Centrally Sponsored Schemes for RURAL DEVELOPMENT

Devraj Chauhan

Foundation for Research in Community Health

3&4, Trimiti B Apts., 85 Anand Park, Aundh, Pune 411 007,
Tel : (020) 5887020, Fax : 5881308, Email : frchpune@giaspn01.vsnl.net.in

Centrally Sponsored Schemes for Rural Sector

Here is a fairly comprehensive list of programmes and schemes broadly for rural development (exclusive of urban-specific schemes) including some national programmes for health and education, etc. with rural bias, initiated by the Centre through its various Ministries. These Centrally sponsored schemes are wholly or partially financed by the Union government but implemented by the States. The Centre has, therefore, no control over the staff, or over day-to-day supervision or coordination. Such schemes have multiplied very fast over the past decade or so. Today their number is about 200 which involved the budgetary allocation of around Rs.24,000 crore for the year 2000-2001 which accounts for a little more than one per cent of the G.D.P. If all the funds are utilized, it comes to around Rs.300 per head for rural population.

But the exhaustive list of such schemes together with budgeted funds with State sharing, if any, should be made easily available and accessible under one umbrella, preferably, the Planning Commission which is supposed to be the think-tank of the nation and where all the Central ministries apparently converge. These should be published in the Annual Plans and should be available separately to all those who may be interested and on web-site too.

The above list at best may serve as a check-list for identifying the Centrally sponsored schemes for a State. With the addition of State sponsored schemes for rural development and deletion of irrelevant programms, an exhaustive State level check-list can be drawn upon for preparing such district level lists for

dissemination among the district related villages. The concerned State must publish this detailed list along with funds provided in their State Annual Plan every year and separately too for the interested individuals and organisations. This will make the local people aware of the programmes and schemes available to them.

The government, Panchayats or NGOs should further provide the following details in simple local language as understood by the villagers concerned who are by and large illiterate and not well informed:

- Description of scheme/ programme
- Objective/s
- Target group/beneficiaries
- Eligibility criteria
- Funding system including sharing provision, if any
- Sources of funds / providers of funds
- Implementing agency
- Monitoring agency
- Contact point at State level-DRDA/BDO, etc.
- More information, if any

Availability and easy accessibility of such adequate information will go a long way in enhancing transparency, establishing accountability, curbing corruption and bringing about better implementation of programmes and schemes. Right to Information, however, is a must for better compliance in implementation of these schemes.

In spite of various shortcomings and lacunae in their constitution and functioning, if devised properly, the PRIs can play an effective role in enhancing local participation and empowerment.

Accountability is the first principle of democratic governance. The freedom of access to reliable information is the pre-requisite to operationalising accountability. If the local people are involved in planning, implementation and management of programmes and if the government functionaries are made accountable to the bodies such as the Panchayats or Village Committees, the delivery systems of development programmes are likely to improve. Decentralisation of the development process will help customising to the felt needs of the local people. With people's participation, the democratic decentralisation in planning and implementation will, to a large extent, help overcome the problems posed by the vertical operation of multiplicity of development programmes and inefficiency in resource use. The effective alternative lies in strengthening the PRIs through empowering them with adequate authority, resources and responsibility.

The Approach Paper to the Tenth Five Year Plan:2002-2007 (September 2001) has noted that the Controller and Auditor-General of India (CAG) have studied the implementation of a few Centrally sponsored schemes and obs ved the following shortcomings:

- The programmes continued to be executed in uncontrolled and open-ended manner without quantitative and qualitative evaluation of delivery.
- The Centre releases the funds to the States mechanically without reference to the effective utilisation or balance from the previous grant.
- The Central ministries were unable to ensure correctness of data and facts as reported by the States, hence, rampant overstatement

of figures of physical and financial performance by the States. The Centre was more concerned with expenditure rather than the attainment of the objectives.Large parts of funds were released in the last month of the financial year.

- The States were generally indifferent to the execution of the programmes. Misuse of funds meant for vulnerable sectors and sections of the society was rampant. Union ministries had no clue to such misuse. Thus, in many cases, the figures of expenditure booked in accounts assumed precedence over the bonafide and propriety of the expenditure.

- Nobody could be held responsible for shortfall in performance, poor delivery of output, wanton abuse of authority to missuse the funds provided for the programme.

Thus, the CAG has indicted both the Central as well as the State governments for shabby implementation of the Centrally sponsored schemes.

In the circumstances, the people at the grass-root level have to rise to the occasion for their rights and responsibilities through proper participation in planning, implementation, monitoring and sharing the benefits. And the requisite funds for these schemes should be passed on to the PRIs concerned ,directly together with implementation authority. The five Fs are sine quo non for success: Functions, Funds and Functionaries-honest and dedicated functionaries as well as facts and figures (information).

Pune

January 2002 D. C.

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
1	**Ministry of Rural Development (Department of Rural Development)**	
1.1	Rural Water Supply Programme	2010.00
1.2	Rural Sanitation	150.00
1.3	Jawahar Gram Samridhi Yojana (Earlier JRY)	1650.00
1.4	Employment Assurance Scheme	1600.00
1.5	Indira Awas Yojana	1527.00
1.6	Strengthening of State Training Centre	8.75
1.7	Strengthening of Extension Training Centre	3.00
1.8	National Social Assistance Programme	835.00
1.9	Annapuma	300.00
1.10	Drought Prone Area Programme	210.00
1.11	Desert Development Programme	160.00
1.12	Computerisation of Land Records	45.00
1.13	Strengthening of Revenue Administration and Updating of Land Records	31.00
1.14	Swarnjayanti Gram Swarozgar Yojana (Earlier IRDP etc.)	500.00
1.15	District Rural Development Agencies (DRDAs) Administration	220.00
		9249.75
2	**Department of Agriculture and Cooperation, Ministry of Agriculture**	
2.1	Assistance to Cooperatives of Weaker Sections	
2.2	Assistance to Women Cooperatives	
2.3	Special Scheme for Scheduled Castes (SCs) and Scheduled Tribes (STs)	
2.4	Reclaimation of Alakli (Usar) Soils	
2.5	National Watershed Development Project for Rainfed Areas	
2.6	Assistance to Cooperative Credit Institutions in under Developed States and Special Areas (Non Over Due Cover)	
2.7	Agricultural Credit Stabilization Fund	
2.8	Sustainable Development of Sugarcane Based Cropping System	

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
2.9	Integrated Cereals Development Programme in Rice Based Cropping System Areas (ICDP-Rice)	
2.10	Integrated Cereals Development Programme in Wheat Based Cropping System Areas (ICDP-Wheat)	
2.11	Integrated Cereals Development Programme in CoarseCereal Based Cropping System Areas (ICDP-Coarse Cereals)	
2.12	Special Jute Development Programme	850.00
2.13	Balanced and Integrated use of Fertilizers	
2.14	Promotion of Agricultural Mechanization among Small Farmers	
2.15	Integrated Programme for Development of Spices	
2.16	Integrated Development of Cashewnut and Cocoa	
2.17	Use of Plastics in Agriculture	
2.18	Soil Conservation in Catchment of River Valley Projects (Integrated Watershed Development in Flood Prone rivers merged with this scheme)	
2.19	Integrated Development of Tropical, arid and temperate zone fruits	
2.20	Production and supply of vegetable seeds	
2.21	Development of Commercial floriculture	
2.22	Development of Medicinal and aromatic plants	
2.23	Development of roots and tuber crops	
2.24	Development of Mushroom	
2.25	Bee Keeping	
2.26	Scheme for foundation and certified seed production of vegetable crops	
2.27	State land use boards	
2.28	Oilseeds Production Programme	88.00
2.29	National Pulses Development Programme	31.28
2.30	Oil Palm Development Programme	10.00
2.31	Accelerated Maize Development Programme	5.50
2.32	Improvement of Crop Statistics (ICS)	2.85
2.33	Timely Reporting of Estimates of Area & Production of Principal Crops	4.25

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
2.34	Establishment of an Agency for Reporting of Agricultural Statistics (EARAS)	9.50
2.35	Crop Estimation Survey on Fruits, Vegetables and Minor Crops	4.00
2.36	Livestocks Census	5.00
2.37	Share Capital Participation in Cooperative Sugar Factories	25.00
2.38	Share Capital Participation in Cooperative Spinning Mills (Growers)	8.00
2.39	Assistance to Cooperative Marketing, Processing, Storage in under developed States and UTs	20.00
2.40	Technology Mission for Cotton Development (Intensive Cotton Development Programme has been merged under this scheme)	41.00
2.41	Watershed Development in Shifting Cultivation Areas	15.00
		1119.38
3	**Ministry of Water Resources**	
3.1	Command Area Development Programme	186.70
3.2	Rationalization of Minor Irrigation Statistics	7.00
3.3	Flood Proofing Programme in North Bihar	1.00
3.4	Critical Anti Erosion Works in Ganga Basins Coastal States	20.00
		214.70
4	**Department of Animal Husbandary and Dairying, Ministry of Agriculture**	
4.1	Assistance to Status for Feed Fodder Development	3.00
4.2	Development and Preservation of Pack Animals	0.30
4.3	Progeny Testing Programme and Extension of Frozen Technology	46.00
4.4	National Bull Production Programme	
4.5	Professional Efficiency Development	6.00
4.6	National Ram/Buck Production Programme	1.25
4.7	Assistance to States for Integrated Piggery Development	2.00

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
4.8	Freshwater Aquaculture	14.00
4.9	Fish Harbour Facilities at Minor Ports	14.00
4.10	Development of Coastal Marine Fishries	11.00
4.11	Welfare of Fisherman	22.00
4.12	Improvement of Slaughter Houses	
4.13	Establishment of Carcass Utilization Centres/Flaying Units	6.00
4.14	National Project on Rinderpest Eradication	13.00
4.15	Systematic Control of Animal Diseases	5.50
4.16	Foot and Mouth Disease	4.50
4.17	Animal Diseases Surveillance	2.00
4.18	Integrated Sample Surveys for Estimation of Major Livestock Products	4.40
4.19	Integrated Coastal Acquaculture	2.00
4.20	Integrated Brackish Water Development	0.00
4.21	National Project on Cattle Breeding	46.00
4.22	Assistance to States for Poultry/Duck Farms	2.70
4.23	Integrated Dairy Development Project	19.50
4.24	Inland Fish Marketing	0.04
		225.19
5	**Ministry of Environment and Forest**	
5.1	Seed Development Agencies	1.50
5.2	Promotion of Construction of Common Effluent Treatment Plants (CETP) for Clusters of Small Scale Industrial Units	1.50
5.3	Industrial Pollution Control Projects	20.00
5.4	Biosphere Reserves	5.75
5.5	Conservation and Management of Mangroves	5.00
5.6	Conservation and Management of Wetlands	5.00
5.7	Fuel wood/Fodder Projects	22.00
5.8	Plantation of Non Timber/Minor Forest Produce including Medicinal Plants	16.50
5.9	National River Conservation Programme (earlier Ganga Action Plan Phase - II)	180.95

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
5.10	National Lakes Conservation Plan	10.00
5.11	Association of Scheduled Tribes and Rural Poor in Regeneration of Degraded Forests	5.35
5.12	Introduction of Modern Forest Fire Control Methods	17.20
5.13	Beneficiary Oriented Scheme for Tribal Development	6.00
5.14	Integrated Afforestation and Eco-development Project	68.00
5.15	Eco-development around Sanctury and National Parks including Tigers Reserves	64.75
5.16	Development of National Parks and Sancturies	21.70
5.17	Project Tiger	19.00
5.18	Project Elephant	9.00
5.19	Control of Poaching and Illegal Trade in Wildlife	
5.20	Taj Protection Mission	35.00
		514.20
6	**Department of Industrial Policy and Promotion, Ministry of Industry**	
6.1	Growth Centres Schemes	40.00
6.2	Transport Subsidy Scheme	90.00
6.3	Capital Investment Subsidy Schemes (North East Region)	5.00
6.4	Interest Subsidy Scheme (North East Region)	2.00
		137.00
7	**Ministry of Road Transport and Highways**	
7.1	Economic and Interstate Importance (E&I) a) Inter State Roads/Bridges	60.00
	b) Roads/Bridges of Economic Importance	
		60.00
8	**Ministry of Power**	
8.1	Rural Electrification Programme	
9	**Ministry of Non-Conventional Energy Sources**	
9.1	National Programme on Improved Chulha	18.00

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
9.2	Institutional/Community Biogas Plant Programme	6.00
9.3	Integrated Rural Energy Programme	8.00
9.4	National Project on Biogas Development	60.00
9.5	Solar Photovoltaic Lantern/Domestic Lighting Programme	42.00
9.6	Small Hydro Power Programme	39.00
		173.00
10	**Department of Elementary Education and Literacy, Ministry of Human Resource Development**	
10.1	Operation Blackboard	520.00
10.2	Teacher Education	220.00
10.3	Non Formal Education (State Sector) and Assistance to Voluntary Agencies for Non-formal Education	400.00
10.4	Nutritional Support to Primary Education (Mid-day-Meal)	930.00
10.5	(a) Shiksha Karmi	30.00
	(b) Lokjumbish	59.00
	(c) Mahila Samakhya	11.00
	(d) District Primary Education Programme	1100.00
10.6	Joint GOI -UN Programme for Primary Education	10.00
10.7	Sarvasiksha Abhiyan	500.00
10.8	Residential Primary Schools in Rural Areas	0.00
10.9	(i) Implication of the Proposals to make Elementary Education to Fundamental Right	0.00
	(ii) National Elementary Education Mission	0.00
	(iii) Special Assistance to States/Uts	0.00
10.10	Domestic Funding for DPEP	0.00
10.11	National Programme for Women's Education	10.00
10.12	Literacy Campaign and Operation Restoration (earlier special programme for eradication of illiteracy	27.00
10.13	(a) Support to NGOs in field of Adult	

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
	Education (earlier voluntary agencies)	15.00
	(b) Janshikshan Sansathan (earlier Shramic Vidhyapeeth)	25.00
	(c) Continuing Education for Neo Literates	108.50
	(d) Cultural Exchange Programme	0.04
		3965.54
11	**Department of Higher and Secondary Education, Ministry of Human Resource Development**	
11.1	Environment Orientation to School Children	2.60
11.2	Promotion of Yoga	0.30
11.3	Strengthening of culture and values in education	4.30
11.4	Improvement of Science Education in Schools	18.00
11.5	Assistance to NGOs for Strengthening of Hostel Facilities for Girls	4.30
11.6	Education Technology	13.70
11.7	Computer Education in Schools (Class)	84.50
11.8	Vocationalization of Education	42.70
11.9	Integrated Education for Disabled Children	21.40
11.10	National Loan Scholarship Scheme	0.01
11.11	National Programme for Free Education for Girls	0.01
11.12	Educational Development of NE Region	1.15
11.13	National Scholarship Scheme	2.00
11.14	Scholarships for Talented Children from Rural Areas	1.00
11.15	Appointment of Hindi Teachers	10.00
11.16	Appointment of Urdu Teachers	1.00
11.17	Modern Indian Languages	0.05
11.18	Development of Sanskrit	10.50
11.19	Area Intensive Programme for Educationally Backward Minorities	20.00
11.20	Modernization of Madarasas	10.50
		248.02

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
12	Department of Youth Affairs and Sports, Ministry of Culture, Youth Affairs and Sports	
12.1	Establishment and Development of Mountaineering Institutes	0.50
12.2	National Service Scheme	23.85
12.3	Games and Sports in Colleges and Universities	4.50
		28.85
13	Department of Health, Ministry of Health & Family Welfare	
13.1	National Malaria Eradication Programme	225.00
13.2	National Leprosy Eradication Programme	75.00
13.3	National TB Control Programme	136.00
13.4	National Programme of Prevention of Blindness	140.00
13.5	National AIDS Control Programme	210.00
13.6	Assistance for Augmentation of Drug Testing Facilities in the States (Strengthening of State Drug Analytical Laboratories)	
	Drug Inspectorate Staff in Various States/Uts (Strengthening of State Drug Control Organizations)	18.50
	Financial Assistance to the States for Strengthening Food Testing Laboratories	
	Assistance for Upgradation of Post Graduates	
13.7	National Guineaworm Eradication Programme	0.10
		804.60
14	Department of Family Welfare, Ministry of Health and Family Welfare	
14.1	National Family Welfare Programme	4210.00
		4210.00
15	Department of Women and Child Development, Ministry of Human Resource Development	
15.1	Integrated Child Development Schemes (ICDS)	1198.00

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
15.2	World Bank Assisted ICDS Projects	220.00
15.3	Rural Women's Development and Employment Project	15.00
15.4	National Resource Centre for Women	
15.5	Indira Mahila Yojana	19.50
15.6	Balika Samridhi Yojana	25.00
		1477.50
16	**Ministry of Social Justice and Empowerment**	
16.1	Scheduled Caste Development Corporation	23.00
16.2	Boys Hostels for SCs	20.00
16.3	Girls Hostels for SCs	20.00
16.4	Hostels for OBC Boys and Girls Students	15.00
16.5	Book Banks for SC Students	2.50
16.6	Post Matric Scholarship for SC/ST Students	159.77
16.7	Coaching and Allied Scheme	10.00
16.8	Pre Matric Scholarship for Children for those engaged in Unclean Occupations	12.00
16.9	National Scheme of Liberation and Rehabilitation of Scavengers	75.00
16.10	Implementation of Protection of Civil Rights Act, 1965 and SC/ST (Prevention of Atrocities Act) 1989	30.00
16.11	Employment of Handicapped	1.60
16.12	Scheme of Prevention and Control of Juvenile Social Maladjustment	12.50
16.13	Post Matric Scholarship for OBCs	42.50
16.14	Pre Matric Scholarship for OBCs	0.00
16.15	Residential Schools for OBC Boys and Girls Students	0.01
16.16	Upgradation Merit	42.50
		466.38

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
17	Department of Food & Public Distribution, Ministry of Consumer Affirs, Food & Public Distribution	
17.1	Purchase of Mobile Vans/Trucks	0.30
17.2	Construction of Godowns	11.50
		11.80
18	Ministry of Tribal Development	
18.1	Upgradation of Merit of ST Students	0.40
18.2	Research and Training for STs	7.80
18.3	GIA to Scheduled Tribes Development and Finance Corporation	2.60
18.4	Coaching and Allied Scheme for ST	1.40
18.5	Book Bank Scheme for ST	0.90
18.6	Boys Hostels for STs	10.80
18.7	Girls Hostels for STs	13.00
18.8	Ashram School for STs	14.00
		50.90
19	Ministry of Labour	
19.1	World Bank Aided Schemes	0.75
19.2	Rehabilitation of Bonded Labour	603.00
19.3	Equipment Modernization & Maintenance	15.00
19.4	Introduction of new trades in Industrial Training Institutes	10.00
19.5	Basic Training Centres and RI Centres	3.00
19.6	Advanced Vocational Training Centres	5.00
19.7	Setting up on new Women ITIs/Wings	10.00
19.8	New Trades in Women ITIs/Wings	5.00
19.9	Management Information System	7.00
19.10	Hi-tech Training in ITIs	20.00
		678.75
20	Ministry of Commerce	
20.1	Export Promotion Industrial Park	22.00

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
20.2	Critical Infrastructure Balance Scheme	26.75
		48.75
21	**Ministry of Textiles**	
21.1	Schemes for Handloom Export	5.00
21.2	Welfare Schemes Workshed Cum Housing	9.00
21.3	Group Insurance	
21.4	Thrift Fund	5.00
21.5	Health Package Scheme	
21.6	New Insurance Scheme	
21.7	Handloom Development Centre/Quality Dyeing Units	66.00
21.8	Project Package Scheme - all States and NE	3.00
		88.00
22	**Ministry of Tourism**	
22.1	Development of Tourist Centres/Areas	
22.2	Refurbishment of Monuments/Heritage Sites	50.85
22.3	Budget Accommodation	
22.4	Wayside Amenities	
22.5	SEL Shows (Flood Lighting)	
22.6	Adventure Tourism	5.00
22.7	Production of Literature	3.00
22.8	Domestic Campaigns including Fairs and Festivals	3.00
22.9	Research, Computerization and Monitoring	10.00
22.10	Marketing Research including 20 Years Perspective Plan	15.00
		86.85
23	**Ministry of Shipping**	
23.1	Inland Water Transportation Schemes Implemented by the States	3.00
		3.00

Major Programmes and Schemes Initiated by the Centre Broadly for Rural Development through its Various Ministries : 2001-02

A.	Rural Sector in general (Name of the Scheme)	Budget Provision (Rs. Crore) 2001-02
24	**Department of Justice, Ministry of Law, Justice and Company Affirs**	
24.1	Development of Infrastructural Facilities for the Judiciary	75.00
		75.00
25	**Department of Revenue, Ministry of Finance**	
25.1	Setting up of Special Courts for Trial of Offences under the Narcotic Drugs and Psychotropic Substances Act, 1955 (NDPS)	1.00
		1.00
	Total for A	23938.16
B.	URBAN SECTOR	
1	**Ministry of Urban Development and Poverty Alleviation**	
1.1	Urban Low Cost Sanitation Scheme for Liberation of Scavengers	40.00
1.2	Accelerated Urban Water Supply Programme for Towns with Population less than 20000	95.00
1.3	Integrated Development of Small and Medium Towns	70.00
1.4	Mega City Scheme	95.50
1.5	Contribution to National Capital Region Planning Board	50.00
1.6	Contribution to Urban Transport Consortium Fund	0.00
1.7	Swarana Jayanti Shahri Rojgar Yojana (Earlier NRY + UBSP + PMIUPEP	168.00
		518.50
	Total for B	518.50
	Grand Total (A + B)	24,456.66

ಗ್ರಾಮೀಣ ಬಡಜನರ ಜೀವನದ ಗುಣಮಟ್ಟವನ್ನು ಸುಧಾರಿಸಲು ಯೋಜನೆಗಳು

ದಾರಿದ್ರ್ಯ ನಿವಾರಣೆ ನಮ್ಮೆಲ್ಲ ಅಭಿವೃದ್ಧಿ ಯೋಜನೆಗಳ ಪ್ರಮುಖ ಕಳಕಳಿಯಾಗಿದೆ. ಆರ್ಥಿಕತೆಯನ್ನು ಪುನರ್‌ರಚಿಸಲು ಹೊಸ ನೀತಿಗಳನ್ನು ಕಳೆದ ವರ್ಷ ಪ್ರಾರಂಭಿಸಿದಾಗ ದುರ್ಬಲ ಮತ್ತು ಅನುಕೂಲರಹಿತರ ಜೀವನದ ಗುಣಮಟ್ಟವನ್ನು ಸುಧಾರಿಸುವ ತನ್ನ ನಿಶ್ಚಯವನ್ನು ಸರ್ಕಾರ ಪುನರುಚ್ಚರಿಸಿತು. ಈ ನಿಶ್ಚಯ ತೀವ್ರ ಆರ್ಥಿಕ ಬಿಕ್ಕಟ್ಟನ್ನು ಎದುರಿಸಲು ಕೈಗೊಂಡಿರುವ ಆರ್ಥಿಕ ಕಾರ್ಯಕ್ರಮಗಳ ಒಂದು ಮಹತ್ವದ ಅಂಶ. ಬಡವರಲ್ಲಿ ಅತ್ಯಂತ ಬಡವರಾದವರು ತಮ್ಮ ಸಾಮಾಜಿಕ–ಆರ್ಥಿಕ ಸ್ಥಾನಮಾನಗಳನ್ನು ಸುಧಾರಿಸಿಕೊಳ್ಳುವುದಕ್ಕೆ ಎಲ್ಲ ಸಾಧ್ಯ ಮಾರ್ಗಗಳಲ್ಲಿ ಅವರಿಗೆ ನೆರವಾಗಲು ಹೆಚ್ಚು ಉದ್ಯೋಗಾವಕಾಶಗಳ ಸೃಷ್ಟಿ, ಉತ್ಪಾದಕ ಆಸ್ತಿಗಳನ್ನು ಒದಗಿಸುವುದು, ಸಾಲಸೌಲಭ್ಯ, ಕುಡಿಯುವ ನೀರು, ವಿದ್ಯುಚ್ಛಕ್ತಿ, ರಸ್ತೆಗಳು ಮತ್ತಿತರ ಸೌಲಭ್ಯಗಳನ್ನು ಒದಗಿಸುವುದಕ್ಕೆ ಗಮನ ನೀಡಲಾಗುವುದು.

ಈಗ ಕೈಗೊಂಡಿರುವ ಕಾರ್ಯಕ್ರಮಗಳ ಕೆಲವು ಮುಖ್ಯ ಅಂಶಗಳನ್ನು ಕೆಳಗೆ ಕೊಡಲಾಗಿದೆ :

ಸಮಗ್ರ ಗ್ರಾಮೀಣ ಅಭಿವೃದ್ಧಿ ಕಾರ್ಯಕ್ರಮ
(ಐಆರ್‌ಡಿಪಿ)

ಗುರಿ

- ಸರ್ಕಾರದ ದಾರಿದ್ರ್ಯ ನಿವಾರಣಾ ಕಾರ್ಯಕ್ರಮಗಳ ಮುಖ್ಯಾಧಾರವಾಗಿರುವುದು.
- ಸಣ್ಣ ಮತ್ತು ಅತಿ ಸಣ್ಣ ರೈತರು, ಕೃಷಿ ಕಾರ್ಮಿಕರು, ಗ್ರಾಮೀಣ ಕರಕುಶಲಿಗಳು ಮತ್ತು ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳ ಇತರ ಬಡಜನರು ದಾರಿದ್ರ್ಯ ರೇಖೆಯನ್ನು ದಾಟುವುದಕ್ಕೆ ನೆರವಾಗುವುದು.

ಯೋಜನೆ

- ಉತ್ಪಾದಕ ಆಸ್ತಿಗಳು ಮತ್ತು ಅಗತ್ಯ ಸಾಧನಸಲಕರಣೆಗಳನ್ನು ಬಡಜನರಿಗೆ ಒದಗಿಸುವುದು, ಫಲಾನುಭವಿಗಳಲ್ಲಿ ಕನಿಷ್ಠ ಶೇಕಡ 50 ರಷ್ಟು ಪರಿಶಿಷ್ಟ ಜಾತಿ ಮತ್ತು ಪರಿಶಿಷ್ಟ ವರ್ಗಗಳಿಗೆ ಸೇರಿರಬೇಕು; ಯೋಜನೆಯ ನೆರವು ಪಡೆಯುವವರಲ್ಲಿ ಶೇಕಡ 40 ರಷ್ಟು ಮಹಿಳೆಯರಾಗಿರಬೇಕು. ಐಆರ್‌ಡಿಪಿಯ ಅನುಕೂಲಗಳಲ್ಲಿ ಶೇಕಡ 3 ರಷ್ಟು ಅಂಗವಿಕಲರಿಗೆ ಮೀಸಲಿಡಲಾಗಿದೆ.
- ದೇಶದ ಎಲ್ಲ 5,300 ಬ್ಲಾಕ್‌ಗಳಲ್ಲಿ ಜಾರಿಗೊಳಿಸಲಾಗಿದೆ.
- ಇದು ಕೇಂದ್ರದ ಆಶ್ರಯದ ಯೋಜನೆಯಾಗಿದ್ದು, ವೆಚ್ಚವನ್ನು ಕೇಂದ್ರ ಸರ್ಕಾರ ಮತ್ತು ರಾಜ್ಯ ಸರ್ಕಾರಗಳು ಸಮಾನವಾಗಿ ಭರಿಸುತ್ತವೆ.
- 1991–92ರ ಸಾಲಿಗೆ ಕೇಂದ್ರವುಯೋಜನೆಗೆ ಒದಗಿಸಿದ ಹಣ 352.66 ಕೋಟಿ ರೂ. ರಾಜ್ಯ ಸರ್ಕಾರಗಳು ಇಷ್ಟೇ ಮೊತ್ತದ ಹಣವನ್ನು ಒದಗಿಸಬೇಕು.
- 7ನೆಯ ಯೋಜನೆಯಲ್ಲಿ ಈ ಕಾರ್ಯಕ್ರಮಕ್ಕೆ ಸುಮಾರು 3,316 ಕೋಟಿ ರೂಪಾಯಿಗಳನ್ನು ವೆಚ್ಚ ಮಾಡಿ ಸುಮಾರು 182 ಲಕ್ಷ ಕುಟುಂಬಗಳಿಗೆ

ನೆರವು ನೀಡಲಾಯಿತು. ಫಲಾನುಭವಿಗಳಿಗೆ 5372 ಕೋಟಿ ರೂಪಾಯಿಗಳಿಗೂ ಹೆಚ್ಚಿನ ಸಾಲ ನೀಡಲಾಯಿತು. 7ನೆಯ ಯೋಜನೆಯಲ್ಲಿ ಐಆರ್‌ಡಿಪಿ ಕಾರ್ಯಕ್ರಮಕ್ಕೆ ತೊಡಗಿಸಿದ ಒಟ್ಟು ಹಣ 8,688 ಕೋಟಿ ರೂಪಾಯಿಗಳಿಗೂ ಹೆಚ್ಚು.

- 1990–91ರಲ್ಲಿ 23.71 ಲಕ್ಷ ಕುಟುಂಬಗಳಿಗೆ ನೆರವು ನೀಡಲಾಯಿತು. ನೀಡಿದ ಸಾಲ 1,190 ಕೋಟಿ ರೂ.

- 1985–86ರಲ್ಲಿ ಪ್ರತಿ ಕುಟುಂಬದ ಮೇಲೆ ಹೂಡಿದ ಬಂಡವಾಳ 3,574 ರೂಪಾಯಿ ಇದ್ದದ್ದು 1990–91ರಲ್ಲಿ 6,422 ರೂಪಾಯಿಗಳಿಗೆ ಏರಿತು.

ಸ್ವ–ಉದ್ಯೋಗ ಹೊಂದಲು ಗ್ರಾಮೀಣ ಯುವಜನರಿಗೆ ತರಬೇತಿ (ಟ್ರೈಸೆಮ್)

ಗುರಿ

- ಗ್ರಾಮೀಣ ಬಡ ಕುಟುಂಬಗಳ ಯುವಜನರು ಸೂಕ್ತ ಸ್ವ–ಉದ್ಯೋಗ ಅಥವ ಸಂಬಳದ ಉದ್ಯೋಗ ಹೊಂದುವುದು ಸಾಧ್ಯವಾಗುವಂತೆ ಅವರಿಗೆ ಕುಶಲತೆ ಒದಗಿಸುವ ತರಬೇತಿ ನೀಡಲು 1979ರಲ್ಲಿ ಟ್ರೈಸೆಮ್ ಯೋಜನೆಯನ್ನು ಪ್ರಾರಂಭಿಸಲಾಯಿತು.

ಯೋಜನೆ

- ತರಬೇತಿಗೆ ಆಯ್ಕೆಯಾದ ಯುವಜನರಲ್ಲಿ ಕನಿಷ್ಠ ಶೇಕಡ 50 ಯುವಜನರು ಪರಿಶಿಷ್ಟ ಜಾತಿ/ಪರಿಶಿಷ್ಟ ಪಂಗಡಗಳಿಗೆ ಸೇರಿದವರಾಗಿರಬೇಕು ಮತ್ತು ತರಬೇತಿ ಪಡೆಯುವವರ ಒಟ್ಟು ಸಂಖ್ಯೆಯಲ್ಲಿ ಶೇಕಡ 40 ರಷ್ಟು ಮಹಿಳೆಯರಾಗಿರಬೇಕು. ಯೋಜನೆಯ ಅನುಕೂಲಗಳಲ್ಲಿ ಶೇಕಡ 3 ರಷ್ಟು ಅಂಗವಿಕಲರಿಗೆ ಮೀಸಲಿಡಲಾಗಿದೆ.

- ತರಬೇತಿ ಪಡೆಯುವ ಪ್ರತಿ ವ್ಯಕ್ತಿಗೆ ತಿಂಗಳಿಗೆ 300/– ರೂ. ಗಳ ವರೆಗೆ ಸ್ಟೈಪೆಂಡ್ ನೀಡಲಾಗುವುದು.

- ತರಬೇತಿ ಪಡೆಯುವ ಪ್ರತಿ ವ್ಯಕ್ತಿಗೆ ಸುಮಾರು 600/– ರೂ. ಮೌಲ್ಯದ ಟೂಲ್ ಕಿಟ್ ಉಚಿತವಾಗಿ ನೀಡಲಾಗುವುದು.

- ತರಬೇತಿ ಮುಕ್ತಾಯವಾದ ನಂತರ, ವೃತ್ತಿಗಳನ್ನು ಕೈಗೊಳ್ಳಲು ಸೂಕ್ತವಾದ ಆಸ್ತಿಗಳನ್ನು ಹೊಂದಲು, ವರಮಾನವನ್ನು ಗಳಿಸಲು ತರಬೇತಿ ಪಡೆದ ಪ್ರತಿ ಯುವ ವ್ಯಕ್ತಿಗೆ ಐಆರ್‌ಡಿಪಿಯಡಿ ಸಹಾಯಧನ ಮತ್ತು ಸಾಲವನ್ನು ನೀಡಲಾಗುವುದು.

- 7ನೇ ಯೋಜನಾವಧಿಯಲ್ಲಿ ಈ ತರಬೇತಿ ಯೋಜನೆಗೆ ವೆಚ್ಚ ಮಾಡಿದ ಹಣ 129 ಕೋಟಿ ರೂಪಾಯಿ; ಸುಮಾರು 10 ಲಕ್ಷ ಗ್ರಾಮೀಣ ಯುವಜನರಿಗೆ ತರಬೇತಿ ನೀಡಲಾಗಿದೆ; ಈ ಪೈಕಿ 4.6 ಲಕ್ಷಕ್ಕೂ ಹೆಚ್ಚು ಜನರು ಸ್ವಂತ ಉದ್ಯೋಗ ಹೊಂದಿದ್ದಾರೆ ಹಾಗೂ 1.3 ಲಕ್ಷ ಯುವಜನರು ಸಂಬಳದ ಉದ್ಯೋಗ ಪಡೆದುಕೊಂಡಿದ್ದಾರೆ.

ಅನುಕೂಲಗಳು

- 1990–91ರಲ್ಲಿ ಸುಮಾರು 2.4 ಲಕ್ಷ ಯುವಜನರು ತರಬೇತಿ ಪಡೆದಿದ್ದಾರೆ; ಈ ಪೈಕಿ ಅರ್ಧದಷ್ಟು ಜನರು ಸ್ವಂತ ಉದ್ಯೋಗಗಳಲ್ಲಿದ್ದಾರೆ ಮತ್ತು ಆರನೆಯ ಒಂದಂಶದಷ್ಟು ಯುವಜನರು ಸಂಬಳದ ಉದ್ಯೋಗಗಳಲ್ಲಿದ್ದಾರೆ.

- 1991–92 ರಲ್ಲಿ (ಅಕ್ಟೋಬರ್‌ವರೆಗೆ) ಒಂದು ಲಕ್ಷಕ್ಕೂ ಹೆಚ್ಚು ಯುವಜನರು ತರಬೇತಿ ಪಡೆದಿದ್ದಾರೆ.

- 1990–91ರಲ್ಲಿ ತರಬೇತಿ ಯೋಜನೆಗೆ 23 ಕೋಟಿ ರೂಪಾಯಿಗಳನ್ನು ಒದಗಿಸಿದ್ದರೆ 1991–92ರ ಬಜೆಟ್‌ನಲ್ಲಿ 26 ಕೋಟಿ ರೂಪಾಯಿ ಒದಗಿಸಲಾಗಿದೆ.

ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ಮಹಿಳೆಯರು ಮತ್ತು ಮಕ್ಕಳ ಅಭಿವೃದ್ಧಿ (ಡ್ವಾಕ್ರ)

ಗುರಿ

- ಡ್ವಾಕ್ರ ಯೋಜನೆಯನ್ನು 1982 ರಲ್ಲಿ ಐಆರ್‌ಡಿಪಿಯ ಅಂಗವಾಗಿ ಕೈಗೊಳ್ಳಲಾಯಿತು. ಉದ್ಯೋಗಾವಕಾಶಗಳು, ತರಬೇತಿ ಮತ್ತು ಸಾಲಸೌಲಭ್ಯಗಳು ಮಹಿಳೆಯರಿಗೆ ಸುಲಭವಾಗಿ ದೊರಕುವುದಕ್ಕೆ ಮತ್ತು ಆ ಮೂಲಕ ಅವರು ತಮ್ಮ ಸ್ಥಾನಮಾನಗಳನ್ನು ಸುಧಾರಿಸಿಕೊಳ್ಳುವುದಕ್ಕೆ ನೆರವಾಗುವುದು ಈ ಯೋಜನೆಯ ಗುರಿ. ಸಮಾಜ ಕಲ್ಯಾಣ, ಆರೋಗ್ಯ, ಪುಷ್ಟಿಕರ ಆಹಾರ ಮತ್ತು ಶಿಕ್ಷಣದಂತಹ ಸೇವಾಸೌಲಭ್ಯಗಳು ಮಹಿಳೆಯರು ಮತ್ತು ಮಕ್ಕಳಿಗೆ ದೊರಕುವಂತೆ ಮಾಡುವುದಕ್ಕೆ ವಿಶೇಷ ಗಮನ ನೀಡಲಾಗುವುದು.

ಯೋಜನೆ

- ಮಹಿಳೆಯರನ್ನು 10–15 ಸಂಖ್ಯೆಯ ತಂಡಗಳನ್ನಾಗಿ ಸಂಘಟಿಸಲಾಗುವುದು. ಪ್ರತಿಯೊಂದು ತಂಡಕ್ಕೂ ಆಧಾರಸ್ವರೂಪದ ವಸ್ತುಗಳು, ಕಚ್ಚಾ ಪದಾರ್ಥಗಳು, ಮಾರುಕಟ್ಟೆವ್ಯವಹಾರ, ಮಕ್ಕಳ ಪಾಲನೆ ಮುಂತಾದುವುಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ವೆಚ್ಚಕ್ಕಾಗಿ ಒಮ್ಮೆ ಮಾತ್ರ 15,000 ರೂ. ಗಳ ಅನುದಾನವನ್ನು ನೀಡಲಾಗುವುದು.ಇದನ್ನು ಆವರ್ತ ನಿಧಿಯನ್ನಾಗಿ ಬಳಸಬೇಕು.

- 1990–91ರಲ್ಲಿ ಒಂದು ಲಕ್ಷಕ್ಕೂ ಹೆಚ್ಚು ಸದಸ್ಯರಿದ್ದ 6835 ತಂಡಗಳನ್ನು ರಚಿಸಲಾಯಿತು. 1991–92 ರಲ್ಲಿ 10,000 ತಂಡಗಳ ರಚನೆಯ ಗುರಿ ಹೊಂದಲಾಗಿದೆ.

- 1982–91 ಅವಧಿಯಲ್ಲಿ ದೇಶದಲ್ಲಿ 37,174 ತಂಡಗಳನ್ನು ರಚಿಸಲಾಗಿತ್ತು ಹಾಗೂ ಈ ಕಾರ್ಯಕ್ರಮದ ಫಲಾನುಭವಿಗಳ ಸಂಖ್ಯೆ 6,30,049.

- ಡ್ವಾಕ್ರ ಕಾರ್ಯಕ್ರಮದ ಅಂಗವಾಗಿ ಉಳಿತಾಯ ಮತ್ತು ಸಾಲಸೌಲಭ್ಯ ಚಟುವಟಿಕೆಗಳಿಗೆ ಉತ್ತೇಜನ ನೀಡಲಾಗುತ್ತದೆ.

ಜವಾಹರ್ ರೋಜ್‌ಗಾರ್ ಯೋಜನಾ

(ಜೆಆರ್‌ವೈ)

ಗುರಿ

- ಗ್ರಾಮೀಣ ಬಡಜನರಿಗೆ ಉದ್ಯೋಗಾವಕಾಶಗಳನ್ನು ಸೃಷ್ಟಿಸುವುದು ಹಾಗೂ ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ಜೀವನದ ಗುಣಮಟ್ಟವನ್ನು ಸುಧಾರಿಸುವುದಕ್ಕೆ ನೆರವಾಗುವಂತಹ ಆಸ್ತಿಗಳನ್ನು ನಿರ್ಮಿಸುವುದು. ಜೆಆರ್‌ವೈ 1989–90 ರಲ್ಲಿ ಪ್ರಾರಂಭವಾಯಿತು.

ಯೋಜನೆ

- 1991–92ರ ಸಾಲಿಗೆ ಜವಾಹರ್ ರೋಜ್‌ಗಾರ್ ಯೋಜನೆಗೆ ಕೇಂದ್ರ ಒದಗಿಸಿದ ಹಣ 2,100 ಕೋಟಿ ರೂ. ಇದರ ಜೊತೆಗೆ ರಾಜ್ಯಗಳು ಒದಗಿಸಿದ್ದು 523 ಕೋಟಿ ರೂಪಾಯಿ.

- 1990–91 ರಲ್ಲಿ ಈ ಯೋಜನೆಯ ಮೇರೆಗೆ 87 ಕೋಟಿ ಮಾನವದಿನಗಳ ಉದ್ಯೋಗ ಸೃಷ್ಟಿಯಾಗಿದ್ದರೆ 1991–92 ರಲ್ಲಿ 90 ಕೋಟಿ ಮಾನವದಿನಗಳ ಉದ್ಯೋಗಸೃಷ್ಟಿಸಬೇಕಾಗಿದೆ. 1989–91ರ ಎರಡು ವರ್ಷಗಳಲ್ಲಿ ಸುಮಾರು 5045 ಕೋಟಿ ರೂಪಾಯಿಗಳನ್ನು ಯೋಜನೆಯ ಮೇಲೆ ವೆಚ್ಚ ಮಾಡಲಾಗಿದೆ.

- ಒಂದು ರಾಜ್ಯ/ಕೇಂದ್ರಾಡಳಿತ ಪ್ರದೇಶದಲ್ಲಿ ಜಾರಿಯಲ್ಲಿರುವ ಕನಿಷ್ಠ ವೇತನ ಕಾಯಿದೆಯಲ್ಲಿ ನಿಗದಿಪಡಿಸಿದ ದರಗಳಲ್ಲಿ ವೇತನ ನೀಡಲಾಗುವುದು.

- ಉದ್ಯೋಗ ಒದಗಿಸುವುದರಲ್ಲಿ ಪರಿಶಿಷ್ಟ ಜಾತಿ/ಪರಿಶಿಷ್ಟ ಪಂಗಡಗಳಿಗೆ ಆದ್ಯತೆ. ಜೀತಮುಕ್ತರಿಗೆ ಎಲ್ಲರಿಗಿಂತಲೂ ಹೆಚ್ಚಿನ ಆದ್ಯತೆ ನೀಡಲಾಗುವುದು.

- ಶೇಕಡ 30 ರಷ್ಟು ಉದ್ಯೋಗಗಳು ಮಹಿಳೆಯರಿಗೆ ಮೀಸಲು.

- ಕೇಂದ್ರ ಮತ್ತು ರಾಜ್ಯಗಳು 80:20 ಪ್ರಮಾಣಗಳಲ್ಲಿ ವೆಚ್ಚವನ್ನು ಹಂಚಿಕೊಳ್ಳುತ್ತವೆ.

- ಪರಿಶಿಷ್ಟ ಜಾತಿ/ಪರಿಶಿಷ್ಟ ಪಂಗಡಗಳಿಗೆ ಸೇರಿದವರಿಗೆ ಹಾಗೂ ದಾರಿದ್ರ್ಯ ರೇಖೆಯ ಕೆಳಗಡೆ ಇರುವ ಜೀತಮುಕ್ತ ಕಾರ್ಮಿಕರಿಗೆ ಮನೆಗಳನ್ನು ಕಟ್ಟಲು ನಿಧಿಯ ಶೇಕಡ 6 ರಷ್ಟನ್ನು ಇಂದಿರಾ ಆವಾಸ ಯೋಜನೆಗೆ (ಐಎವೈ) ನಿಗದಿಪಡಿಸಲಾಗಿದೆ. 10 ಲಕ್ಷ ಮನೆಗಳನ್ನು ಕಟ್ಟುವ ಗುರಿ ಹೊಂದಿದ ಈ ಯೋಜನೆಯನ್ನು 1985 ರಲ್ಲಿ ಪ್ರಾರಂಭಿಸಲಾಯಿತು ಹಾಗೂ ಇದುವರೆಗೆ 9.73 ಲಕ್ಷ ಮನೆಗಳನ್ನು ನಿರ್ಮಿಸಲಾಗಿದೆ. ಐಎವೈ ಮೇರೆಗೆ ಕಟ್ಟಲಾದ ಮನೆಗಳನ್ನು ಮಹಿಳೆಯರ ಹೆಸರಿನಲ್ಲಿ ಅಥವ ಗಂಡ ಮತ್ತು ಹೆಂಡತಿಯ ಜಂಟಿ ಹೆಸರುಗಳಲ್ಲಿ ವಿತರಿಸಲಾಗುವುದು.

- ಪರಿಶಿಷ್ಟ ಜಾತಿ/ಪರಿಶಿಷ್ಟ ಪಂಗಡಗಳಿಗೆ ಸೇರಿದ ಬಡ, ಸಣ್ಣ ಮತ್ತು ಅತಿ ಸಣ್ಣ ರೈತರಿಗೆ ಹಾಗೂ ಜೀತಮುಕ್ತ ಕಾರ್ಮಿಕರಿಗೆ ಉಚಿತವಾಗಿ ನೀರಾವರಿ ಬಾವಿಗಳನ್ನು ಒದಗಿಸಲು ಮತ್ತು ಭೂ ಅಭಿವೃದ್ಧಿಯನ್ನು ಮಾಡಿಕೊಡಲು ಪ್ರಾರಂಭಿಸಲಾದ 'ದಶಲಕ್ಷ ಬಾವಿಗಳ ಯೋಜನೆ' ಗೆ ಶೇಕಡ 20 ರಷ್ಟು ಸಂಪನ್ಮೂಲಗಳನ್ನು ಒದಗಿಸಲಾಗಿದೆ.

ಅಭಾವಪೀಡಿತ ಪ್ರದೇಶ ಕಾರ್ಯಕ್ರಮ

ಗುರಿ

- ಅಂತಿಮವಾಗಿ ಪ್ರದೇಶ/ಜನತೆ ಬರಗಾಲಕ್ಕೆ ತುತ್ತಾಗದಂತೆ ಮಾಡುವುದು

- ಭೂಮಿ ಮತ್ತಿತರ ಸಂಪನ್ಮೂಲಗಳ ಸದುಪಯೋಗ ಹಾಗೂ ಸೂಕ್ತ ತಂತ್ರಜ್ಞಾನದ ಬಳಕೆ

- ಬರಗಾಲದ ಪ್ರತಿಕೂಲ ಪರಿಣಾಮಗಳನ್ನು ತಗ್ಗಿಸುವುದು

ಯೋಜನೆ

- 13 ರಾಜ್ಯಗಳ 615 ಬ್ಲಾಕ್‌ಗಳಲ್ಲಿ ಜಾರಿಯಲ್ಲಿದೆ
- 1974–75 ರಿಂದ ಮಾರ್ಚ್ 1991 ರವರೆಗೆ ಈ ಕಾರ್ಯಕ್ರಮದಡಿ 1,223 ಕೋಟಿ ರೂಪಾಯಿಗೂ ಹೆಚ್ಚು ಹಣ ಖರ್ಚು ಮಾಡಲಾಗಿದೆ.

ಅನುಕೂಲಗಳು

- ಫಲಾನುಭವಿಗಳ ಸಂಖ್ಯೆ : 70–75 ದಶಲಕ್ಷ (ಮಾರ್ಚ 1991ರ ವರೆಗೆ)
- ಭೂಸಾರ ಮತ್ತು ತೇವ ಸಂರಕ್ಷಣಾ ಯೋಜನೆ : 24.88 ಲಕ್ಷ ಹೆಕ್ಟೇರ್
- ಸೃಷ್ಟಿಸಲಾದ ನೀರಾವರಿ ಸಾಮರ್ಥ್ಯ : 8.55 ಲಕ್ಷ ಹೆಕ್ಟೇರ್
- ಅರಣ್ಯ ಮತ್ತು ಹುಲ್ಲುಗಾವಲು ಅಭಿವೃದ್ಧಿ : 13.97 ಲಕ್ಷ ಹೆಕ್ಟೇರ್
- 1991–92ರ ಬಜೆಟ್‌ನಲ್ಲಿ ಒದಗಿಸಿದ ಹಣ : 56 ಕೋಟಿ ರೂ.

ಮರುಭೂಮಿ ಅಭಿವೃದ್ಧಿ ಕಾರ್ಯಕ್ರಮ

ಗುರಿ

- ಮರುಭೂಮಿ ಹರಡುವುದನ್ನು ತಡೆಗಟ್ಟುವುದು ಮತ್ತು ಮರುಭೂಮಿ ಪ್ರದೇಶದಲ್ಲಿ ಬರಗಾಲದ ಪರಿಣಾಮಗಳನ್ನು ತಗ್ಗಿಸುವುದು

ಯೋಜನೆ

- 5 ರಾಜ್ಯಗಳ 131 ಬ್ಲಾಕ್‌ಗಳಲ್ಲಿ ಕಾರ್ಯಕ್ರಮ ಜಾರಿಯಲ್ಲಿದೆ. ಜಮ್ಮು ಮತ್ತು ಕಾಶ್ಮೀರ ಮತ್ತು ಹಿಮಾಚಲ ಪ್ರದೇಶದ ಚಳಿ ಮತ್ತು ಶುಷ್ಕ ಪ್ರದೇಶಗಳೂ ಕಾರ್ಯಕ್ರಮಕ್ಕೊಳಪಟ್ಟಿವೆ.

✡ ಕಾರ್ಯಕ್ರಮ ಪ್ರಾರಂಭವಾದಾಗಿನಿಂದ (1977–78) ಮಾರ್ಚ್ 1991ರ ವರೆಗೆ 350 ಕೋಟಿ ರೂಪಾಯಿಗೂ ಹೆಚ್ಚು ಹಣವನ್ನು ಈ ಕಾರ್ಯಕ್ರಮಕ್ಕಾಗಿ ಖರ್ಚು ಮಾಡಲಾಗಿದೆ.

ಗ್ರಾಮೀಣ ನೀರು ಸರಬರಾಜು

ಗುರಿ

✡ ಕುಡಿಯುವ ನೀರಿನ ಸಮಸ್ಯೆ ಇರುವ ಹಳ್ಳಿಗಳಿಗೆ ಕುಡಿಯುವ ನೀರು ಒದಗಿಸಲು ಕಾಲ ಮಿತಿಯುಳ್ಳ ಕಾರ್ಯಯೋಜನೆ ಹೊಂದುವುದು

ಯೋಜನೆ

✡ 5,83,000 ಹಳ್ಳಿಗಳ ಪೈಕಿ, ಮಾರ್ಚ್ 1991 ಹೊತ್ತಿಗೆ 5,77,670 ಹಳ್ಳಿಗಳು ಪೂರ್ಣವಾಗಿ ಅಥವಾ ಭಾಗಶಃ ಈ ಯೋಜನೆಯ ವ್ಯಾಪ್ತಿಗೊಳಪಟ್ಟಿವೆ.

✡ ನೀರಿನ 'ಯಾವ ಮೂಲವೂ ಇಲ್ಲದ' ಸಮಸ್ಯೆಯ 2509 ಹಳ್ಳಿಗಳನ್ನು 1992ರ ಮಾರ್ಚ್ ಹೊತ್ತಿಗೆ ಯೋಜನೆಯ ವ್ಯಾಪ್ತಿಗೊಳಪಡಿಸಲಾಗುವುದು. ಜೊತೆಗೆ, ಭಾಗಶಃ ಯೋಜನೆಯ ವ್ಯಾಪ್ತಿಗೊಳಪಟ್ಟಿರುವ 41,066 ಹಳ್ಳಿಗಳನ್ನು 1991–92ರ ಹೊತ್ತಿಗೆ ಸಂಪೂರ್ಣವಾಗಿ ಯೋಜನೆಗೊಳಪಡಿಸಲಾಗುವುದು. ನೀರಿನ 'ಯಾವ ಮೂಲವೂ ಇಲ್ಲದ' ಸಮಸ್ಯೆಯ ಉಳಿದ 2824 ಹಳ್ಳಿಗಳನ್ನು 1992–93 ರಲ್ಲಿ ಯೋಜನೆಗೆ ಒಳಪಡಿಸಲಾಗುವುದು.

✡ 1990–91 ರಲ್ಲಿ ರಾಜೀವ್ ಗಾಂಧಿ ರಾಷ್ಟ್ರೀಯ ಕುಡಿಯುವ ನೀರಿನ ಕಾರ್ಯಕ್ರಮಕ್ಕೆ 423 ಕೋಟಿ ರೂಪಾಯಿ ಒದಗಿಸಿದ್ದು ಈ ವರ್ಷ (1991–92) ಇದನ್ನು 758 ಕೋಟಿ ರೂಪಾಯಿಗಳಿಗೆ ಏರಿಸಲಾಗಿದೆ. 'ನೀರಿನ ಯಾವುದೇ ಮೂಲವಿಲ್ಲದ' ಸಮಸ್ಯೆಯ ಹಳ್ಳಿಗಳಿಗೆ ಕುಡಿಯುವ ನೀರು ಪೂರೈಸಲು ಒದಗಿಸಿರುವ 250 ಕೋಟಿ ರೂಪಾಯಿಗಳು ಇದರಲ್ಲಿ ಸೇರಿವೆ.

ಸಂಬಂಧಪಟ್ಟ ಕೆಲವು ಕ್ರಮಗಳು

- ಅನುಕೂಲವಿಲ್ಲದ ಗ್ರಾಮೀಣ ಮತ್ತು ದುರ್ಗಮ ಪ್ರದೇಶಗಳಲ್ಲಿ ಸಾರ್ವಜನಿಕ ವಿತರಣಾ ವ್ಯವಸ್ಥೆಯನ್ನು ಬಲಪಡಿಸುವುದು.
- ಸಣ್ಣ ಮತ್ತು ಅತಿ ಸಣ್ಣ ರೈತರಿಗೆ ಸಾಕಷ್ಟು ಸಾಲಸೌಲಭ್ಯ ದೊರೆಯುವಂತೆ ಮಾಡಲು ಸಾಲ ನೀಡಿಕೆಯ ವ್ಯವಸ್ಥೆಯನ್ನು ಬಲಪಡಿಸುವುದು
- ಗ್ರಾಮೀಣಾಭಿವೃದ್ಧಿಗೆ ಕಳೆದ ಸಾಲಿನ ಯೋಜನೆಯಲ್ಲಿ 3,115 ಕೋಟಿ ರೂಪಾಯಿ ಒದಗಿಸಲಾಗಿದ್ದು ಈ ವರ್ಷ ಅದನ್ನು 3,508 ಕೋಟಿ ರೂಪಾಯಿಗಳಿಗೆ ಹೆಚ್ಚಿಸಲಾಗಿದೆ.
- ಹಿಂದುಳಿದ ವರ್ಗಗಳ ಕಲ್ಯಾಣಕ್ಕಾಗಿ ಒಂದು ನಿಗಮದ ಸ್ಥಾಪನೆ
- ನಗರಗಳ ಬಡವರಿಗೆ ನೆಹರು ರೋಜ್‌ಗಾರ್ ಯೋಜನಾ (ಎನ್‌ಆರ್‌ವೈ); 1991–92 ರಲ್ಲಿ ನಗರಗಳ 1.45 ಲಕ್ಷ ಬಡಜನರು ಸ್ವ–ಉದ್ಯೋಗದ ಅವಕಾಶಗಳನ್ನು ಪಡೆಯಲಿದ್ದಾರೆ.
- ಈ ವರ್ಷ ನಗರಗಳಲ್ಲಿ ಉದ್ಯೋಗ ಯೋಜನೆಗಳಿಗೆ 130 ಕೋಟಿ ರೂಪಾಯಿ ತೆಗೆದಿರಿಸಲಾಗಿದೆ. ಇದರಲ್ಲಿ 113 ಕೋಟಿ ರೂಪಾಯಿಗಳನ್ನು ಎನ್‌ಆರ್‌ವೈಗೆ ವಚ್ಚ ಮಾಡಲಾಗುತ್ತದೆ.
- ಗ್ರಾಮೀಣ ಜನಸಂಖ್ಯೆಯ ಇನ್ನೂ 10% ರಷ್ಟು ಜನರಿಗೆ ನೈರ್ಮಲ್ಯ ಸೌಲಭ್ಯಗಳು.
- ಮಲಮೂತ್ರಗಳನ್ನು ಜನರಿಂದ ತೆಗೆಸುವ ಅಮಾನವೀಯ ಪದ್ಧತಿಯನ್ನು ಕೊನೆಗೊಳಿಸಲು ಎಲ್ಲ ಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳಲಾಗುತ್ತಿದೆ.

ಜಮ್ಮು ಮತ್ತು ಕಾಶ್ಮೀರ ಹಾಗೂ ಪಂಜಾಬ್

- ದಾರಿದ್ರ್ಯ ರೇಖೆಯ ಕೆಳಗಡೆ ಜೀವಿಸುತ್ತಿರುವ ಪಂಜಾಬ್‌ನ 35,944 ಗ್ರಾಮೀಣ ಕುಟುಂಬಗಳು ಹಾಗೂ ಜಮ್ಮು ಮತ್ತು ಕಾಶ್ಮೀರದ 13,000 ಗ್ರಾಮೀಣ ಕುಟುಂಬಗಳಿಗೆ ತಮ್ಮ ಜೀವನದ ಗುಣಮಟ್ಟವನ್ನು ಸುಧಾರಿಸಿಕೊಳ್ಳುವುದಕ್ಕೆ ಐಆರ್‌ಡಿಪಿಯಡಿ ಸಾಲಗಳನ್ನು, ಸಹಾಯಧನವನ್ನು ನೀಡಲಾಗಿದೆ.

- ಜಮ್ಮು ಮತ್ತು ಕಾಶ್ಮೀರದಲ್ಲಿ ಕಳೆದ ವರ್ಷ ಜವಾಹರ್ ರೋಜ್‌ಗಾರ್ ಯೋಜನೆಯಡಿ 54 ಲಕ್ಷಕ್ಕೂ ಹೆಚ್ಚು ಮಾನವದಿನಗಳಷ್ಟು ಉದ್ಯೋಗ ಕಲ್ಪಿಸಲಾಗಿದೆ.

- ಪಂಜಾಬ್‌ನಲ್ಲಿ ಕಳೆದ ವರ್ಷ ಜೆಆರ್‌ವೈ ಅಡಿ 21 ಲಕ್ಷಕ್ಕೂ ಹೆಚ್ಚು ಮಾನವದಿನಗಳಷ್ಟು ಉದ್ಯೋಗ ಸೃಷ್ಟಿಸಲಾಗಿದೆ.

- ಪಂಜಾಬ್ ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳನ್ನು ಕೈಗಾರೀಕರಣಗೊಳಿಸುವ ಗುರಿಯಿಂದ ಪ್ರಾರಂಭಿಸಲಾದ ಆ ರಾಜ್ಯದ ಗ್ರಾಮೀಣ ಕೈಗಾರಿಕೆಗಳ ಕಾರ್ಯಕ್ರಮ ಮತ್ತು ಗ್ರಾಮೀಣ ಕರಕುಶಲಗಳ ಕಾರ್ಯಕ್ರಮಗಳ ವೆಚ್ಚದ ಶೇಕಡ 50 ರಷ್ಟನ್ನು ಕೇಂದ್ರ ಭರಿಸುತ್ತದೆ.

- ಪಶುಸಂಗೋಪನೆಯ ಸುಧಾರಿತ ಪದ್ಧತಿಗಳಲ್ಲಿ ತರಬೇತಿ ನೀಡುವ ಮೂಲಕ ಹಾಗೂ ಉದ್ದೇಶಕ್ಕೆ ಸಾಲಸೌಲಭ್ಯ ಕಲ್ಪಿಸುವ ಮೂಲಕ ಪಂಜಾಬ್‌ನ ಗ್ರಾಮೀಣ ಯುವಜನರಿಗೆ ಸ್ವಉದ್ಯೋಗದ ಅವಕಾಶಗಳನ್ನು ಒದಗಿಸಲಾಗಿದೆ.

DEV

DEV-1.

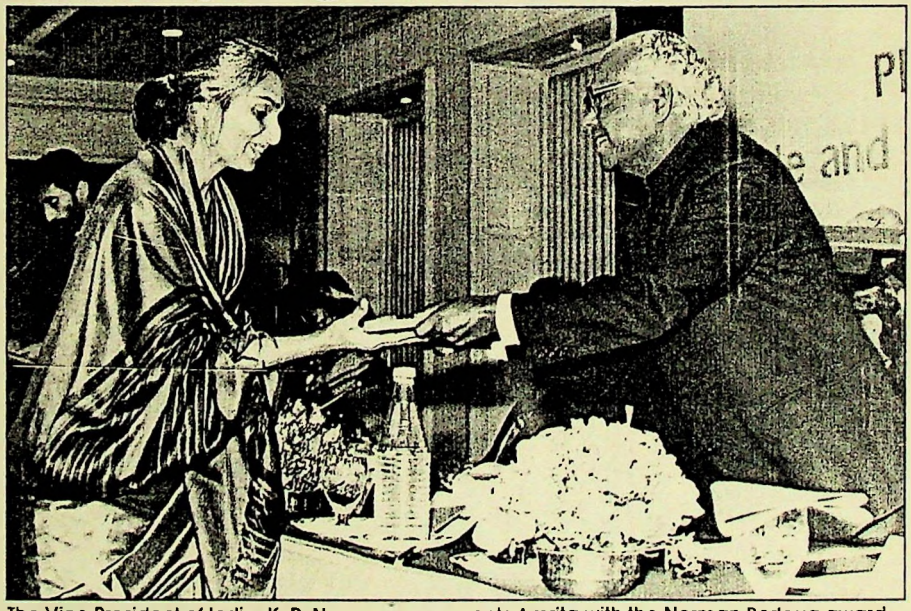
FEATURE

Ayesha Banerjee

EVERYONE KNOWS ABOUT ANAND'S MARVELLOUS SUCCESS STORY — BUT FEW ARE AWARE OF THE WOMAN WHO HAS CONTRIBUTED A FEW MEANINGFUL CHAPTERS TO IT

Dr. Amrita Patel — promoting the White Revolution

Amrita's Anand



The Vice President of India, K. R. Narayanan, presents Amrita with the Norman Borlaug award

"WHO do you think will be interested in this story?" asks the Managing Director of the National Dairy Development Board (N.D.D.B.), pausing to put forth this question in the middle of what was to have been a personal interview but could not be as she's exasperatingly reluctant to talk about herself.

Dr. Amrita Patel, second-in-command at the N.D.D.B., is an extremely low profile person. Therefore, she's not seen, is not heard of often and does not make good copy — at least that's what she thinks. And that's

CN 60/1/195

modesty unlimited for someone who's well known in every corner of the world — every corner that has anything to do with dairying, that is. Besides, we know our readers care about people who have dedicated a lifetime to a worthy cause.

That cause here is dairying, 'the White Revolution' and farmers' cooperatives — a strong but silent movement that has turned into a torrent, bringing dreams of prosperity to our people, our farmers.

"There is a little madness in everyone here at Anand," says this soft-spoken, grey haired woman, dressed simply in a cotton sari. You have to be a little mad to give up dreams of living in the fast lane and come, instead, to sleepy Anand, in Gujarat, for serving the farmers -- to help the people who form the backbone of our society, achieve some form of financial independence.

It was a love for animals that brought Amrita to this world. Born on November 13, 1943, she was the youngest of five sisters and was brought up by her father, the late H. M. Patel, ex-finance minister ond ex-cabinet secretary, as one of the boys. Educated in Delhi, she came to Vidyanagar, in Gujarat, when her father became the chairman of the Charotar Vidyamandal, a trust which runs a rural educational institution — the S. P University. They had three dogs at home and the vet was a frequent visitor. His work appealed to Amrita and she was soon tagging along with him when he went on his rounds in the villages. This time she saw him grappling with cows and buffaloes, saw the enormous faith the villagers placed in him, saw their sincerity and simplicity and came away impressed. Her path in life was chalked out. In 1965, she got a degree in veterinary science and animal husbandry from Bombay University and, soon after that, one day, she walked into Dr. V. Kurien's (then G. M., Amul) office and asked him for a job with Amul!

Dr. Kurien, India's famous 'dudhwallah', was still in the process of building up the dream that was to usher in the White Revolution. Sternly, he told her that he had no job for a girl as vets had to be in some remote corner of some remote village at all sorts of odd hours. The lady, however, was adamant. She said she wasn't scared of that; she said she didn't want a salary and would work only to gain experience. Fortunately, an officer deputed by the Food and Agriculture Organisation. (FAO), who happened to be Scottish and a woman, needed a co-worker to assist her. Amrita volunteered and got the position — on a temporary basis. By and by, most of the male nutrition officers who worked in Anand left and Amrita finally got one's post. She was the animal nutrition officer with the Kaira District Co-operative Milk Producers' Union Limited, India's largest milk producers' co-operative, at their cattle-feed factory at Kanjari (the largest feed mill in the country). Her work there was exceptional. Dr. Kurien, talking about Amrita, says, "The FAO director, on a visit, asked me about this brilliant girl and offered her a scholarship to Scotland for advanced training in animal nutrition at the Rowett Research Institute, Aberdeen, U.K., under a FAO fellowship."

Gearing up to face the competition from multinationals

Amrita, on returning from Scotland, in 1967, rejoined Amul os a project executive (Management and Manpower Development Division). From then on, her hard work and dedication started attracting attention. She was transferred to Delhi as secretary general (XIX International Dairy Congress). The congress was held in December 1974, and was one of the largest international conferences held in India - it made India a recognised name in the field of international dairying. Much of the credit for its success went to Amrita. Delegates were more than impressed with her organisational skills and said it was the best dairy conference ever held. Her performance was also lauded by the president of the International Dairy Federation.

Amrita has chosen to stay on in Anand when she could have been heading some top business house and been like those suit-boot types, earning Rs. 50 to 60 lakhs a month." But that airconditioned, high flying life does not interest Amrita. To call it patriotic zeal would be heavy, but isn't that exactly what it is?

Dr. Amrita Patel with the European Community delegation at N. D. D. B., Anand

he 'spirit' of Anand is acknowledged the world over: The Prince of Netherlands

Amrita feels the entry of multinationals will totally marginalise the small farmers, who play a big role in the cooperatives. The government has a social obligation to its people and it has to fulfil this. It took the farmers here 45 years to build up a product, and now any big company, say Glaxo, can set up an industry next to our milk units and walk off with half of the market without batting an eyelid"

In 1975, she returned to Anand as N.D.D.B., administrator and commercial director, and was subsequently transferred to Delhi in 1976 as director, N.D.D.B., Delhi. There, she was successful in implementing dairy development projects in the northern region. In March, 1980, she was appointed executive director of N.D.D.B., Delhi, and in February, 1983, was made the additional secretary, N.D.D.B., and the regional head of the Indian Dairy Corporation at Delhi. She was also behind the setting up of India's largest Foot and Mouth Disease Vaccine plant at Hyderabad, built in collaboration with the Wellcome Foundation, U.K., and assisted financially by the Overseas Development Administration, U.K. The late Prime Minister Rajiv Gandhi appointed her, on June 19, 1989, the additional secretary, Ministry of Agriculture.

She has been Managing Director, N.D.D.B., Anand, from September 1990 onwards, and, with her usual zeal and enthusiasm, handles the organisation's accounts, commodity management and marketing operations; cooperative management, fruit and vegetable projects; the legal cell; manpower development, marketing; personnel and administration; planning, monitoring and evaluation; plant management and engineering; purchase, research and development — biotechnology; research and development — plant technology and the vegetable oil and oilseeds project. She is also the mission director of the technology mission on dairy development. Phew! And, after that, she still finds time to get involved in wildlife conservation, hospitals and schools...

Schools? "Yes, most of our staffers, when they joined the N.D.D.B., were happy." They have to be; the board's offices and residential areas are surrounded by trees and wonderfully manicured lawns, it's like an oasis in the middle of the desert. ("At least we can offer you fresh air here," quips Amrita) "But, later on, most of them sought transfers because, in the absence of good schools, their children's studies were getting affected. That problem was sorted out when we set up the Anandalaya Education Society (of which she is the vice-chairperson) and now the school is doing very well."

Put across simply, all her awesome responsibilities just mean she's an "employee of the farmers. The N.D.D.B. was set up to work with the milk producers — the farmers — who organise themselves into co-operatives, which they manage. We are just assisting them to manage these and helping them with research and development work. We are introducing new and cheaper kinds of cattle-feed and helping them make a success of their ventures."

The Institute of Rural Management at Anand, where Amrita is on the board of directors, sends out professionals to help strengthen the rural organisations and manage their affairs. It saddens Amrita to see many of the N.D.D.B. people leaving Anand for greener pastures — for the hustle and bustle of big cities, charmed by the lure of lucre. "There is so much satisfaction to be had in doing something worthwhile for our people. People who need help. I don't think money can compensate for that."

And that is precisely the reason why she has stayed on... Why she has refused an offer made by none other than ex-World Bank president Robert McNamara to work for that organisation. Amrita, of course, did not supply us with the details. Dr. Kurien did. "You can quote me on that," he says, "but there are some people in the Ministry of Finance who would give their eyeteeth for that kind of a job — and you may be sure that the kind of job being offered to Amrita was not what these people would have landed up with. But did Ms. Patel go? 'No,' she said, 'what for?'." He laughs, continuing. "Precisely, what for? To be a victim of their patronising attitudes? To add colour to the institution? That's the kind of person she is. They don't make them like that anymore. She has chosen to stay on in Anand, when she could have been heading some top business house and been like those suit-boot types, earning Rs. 50 to 60 lakhs a month." But that airconditioned, high flying life does not interest Amrita. To call it patriotic zeal would be heavy, but isn't that exactly what it is?

What is behind the Anand co-operative's success? Why does everyone want to spread the 'spirit' of Anand — so much so that everyone who is anyone, from the Queen of Netherlands to the Princess of Spain to the Prince of Wales, make it a point to visit the tiny town and the villages surrounding it — you ask Amrita. And what is her contribution to it? She's mum on the contribution bit, but elaborates on the success story. "The best thing about Anand is that there's no governmental interference. There's no interference, as a matter of fact, unlike in the other states, where bureaucracy and interference have affected the farmers' set-ups. We are not promoting the government, and through an act passed in Parliament, have got complete autonomy. Since the farmers get direct returns for the milk yield, without any middlemen, they give their best to the co-ops. And it is wonderful to see their enthusiasm, their earnest desire to learn. They preside over board meetings, they decide on the day-to-day running of the co-ops."

The Kaira District Cooperative Milk Producers' Union, from where you get Amul butter, cheese, milk powder, is owned by the farmers — who run it with the help of professionals in the business. They are the ones who benefit from your buying Amul products. "not some richie rich shareholders in Switzerland," stresses Dr. Kurien. "Women are also the main beneficiaries of this system," says Amrita. Almost every household in a village has milch animals which are tended by women. This is like a business on the side. In some of the villages, there are collec-

tion centres where these women, and men of course, bring in milk from their homes to sell. They are paid for it immediately, and, at the centre itself, low-cost but highly enriched cattlefeed is sold for a low price (this is developed by the N.D.D.B.,) which they can buy."

And that is why Amrita feels so strongly about liberalisation. She feels the entry of multinationals will totally marginalise the small farmers, who play a big role in the cooperatives. "The government has a social obligation to its people and it has to fulfil this. It took the farmers here 45 years to build up a product, and now any big company, say Glaxo, can set up an industry and to our milk units and walk off with half of the market without batting an eyelid. A co-op sets prices for the milk and milk products — obviously, it is very important to hold the prices, the farmers, too, have to eat. You cannot let surplus milk flood the market and let there be a fall in prices. The poor farmer will starve... Private dairies will quote low prices to capture the market and our farmers are definitely going to be the losers."

However, efforts are on to meet the competition head-on. Now the N.D.D.B. is not concerned with just dairying — if that had been the case, then the organisation should have "curled up and died," says Amrita — it is now involved with vegetable and oilseeds projects, is also searching the development of nutritious and low-cost cattlefeed, studying the market for stimulating milk production, etc.

"We are going to strengthen co-ops and urge the government to change the laws, so that our farmers stand to gain everything from liberalisation, not lose by it. We have to get more professionals into the business." Sadly, most of our bright, young MBAs are not interested in rural development. For them, money is what matters and cushy jobs with multinationals or big companies are what they look for.

The biggest task the N.D.D.B. faces right now is to follow up the offer by the Rajasthan chief minister to set up co-operatives on the Anand pattern in his state. "Rajasthan has enormous potential, think of what this would mean?" asks Amrita. For the farming community there, surviving on barely any rainfall, milk would be like 'manna' from heaven. The potential of the Rajasthani 'rathi' cow is enormous. It can survive on a few blades of 'seven' grass and a few drops of water, but gives a high milk yield. "What surprised us," says Amrita, "was the chief minister's commitment to the cause. He agreed to let the project move on without the least governmental interference and was unfazed by the fact that the results would come petering in after 10 to 15 years — when he may not be in power. It is that kind of freedom we need." And, in 10 to 15 years, Amrita may as well be handling the whole show at N.D.D.B.

Does Dr. Kurien see her as a likely successor to him? "Yes, I do," says he. He wants his successor to be someone who has grown with the organisation. Has he recommended her name to those who matter? Dr. Kurien is not forthcoming with the details. He looks up, reflectively. "I'm just wondering. If I were to tell you this, I might jeopardise her chances..." He doesn't say anything more.

So, if all goes well, Dr. Amrita Patel seems all set to take up the reins of N.D.D.B. from Dr. Kurien. And, like him, she is working out long-term plans for the cooperatives. Being also the chairperson of the National Tree Growers' Cooperative Federation (NTGCF) and a trustee of the Worldwide Fund For Nature, India, she is fully aware of the need for environment conservation. Along with the White Revolution, there is bound to be pressure on land as grazing of milch animals leads to land erosion. Amrita is also promoting tree plantation on the co-operative pattern and is trying to get women to play a major role in the movement. Farmers are also being told to keep the milch animals in sheds and provide them with fodder and water to prevent grazing. Setting up of tree growing societies is also being encouraged, so that the land can bear the burden of the increasing demand for milk.

As for Amrita, she says she's very happy to be doing what she's doing because she's seen the institution grow. She says the fact that she has been accepted by her colleagues is immensely satisfying. Meeting some of the N.D.D.B. officials, one is struck by the tremendous goodwill she has generated. The men respect her and the work she does, and take pride in serving the organisation.

As for Dr. Kurien, he has great admiration for his second-in-command but says, that sometimes she is impossible. "Do you know, she was the offical hostess to the finance minister? She didn't think that it was important enough to be mentioned in advance. She asked me if she could leave from office a little early that day. I didn't, of course, ask her the reason. She said, "I wouldn't have gone, you know, but the entire cabinet is coming home to dinner... so I have to leave a little early." "

AWARDS RECEIVED

Fellowship of the Indian Dairy Association for her contribution to dairy development in the country.

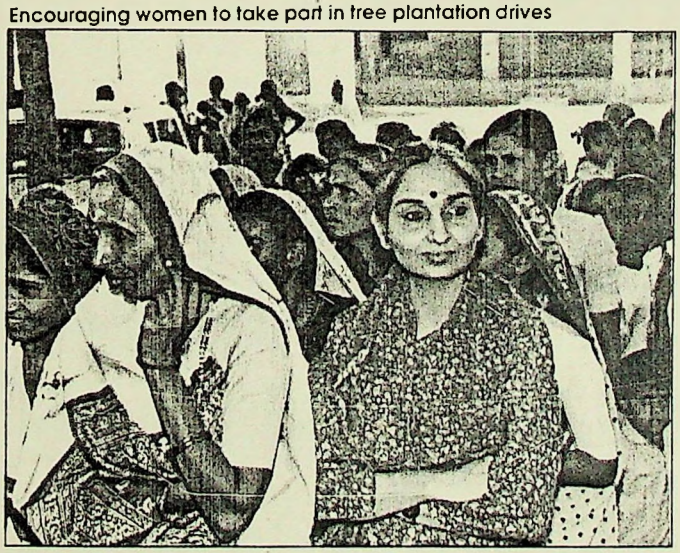
'Krishi Mitra' from the World Agricultural Fair Memorial Farmers Welfare Trust Society in recognition of the services to the farmers and the farming community.

'Dr. Norman Borlaug Award' from the Coromandel Fertilizers Limited for the contribution made in the field of dairy development and animal husbandry through dairy cooperatives and for the leadership and dynamism shown in creating sustainable peoples' institutions to meet their fuel and fodder needs.

Conferred the degree of Doctor of Science (Honouris Causa) by the Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

As for Amrita, she says she's very happy to be doing what she's doing because she's seen the institution grow. She says the fact that she has been accepted by her colleagues is immensely satisfying. Meeting some of the N.D.D.B. officials, one is struck by the tremendous goodwill she has generated. The men respect her and the work she does, and take pride in serving the organisation

Encouraging women to take part in tree plantation drives



Rural development without managers?

By C. Dinesh

DEV-1

WE are a nation with inspired ideas and good intentions which are professed on public platforms but never implemented. Rural development and uplift of the weaker sections is one such area which amply demonstrates the country's unfulfilled ambition of speedy development. A large number of institutions to facilitate the process of rural development and upliftment of the economic conditions of rural poor have been created; a variety of schemes for rural poor have been introduced, and implementing innumerable agencies formed without inducting the right people to manage them. We are yet to realise that all these schemes meant for the weaker sections have failed because we have failed to develop a cadre of rural managers who are sensitive to the process of rural development and problems of rural masses, particularly the weaker sections. We have not been able to identify and develop rural managers who should really be considered kingpins in the process of rural development.

The magnitude of the requirements of rural development can be estimated by the following data:

India has 5,75,936 villages (1981 census) with a rural population of 548 million and 136 million households against an urban population of about 110 million with 27 million households. Out of the total rural households, about 40 per cent are sub-marginal farmers and agricultural labourers. About 20 per cent are marginal farmers and the remaining 40 per cent are classified as viable farmers.

An integrated rural development plan for covering such a large number of households and people will have to operate in the following areas:

Operational services like: a) Provision of credit, b) facilitating effective marketing and c) providing timely and adequate input supplies; technical services and advice; consultancy in planning, in providing managerial and supervisory personnel to man the rural institutions effectively and providing technical and management advice, implementing a programme of developing rural managers by creating an adequate training structure and implementing a plan of creating adequate infrastructure for facilitating faster rural development.

Against this background, there are a large number of institutions engaged in the process of rural development in different areas. There are about 1,66,647 co-operative societies serving different sections of the rural community. About 75 per cent of the total households have been covered by [illegible] types of co-operatives. The total working capital of all these societies amounts to over Rs 15,000 crores. In addition, there are 142 rural banks with 6,416 branches (as on June 30, 1983) and 21,195 rural branches of commercial banks (as on March 31, 1983).

There are more than four lakh primary schools, more than 1,75,000 high schools and middle schools and more than 25,000 colleges in rural areas, as well as 2.25 lakh panchayats and a large number of technical education and social welfare institutions, voluntary associations, cultural groups and so on.

Clearly, the largest number of institutions functioning as business agencies in the rural areas for meeting the economic needs of the people are co-operatives, and they could, therefore, effectively contribute to the social and technological growth and development of the agricultural sector.

In spite of these efforts and facilities, rural poverty has been continuously increasing. An average farmer in India still remains poor. There has been a continuous increase in the agricultural labour force and also in rural unemployment.

Where did the policy-makers fail? What is wrong with our strategies of rural development? Or did we not have a strategy at all? Creating a multiplicity of institutions cannot be called a strategy.

The effectiveness of rural development strategy would depend on an integrated approach in institution building at the operational level and an integrated services approach by creating consultancy and service institutions at the district and state level.

A need-based strategy will have to be evolved in place of the institution based one being implemented at present. In the first instance, such a need-based strategy could be planned at the block level for implementation with the village as a unit. The areas which need to be considered for this strategy are:

(a) manpower development needs — which would facilitate planning of [illegible] institutions as would enable us to bring about a change in attitude and development of skills; (b) production and distribution needs in agriculture and subsidiary occupations; and (c) production and distribution needs of agricultural processing and the small and cottage industries.

It should aim at developing the individual as a viable unit and at developing a viable institutional structure.

Perhaps, in this area development approach, viability of an individual [illegible] could be linked to the viability of the related institution. For instance if a dairy project needs to be introduced and there are 100 members out of whom 10 people could not be given a viable unit, the remaining 90 people should subsidise the 10 and make them viable. This should not be taken as a viability of the dairy society alone. The viability is linked with that of the institutions and agencies providing consultancy advice. Such an integrated viable operation would be feasible only if an umbrella of services are provided by an agency operating at the district level.

The organisation for providing the umbrella of services needs to be supported by the state as well as by the developed sector of the economy. The private sector which is earning substantial profits needs to be compelled to contribute towards maintenance of the umbrella services which would constitute provision of credit, technical advice and other services. Only such an integrated approach could establish an integrated organisational structure for hastening the pace of rural development.

There is need for an integrated manpower development approach which should take into account the development of skills, knowledge and attitudes of the people which could bring out a change towards speedy economic development. Secondly it is necessary to evolve and develop the right type of institutions and establish a close interrelationship among these institutions to achieve co-ordinated development. Another crucial factor in the development process in identifying and developing the right type of functionaries to work as managers, supervisors and leaders who could achieve socio-economic transformation by building up the right type of institutions and managing them effectively, towards bringing about a total transformation of the rural socio-economic structure.

Another important factor is emphasis on the regional approach — which includes economic activities located at the urban centres in the region. Integration, therefore, implies the rural development and urban development with proper linkages.

Identifying the right type of people has been one of our major problems in development schemes. Because of wrong selection and placement of people in rural institutions, these programmes in most of the places have gone on the rocks. There has been progress in continuous spending without a commensurate increase in productivity.

At least at this stage, serious thought ought to be given to developing a new cadre of people and training them in the necessary skills of managing and developing rural institutions. It is forecast that in 2000 A.D. even a village co-operative society would develop into a large organisation employing 30 to 500 personnel. The level of understanding and consciousness of the people in terms of responsiveness to development programmes would also have changed in such a manner that managers working in the rural areas would not be able to afford being less conscious and knowledgeable than the general mass of agriculturists.

A significant part of a rural manager's job involves, (a) bringing about an all-round change in his area of operation, a change which leads to increasing productivity. These changes must, however, be carried out in such a manner as to improve the physical and material aspects of social life such as tastes, preferences in income distribution, norms of family size and a host of values, etc, a task quite difficult to achieve.

Rural development schemes are intended to enhance the standard of living in terms of food, clothing, shelter, health and nutrition, education, family size, communication and so on. However, before implementing such programmes, it is necessary to find out the existing conditions in order to discover avenues for innovations, factors of resistance and methods of bringing about improvements. It has been found that reactions to the various programmes vary depending upon the socio-economic level to which a particular section of society belonged at the given moment of time in terms of its present resources, activities and behaviour (socio-psychological).

Resources would pertain to house, land, irrigation facilities, modern agricultural implements, material possessions, cattle wealth, income, education level and caste. As for activities, they may be conceived in terms of family size, health and nutritional status, mass media contact, mobility rate, leisure-term activities and membership in social organisations. Behaviour, however, needs to be assessed in terms of awareness, perceptions, affections and attitudes.

Since all the programmes implemented for rural development are meant for the benefit of target people with a view to developing them, the type of changes in their psychological dimensions resulting from their exposure to these programmes are more important than physical and material changes. This is particularly so as long as our aim is to make the people capable of sustaining the programme which is implemented for their benefit.

In other words, these programmes may provide an economic base, but unless it is supported by a psychological base, meaningful utility of the programme remains a matter of doubt. This possibly explains why, in spite of most of the programmes which are being implemented are good in content, strategy and coverage, their effect among the beneficiaries based on whatever information is available through evaluation studies does not seem to convey the impression that the programmes have made an impact on the various aspects indicated earlier in terms of implications.

These absence of concerted efforts in building right type of institutions for facilitating speedy development and identifying the right type of management personnel has led to a state of confusion not only in the field of rural development as such but also in the field of rural employment and general unrest among the rural population which might lead to serious consequences in coming decades. Dissatisfaction keeps surfacing as the farm community uprisings in different parts of the country which once almost led developmental institutions to a standstill.

In certain states, the co-operative credit institutions have not been able to distribute any credit in last two years. In other cases, farmers have been refusing repayments to the lending institutions which has led to a very difficult situation all over. If one goes deeper into the problems, one would realise that it is the inability of rural institutions to meet the felt needs of the community in an integrated manner and lack of managerial cadres to man the institutions which had led to non-conformity to any norms at any levels, particularly in the rural areas.

The development of competent rural managers, however, is by no means an easy task. At least three distinct categories of functionaries deserve the benefit of management education — the field workers whether from the agricultural department, the forest department or those serving in any of the local authority and institutions; farmers and peasants who may possess skills relevant to farming but may need to be trained as managers; and the village youth and women. The kind of training that these groups must be given ought to concern not merely the district and state authorities but should also be a 'priority' item before the various institutions in the country imparting management education including other agencies and training centres which are today training village-level workers, block development officers, co-operative workers and similar functionaries working in tribal areas.

Whatever else these institutions might have done, they do not seem to have done enough or anything at all to introduce relevant inputs to develop rural managers. It should not be difficult to suggest a skeleton syllabus which, if suitably modified, may serve local management needs. There is nonetheless, need for some basic research to make such a syllabus more pragmatic and relevant.

Yet another area which deserves attention is the search for alternative institutional forms relevant to the rural setting. This matter should be looked at not only by academicians but also by policy makers both in the states and at the Centre. Adequate structural alternations in the various rural institutions could make more effective the grassroot-level administrative apparatus now in force.

Finally, whether it is the developmental work or maintenance of the law and order, however, any public activity at the grassroot level will fall short of objectives if it does not inspire enough community approval and participation. There are innumerable ways in which people (rural) should and can be [illegible]

There are thousands of district-level voluntary organisations and associations working in diverse fields, be it social welfare, women's welfare, child welfare or medical care. How these bodies can be mobilised to act in unison with governmental functionaries and programmes is yet another [illegible] problem of establishing correct interface. The institute of advanced education in the field of management, the Institute of Public Administration and its regional agencies and other official institutions dealing with the dissemination of training and mangement knowledge should open up a national dialogue, initiate relevant research activities and drawn up an adequate programme.

It is only then that, in the short span of time, it might be possible to turn out a select band of well trained rural managers in addition to the creation of alternative institutions to serve well the needs of the backward rural community.

DEV - 1.

Reprinted from Fertiliser News, June 1978 Issue.

INTEGRATED RURAL DEVELOPMENT

AN EXPERIMENT IN UTTAR PRADESH

D. S. MAKHAN

Abstract

IEL adopted two villages—Chakarpur and Banguri—in the State of Uttar Pradesh during early 1975 for their all-round development. This paper describes the experiences gained in two totally different situations. It explains how such a programme can be extended to larger areas for rapid growth in agricultural production and productivity and for improving the quality of life in our villages besides establishing the vital infrastructure which would provide the basis for development of rural industries and thereby check the migration of population to towns/cities and ensure a balanced growth, reducing the avoidable tensions between the urban and rural locales.

Introduction

Over the last decade, fertiliser consumption in India rose from 1.17 million tonnes in 1967-68 to 3.42 million tonnes in 1976-77. This has been possible through concerted efforts of the Government and that of the fertiliser industry by which distribution points have been increased, farmers have been educated in modern farming techniques and number of services have been made available to them.

Yet, many studies have revealed that the majority of our farmers, especially the small and marginal ones, either do not apply fertilisers at all or they do not use the right doses and the correct proportion of different nutrients. These farmers have not been able to adopt the modern agricultural technology and derive any economic advantage by producing surpluses. Considering that 80 per cent of India's population lives in its 575,933 villages averaging about 830 persons per village and nearly 70 per cent is only at or below the subsistance level, it is a matter of great social importance to work for uplifting this lot. It is also being increasingly realised that further growth in agricultural production would largely depend on enlarging area under irrigation, expanding area of high yielding varieties, accelerating reclamation work on problem soils and extending the improved crop and water management technology to the weaker sections of the farmers and to the rainfed areas.

We in the Indian Explosives Limited (IEL) feel that, in order to boost the agricultural economy of our villages, an integrated approach to rural development is necessary which should not only aim at increasing the farm production and productivity but also influence the living conditions of the villagers through an all round development. The FAO-FAI annual seminar held in December 1974 at New Delhi also made similar observations while discussing the integrated nutrient supply system.

Through a detailed survey in Uttar Pradesh in early 1975, we adopted two villages for integrated development. These are situated in the heart of our market area. One is Chakarpur, near our fertiliser factory Panki, Kanpur, where the fields were largely irrigated and farmers relatively well-off and the other is Banguri near Agra where there was no irrigation available and incomes were very low.

Methodology

Integrated rural development should cover the entire population in the adopted villages and planning must be initiated at the grassroot level in order to meet the local socio-economic needs and priorities. While developing this concept, it was felt that local resources in the villages—both men and materials—should be employed fully.

For any successful experiment the objectives must be well defined. Our objective was to increase the per capita income by 2-3 times within two to three years and simultaneously improve local health and hygiene, communications, children schooling, community life and cultivate self-reliance amongst villagers by arranging bank loans and involving them in identifying local needs, planning and implementation of the programme so that the future development becomes self-sustaining when IEL withdraws. It was realised right at the beginning that planning shall have to be continuous and flexible so as to meet these objectives. To begin with a sum of Rs. 5 lakhs was provided for this programme.

Our Area Sales Office at Lucknow was entrusted with the charge of village Chakarpur and Meerut Office with village Banguri. Highly qualified staff in the field of agricultural sciences and rural sociology helped in the development of programmes that suited the needs and requirements of the two villages. Two representatives (SRs), postgraduate in agriculture with the drive and commitment, were chosen from these sales force and were deputed for executing day-to-day plans and rendering advice and assistance to the villagers. The Commercial Office at New Delhi had the overall responsibility of planning, guiding and evaluating the progress periodically. The top management was kept continuously advised of the progress of this scheme.

In order to have a reference data for measuring both qualitative and quantitative socio-economic progress during the course of this programme and to know the villagers more intimately, a bench mark survey was conducted at the beginning which was to be repeated every year. A soil fertility survey was also carried out for the entire villages. The SRs were especially told of the need to know the villagers well and develop in them scientific outlook and healthy

Indian Explosives Ltd., Fertilizer Division
New Delhi

attitudes towards economic growth, sanitation, education, community living and our national programmes. All programmes were to be introduced through the existing Gram Panchayats in a manner that every programme got totally identified with the local people through cautious and tactful introduction of new ideas which obtained their full commitment to ensure a smooth and successful implementation and introduced healthier attitudes towards community's interests instead of the individual's own.

The day-to-day operations were to be carried out by the two SRs with the active cooperation of the Village Pradhan and others concerned. To achieve this, Farmers' Clubs were promoted through the local Gram Panchayats and the residents were encouraged to become members of these clubs which were to act as common forums for exchange of technical information, experiences, matters of community interest and provide collective management for the operation of various agricultural and other socio-economic programmes. Besides such physical and psychological involvement in each and every programme, monetary contributions, howsoever small, were sought from the villagers at the same time when we put in our own resources; this was necessary to avoid any input or monetary assistance to smack of charity. The local and district authorities were kept fully informed and assistance from any quarter welcomed in executing the plans.

Materials

Village Chakarpur

This village is located in Block Kalyanpur of Kanpur district about 15 km from Kanpur on Kanpur-Jhansi Road. The geographical area is 263 hectares and the population 1097 distributed over 180 families. Irrigation and power were available and the agriculture was fairly developed. The villagers had subsidiary income from employment in industries. The living conditions were rather poor. There was no approach road connecting the village to the highway. Streets were *kutcha* and the drainage poor. Attendance at the local primary school was very low. The villagers were mostly dependent on the local moneylenders for their social and consumption credit needs.

Village Banguri

The geographical area of this village Banguri in Block Shamshabad of Agra district is 298 hectares and the population of 1542 is distributed over 170 families. The area was predominantly mono-cropped with very low farm incomes. The subsidiary income was limited to the sale of milk and 'khoa' in the city markets. The villagers were under heavy debt to the local moneylenders. Banguri did not have electricity and the nearest point for the supply of diesel, etc., was 7 km away and so were the cooperative and private sale points for fertiliser and other agricultural inputs.

Planning of Programmes

Following needs and priorities were identified for development of the two adopted villages:

(1) Develop agricultural economy by convincing the farmers through demonstrating the usefulness of water management technology, high yielding seeds, chemical fertilisers, plant protection and adoption of improved cropping patterns.

(2) Help the entire farming population with subsidised inputs to assist them in adopting the recommended package of practices with greater incentives for the small and marginal farmers.

(3) Promote self-reliance by inviting nationalised banks for advancing crop loans especially to the small and marginal farmers so as to enable them qualify for the subsidised inputs made available under our programme.

(4) Establish infrastructure necessary for developing the local economy such as tubewells for irrigation, electricity, easy availability of agricultural inputs, easy availability of multipurpose bank loans, upgrading of local livestock, etc.

(5) Promote recycling of organic wastes by putting up demonstration bio-gas plants in order to conserve manurial resources and exploit this renewable source of energy for fuel needs of the villagers.

(6) Improve communications by construction of link roads.

(7) Establish common forums to promote understanding and participation of villagers in the development and welfare programmes and to develop local managerial capabilities to maintain and run the infrastructure established under the programme and continue such activities when IEL withdraws.

(8) Activate the local bodies such as Gram Sabhas for implementing national programmes like distribution of surplus land to the landless, etc.

(9) Improve children schooling facilities.

(10) Improve the village environments for a healthy and hygienic living through provision of safe drinking water, health and medical care, improved sanitation and children/community recreation parks.

(11) Assist local artisans to improve their incomes.

Achievements and Discussion

An evaluation of this programme is attempted below under two broad groups—Economic and Social.

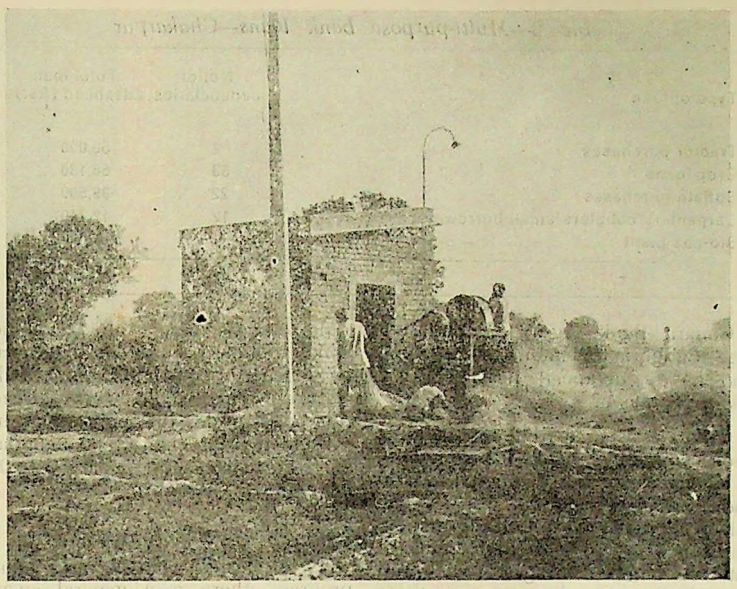
Economic progress

In Chakarpur initially 78 families were landless, 84 had holdings upto 2.5 ha covering a total area of 67 ha cultivable land and the remaining 18 families had holding larger than 2.5 ha covering around 100 ha. After adoption the local Gram Sabha was persuaded to distribute the surplus available land amongst the landless labourers and the weaker sections. Forty-seven pattas were issued at the rate of 0.3 to 0.4 hectare per family. The allotted land was entirely alkali waste land. The number of landless agricultural families consequently reduced to 31. In village Banguri there were 61 landless families and 54 were distributed pattas by the Gram Sabha. Eighty families had holdings of size upto 2.5 ha covering an area of 96 ha and another 29 had 139 ha cultivable land. The adoption of scientific technology by the entire farming community resulted in increasing farm productivity with a simultaneous increase in the consumption of chemical fertilisers. The NPK was improved considerably as is evident from Table 1.

Fertiliser use in Banguri is also expected to increase manifold with assured irrigation now available. With adequate emphasis placed on the introduction of high yielding seeds, balanced fertiliser use, more remunerative crops, multiple cropping, use of pesticides, easy and timely availability of crop loans and subsidised input helped raise farm yields nearly three times. A unique effort in increasing the agricultural production and farm productivity was the reclamation of the entire 20 ha of alkali land distributed to the erstwhile landless farmers in Chakarpur. Initially, Pyrites, Phosphates & Chemicals Ltd. extended 20 per cent discount on these purchases and we met the balance of 80 per cent. Later, we subsidised the entire cost of iron pyrites. We installed a tubewell at a central location in these fields so that water was readily available for expediting the reclamation work instead of depending on the monsoon. The allottees used the diesel engine installed at this tubewell to run a mechanical wheat thresher which saved their wheat crop from the vagaries of strom and rain that was widespread in May 1977. Some of the landless allottees have by now harvested three crops and realised an annual net return of more than Rs. 3,000 per hectare. Considering the average cost of reclamation at Rs. 2,700 per hecatre it is now economically viable and useful to reclaim alkali waste lands. However, farmers need initial capital in the form of loan or subsidy for purchase of cash inputs which if extended can help reclamation of large tracts of problem soil and establish marginal cultivators and landless labour in farming confidently.

A similarly noteworthy feature was the establishment of seven tubewells to provide assured irrigation for more than 95 per cent of the cultivable land in Banguri. While the benefits of assured irrigation in village Banguri will be reflected in the crop harvest of 1978-79 our strategy has already yielded very encouraging results in Chakarpur. It is evident from Table 2.

In Banguri by converting more than 70 per cent of the wheat area into high yielding varieties in the first rabi season, the production went up by nearly 60 per cent. This helped the village produce enough surplus to exceed its wheat levy target of 300 q in 1976 in contrast to a shortfall of 60 q during the previous year.



In Banguri tubewells operate with electricity and farmers use power threshers.

As an essential part of the infrastructure for economic progress, assistance was sought from the local lead banks to meet the credit needs of the villagers. Bank of Baroda, Kanpur agreed to participate in our programme for Chakarpur and has advanced various types of loans over the last two years (Table 3).

Table 1—Fertiliser use — Chakarpur

	0 stage	2 stage	Per cent increase
N	53.18 kg/ha	82.07 kg/ha	54.3
P_2O_5	13.23 kg/ha	25.75 kg/ha	94.6
K_2O	2.31 kg/ha	26.51 kg/ha	1047.6
NPK ratio	23.02:5.7:1.0	3.09:0.97:1.0	

Table 2—Crop yields in Chakarpur

Crop	0 stage (1974-75)			2 stage (1976-77)		
	Area in hectares	Average yield q/ha	Total produce in q.	Area in hectare	Average yield q/ha	Total produce in q.
Wheat (local)	16.0	8.0	128	—	—	—
Wheat (HYV)	136.0	19.8	2584	138.1	46.6	6438
Paddy (local)	24.0	15.2	365	43.0	38.2	1643
Paddy (HYV)	8.0	21.0	168	12.5	48.2	603
Maize (local)	60.0	6.3	378	58.3	22.9	1337
Muskmelon	—	—	—	15.4	8.3	128
Peas	—	—	—	3.4	41.4	141

Table 3—Multi-purpose bank loans—Chakarpur

Type of loan	No. of beneficiaries	Total loan advanced (Rs.)
Tractor purchases	2	50,000
Crop loans	53	56,180
Buffalo purchases	22	39,500
Carpenters/cobblers/small borrowers	12	12,740
Bio-gas plant	1	2,500
	90	160,920

Canara Bank, Agra, adopted village Banguri for intensive financing and have advanced nearly Rs. 2 lakns (Table 4).

Credit assistance from the nationalised commercial banks has completely changed the borrowing pattern in these adopted villages. Earlier the villagers went to the local moneylenders who charged high rates of interest and encouraged social and consumption needs to perpetuate the dependence of the villagers. The production credit available for crops was insignificant. The banks are encouraging only productive loans for both agricultural and non-agricultural families. The villagers are now by and large free from the old debts and feel free to avail of the credit facilities available from the banks. Recovery position of the bank loans is practically cent per cent.

An evaluation of the economic progress in terms of incomes reveals, as is evident from Table 5, that per capita income nearly doubled in Chakarpur. Further the additional earnings were mostly invested by the villagers in creating capital assets like improvements over land, etc.

The top priority accorded to develop local agriculture in order to strengthen the village economy has also been instrumental in providing more gainful employment to the farmers who were earlier much underemployed. This has brought a sea change in villagers attitude and the earlier aimlessness has given way to greater sense of purpose. While agricultural labour is now employed to a far greater extent, some direct employment has also been generated through opening of retail points for agricultural inputs, multipurpose bank loans to artisans for expanding their business and to landless for purchase of buffaloes and piggery and establishment of recreation parks besides promotion of pisciculture. Banguri also offers a similar feature. The civil works already completed under this programme has consumed more than 7,500 man-days in Chakarpur and nearly 16,000 man-days in Banguri.

Social development

As a corollery to the economic progress, there is a general awareness amongst the villagers to improve their social life/living standards. When we adopted Chakarpur and Banguri, the state of hygiene had much to be desired. During every monsoon, these villages were cut off from the main highways. The *kutcha* village streets turned into open wide drains; the domestic waste water had no proper outlet and stagnated in front of the houses providing excellent breeding ground for flies and mosquitoes and other vectors. The problem aggravated with heaps of dung cakes and crop wastes scattered in and around the villages. There are now metalled link roads, brick paved streets and an adequate drainage system. Cooperation of the municipal authorities at Kanpur was sought to spray houses with DDT for keeping a check on mosquitoes and flies. In Chakarpur, 23 families have installed sanitary toilets in their houses. In Banguri we have provided four toilets in the school so that the idea spreads and is adopted by the villagers in their houses.

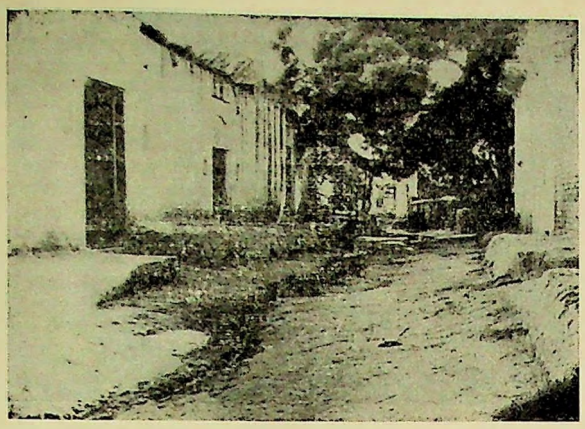
At the time of adoption Banguri had six open wells to meet the villagers' need for water. Because nearly 80 per cent of the diseases are water-borne, we installed 15 handpumps for drinking water at strategic points throughout the village. It is now rare, indeed, to find anyone drinking from the open wells. It has saved drudgery for the womanfolk who hauled water in pitchers over long distances in the past. Open wells have been reconditioned and bath rooms provided at each well site for the women. Well water is treated at weekly intervals. Provision has been made at the wells for feeding water to the animals. Simi-

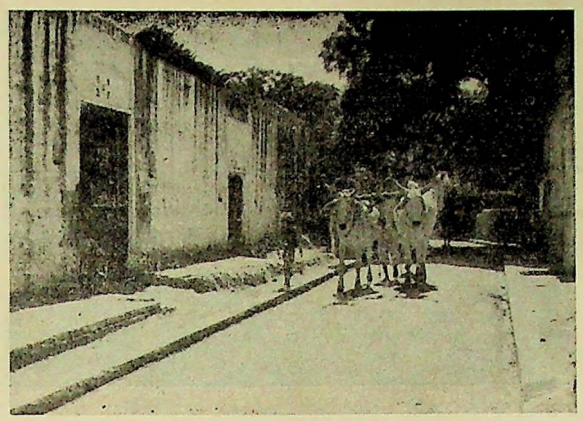
Table 4—Multi-purpose bank loans—Banguri

Type of loan	No. of beneficiaries	Total loan advanced (Rs.)
Crop loans	161	95,660
Buffalo purchase	38	57,000
Bullocks purchase	26	38,000
Carpenters	2	2,000
Piggery	1	500
Cash/credit limit	Diesel sale point	10,000
Cash/credit limit	Fertiliser sale point	20,000
	230	223,160

Table 5—Assets & income analysis—Chakarpur

	Bench Mark 1974-75	Two years after adoption—1976-77
No. of members per family	6	6
Total assets (Rs.)	6,448,701	7,520,376
Gross income (Rs.)	1,122,087	2,025,346
Net income (Rs.)	821,957	1,596,158
Per capita income (Rs.)	749	1,482



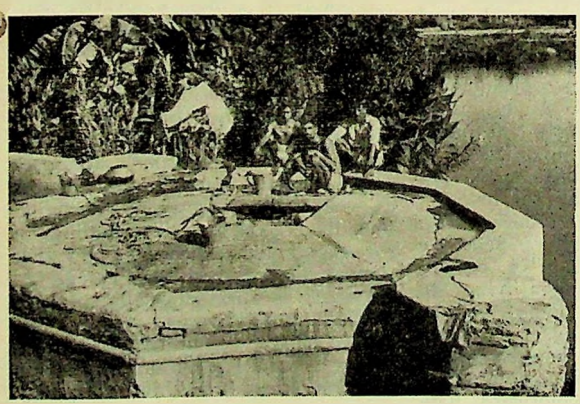


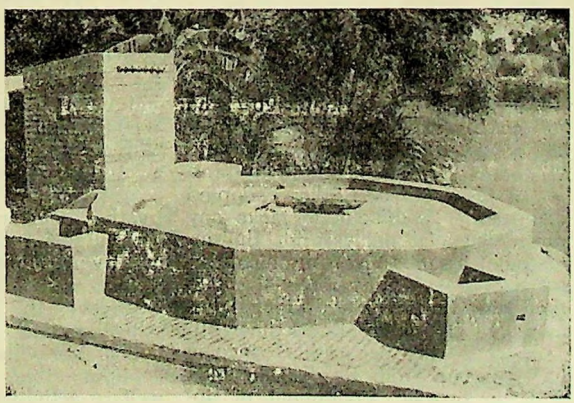
A 'kutcha' street in Banguri (left) changed into brick paved one with drains on either side after adoption by IEL.

larly in Chakarpur a beginning has been made by providing one hand-pump in the community-cum-children park and another at the Montessori school. A scheme is in hand to provide safe drinking water for meeting the requirements of entire population.

The villagers were far from medical facilities and largely dependent on local unqualified practitioners. In Banguri, the 4 bed Ayurvedic Dispensary was practically non-functional. We engaged the voluntary services of a Kanpur doctor for arranging child and maternity care classes in Chakarpur. Entire population was vaccinated against communicable diseases. The local midwife was also trained by a lady doctor. In Banguri, a comprehensive health and medical cover has been provided through the expert assistance sought from the TB Demonstration and Training Centre, Agra. The entire population has been medically examined and history cards are now maintained for each individual, family by family, at the village health centre. All the inhabitants have been inoculated against communicable diseases and the infants now given the essential immunisation. Five volunteers have been trained as Village Health Assistants (barefoot doctors) and two midwives also trained and provided with medical kits. A doctor visits every Saturday; the lady doctor once a month; the Village Health Assistants take care of day to day needs for common ailments and assist the doctor and team of social workers from the TB Demonstration Centre when they visit the village.

Both the villages had primary school but the poor environments and paucity of facilities kept the children away. The children had to bring their own empty gunnies to sit in the class rooms which were dingy and without any furniture even for the teachers to sit. In Banguri, we have tried to change the existing conditions by renovating the existing buildings, providing furniture and teaching aids and improving sanitation. In Chakarpur the villagers took the initiative of starting a Montessori school by collecting donations from amongst themselves to meet the running expenses. We agreed to construct the building. Thirtyfive children are attending it at present.





An open well (left) reconditioned with provisions for drinking water for cattle and bathroom for womenfolk.

A mobile X-ray unit and a team of doctors on a routine visit to Banguri.

A farmer buying fertilisers from Krishak Samaj Club agricultural input retail centre at Chakarpur.

In village Banguri house sites have been given recently to sixteen Harijan families. In consultation with the Government, a sum of Rs. 1,000 each has been given by us to the sixteen Harijan families for construction of their own houses, each of which would cost Rs. 4,000. The State Government is providing another 1,000 and Canara Bank has sanctioned a loan of Rs. 2,000 to each of these families for covering the balance.

Both Banguri and Chakarpur now provides healthy living conditions; there are metalled link roads, brick paved streets, proper drainage, safe drinking water, easy access to medical assistance and better schooling facilities. The inhabitants are healthier in the new environments.

Financial Analysis

In the last two years, we have spent approximately Rs. 16 lakhs on both the villages in order to create a permanent, viable infrastructure on which people could build for the future. As would be observed from the detailes given in Annexure I and II, there has been a positive transfer of resources into these adopted villages. It is difficult to make any direct financial analysis for the investments made. But nothing can be more rewarding than the fact that gross output in the villages has increased by nearly three times. In Chakarpur the per capita income has gone up from Rs. 749 to 1482 with an overall investment of approximately Rs. 500 per head over the last two years. Similar results are expected in case of Banguri also.

In both the villages, Farmers' Clubs have been established to provide common forum for the villagers to exchange technical information, experiences and develop community life besides providing to the members various farm aids like pump sets, sprayers, etc., on custom-hire basis. These clubs have been registered with Registrar of Societies, Lucknow. The clubs are being prepared to take over the responsibility for managing and operating the infrastructure established in the two villages under our programmes so that the progress is not only sustained but continued when IEL withrdaws. In Banguri in the 'Happy Farmers' Club' is already managing and operating all the tubewells and meeting the expenses by collecting water charges. Similarly, in Chakarpur where we are now withdrawing we have appointed the 'Krishak Samaj Clubs' and an authorised dealer of fertilisers in order to make it a financially viable body to manage and continue the development and welfare activities. An estimated annual turnover of nearly 500 tonnes will generate enough resources to meet such expenses and pay 25 per cent return on the capital invested by the members. In order to further augment the club's income we are trying to get them a cement agency. It is highly gratifying to note that the programme is now self-generating and we have no doubt that villagers themselves will continue the developmental and welfare activities henceforward. Banguri shall also reach this take off stage by the time we withdraw from that village.

Conclusions

It is obvious from the foregoing that though the task was gigantic and very systematic efforts were needed, the results obtained by IEL within a short period of two years have been highly gratifying. It is clear that if the rural development is basically build around agricultural development and special incentives are given to the small and marginal farmers to adopt the new technology, it is possible to increase the farm production and productivity rapidly. Total involvement of the village community is essential in the planning and relevant decision making process in order to ensure success of the programme. Attention should also be given to the non-farming families in order to cover the entire population.

A cadre of selfless innovative and committed workers is a pre-requisite and the starting point is to identify the local needs and fix priorities. The social life should be enriched when the building up of infrastructure is well underway and villagers have developed adequate confidence and trust in the workers as well as the programme to strengthen their economy. The findings of the experiment conducted by IEL suggest that with a well integrated approach to rural development it is possible to improve rapidly the socio-economic conditions in our villages. These programmes can be self-generating if a suitable apparatus is provided with adequate resources to make it financially and socially viable.

Once the agricultural economy reaches a take off stage and adesuate infrastructural facilities (including credit) are established in the adopted villages, other institutions having the requisite expertise can then take up programmes for the promotion of cottage and small scale industries, dairying etc., to further generate the employment avenues and improve the incomes especially of the rural poor.

Acknowledgements

The author wishes to acknowledge the assistance received in particular from M/S S. S. S. Upadhyaya, L. K. Bajpai, G. S. Mishra and S. Kumar of Eastern Area Office, Lucknow; and M/S S. Chattopadhyaya, Mahkar Singh and Ranvir Singh of Branch Office, Meerut, who have been closely involved in the implementation of our village adoption programme.

References

(i) Chaudhuri S. — "Contribution of Fertiliser Industry in Stimulating Fertiliser Consumption—A Critique", *Fert. News*, 22 (12), p. 68-71 (Dec. 77).

(ii) Bhalla Sheila, — "Agricultural Growth—Role of Institutional and Infrastructural Factors"— *Economic & Political Weekly*, p. 1898-1905, Nov. 5-12, 1977.

Annexure I

Infrastructures built in village Chakarpur

i) Metalled link road—788 metres

ii) Brick paved approach road—180 metres (through the assistance obtained from local Block Development Office)

iii) Brick paved village streets—650 metres

iv) Pucca drains—1000 metres

v) 2 shallow tubewells with pacca pump houses and installed with 10 hp Kirloskar diesel engine pump sets.

vi) Renovated an abandoned pond and established children-cum-community recreation park around this pond.

vii) Seeded fish fingerlings in the pond for promoting pisciculture.

viii) A scientific cattle shed to house 5 cattle.

ix) 23 sanitary toilets

x) 24 soak pits

xi) One hand pump for providing safe drinking water at the recreation park and another at the Montessori school

xii) Established Krishak Samaj Club which was provided with following items for custom-hiring to its members:

i) Two power sprayers-cum-dusters

ii) One mechanical wheat thresher

iii) One mechanical maize sheller

One TV set also provided to enable farmers view Doordarshan agricultural prorammes.

xiii) About 500 trees were planted along the newly constructed link road

xiv) A raingauge in cooperation from the Meteorological Department, Poona

xv) A 500 cft community bio gas plant established as demonstration for 4/5 families who share the operation and utilisation of gas from this plant; after watching the successful operation over a period of several months, two more residents of this village have put up bio gas plants at their own expense.

xvi) Some progress also made for improving the local livestock. A visit of a group of farmers from Chakarpur was conducted to NDRI Karnal and one farmer purchased a Holstein-Frensian-cum-Sahiwal crossbred cow.

xvii) Building for the Montessori school.

Jobs in hand

i) Permanent premises for the Krishak Samaj Club.

ii) Drinking water scheme

Annexure II

Infrastructures built in village Banguri

i) Metalled link road—230 metres

ii) Brick paved village streets—680 metres; with drain on either side.

iii) Seven tubewells complete with pump houses—five with discharge between 4-10,000 gph, one 35,000 gph and another 40,000 gph.

iv) Renovation of open drinking water wells—5 nos.

v) Ladies bath room at well sites —5 nos.

vi) Installed handpumps for drinking water—15 nos.

vii) Renovation of primary school and junior high school buildings.

viii) Main power supply line to bring electricity to the village—2.5 kms. Distribution lines to different tubewell sites was extra.

ix) A community-cum-children recreation park is being established.

x) One 200 cft biogas plant as demonstration.

xi) A murrah buffalo bull of high pedigree for upgrading the local bufferlce.

xii) An agricultural input retail centre

xiii) A diesel/crude oil sale centre

xiv) Established Happy Farmers' Club and provided it with following items for custom-hiring to its members:

i) One portable diesel engine pump set

ii) Two power sprayers-cum-dusters

iii) Two mechanical wheat threshers

One radio set also provided to enable farmers listen to agricultural programmes from AIR

xv) Pucca irrigation channels of approx. 3.7 kms length are under construction.

xvi) Subsidised housing for Harijan families.

MILK-MEN'S-UNITY NDEF

MILK WORKER

VOICE OF NATIONAL DAIRY EMPLOYEES FEDERATION REG. NO. 34/PYR

VOL 2 □ JANUARY—FEBRUARY 1984 □ FOR MEMBERS ONLY □ PRICE Rs. 2-50

GLORIOUS VICTORY OF NDEF
AGAINST NDDB

Our general secretary, Shri S. A. Rahim, Who has been punished for organisig dairy employees at last won the case against the mighty, powerful financially strong national Dairy Developent Board. Their Lordships Shri. C. S. Dharmadhikari & Shri. H. H. Kantharia of Honb'le High Court of Bombay in Their judgement pronounced on 9-12-83 in W. P. No. 3285 of 1982 Stated that the Termination of S. A. Rahim is not only malafide but also it is an ugly example of nacked victmisation of a person connected with trade union Activities & Ordered immediate reinstatement with full back wages & Costs of the case.

Editorial

Do Justice, Dr. Kurien ! !

It is important to not that crude managements like that of NDDB, due to personal vendetta and antiwo-rking class feeling, even without proper reasons takes arms in their hand to subvert the constitutional rights & labour legislations, because of authority entrusted on them by Govt. or public to use the public funds which has been misused to suppress hard working people. In this case Brig. Salick, Director (Adm.) along with other officers was continuosly engaged enjoying, TA, DA, and flight charges, which is also helping them to get larger income. These persons need not spent a single paise from their pocket.

Even now after this strong Judgement and facts exposed, wecan't be sure that they will stop harrass-

(Cont. On Page 2)

Dr. R. S. Kulkarni L.L. M., Ph. D. Who fought the CASE, on behalf of S. A. Rahim and National Dairy Employees Federation. He was assisted by his daughter Mrs. Neelima Kanitkar. We express Our gratitude for the Selfless efforts continuosly taken to represent our cause.

ment. High court, understanding the difficulties of workers refused Leave to go to supreme Court but their cruel mind may not stop them from trying other provisions to appeal in supreme court, even though the High court decesion was based on supreme court direction. They are in a better position to exploit the financial poverty of employees to stand with them. Who can control these people who misuse public funds. Since the inception of the Board, they cruelly terminated, tortured, and suppressed many employees. Who is there to expose their cruelty ?

As per NDDB's own report, the milk sales in Kolhapur should be around 70,000 ltrs, whereas in this town with more than 5 lakh population where NDDB experts were working since last 5 years are selling less than 6000 ltrs and in villages only the name plate is changed to Anand pattern. Our General secretary immediately after his Coming from Tamilnadu, has challenged to improve this for the benefit of farmers, but the dishonest Team Leader Mr. V. G Patil and Mr. Ganekar, who were enjoying salary and other benefits from the funds earmarked for farmers programme, in collusion with other vested interests, have suppressed him Perhaps the illiterate farmerse cant understand the facts. The Board of Directors, or Mr. G. N. Malusare, who has written so mnch ugly and fabricated letters due to his incapablity may try to protect, the corruption of V. G. Patil and others. Whether Dr. V. Kurien, Chairman of the Board who claims to be honest, has got the guts to enquire into the facts ?

History is facts and it can't be twisted for long time. so far we have learned that there is no place for self respecting, honest and hard working people in NDDB except " Yesmen " Who only take fatty salaries and twist facts for the " yesism " in NDDB. We knew why the corrupt officers are trying their best to suppress our movement, because if we become strong, it is the end of corruption and dictatorship. We request to Dr. KURIEN, if you are having an iota of respect for justice, enquire into the functioning of those corrupt Officers and the reasons for their failures. If you are going to crush us and truth, with your money, power and influence, we take open challenge to expose truth. we hope truth and justice will prevail.

☐ ☐ ☐

LETTERS

NDEF will Grow From Strength to Strength

Dear Comrade, Rahim

I am in receipt of your information letter to press dated 15th Dec. 83 and Circular dated 13-12-83 and My joy was boundless on the success of your case. It is victory to the selfless cause you have undertaken by yourself without anybody's asking or without consistant support from many whom you had expected to stand by you in the hour of crisis. I am including myself also in that lot. But your comrades-in-arm at Kolhapur have done their best to keep your ideals alive and growing, I hope.

Having passed through an exemplery saga of sacrifice and struggle, It is nodoubt NDEF will grow from strength to strength from now onwards We cannot also underestimate the anti Union venom of NDDB under Kurien for which we must keep an ever alert vigil to defend the present gain. You have to be still more cautious. But your involvement in NDEF can never be stopped by any forces on the earth hereafter.

Yours fraternally

B. B Ramani Coimbatore
Central Bank of India Employees Union

☐ Hearty congratulations for the victory of our Federation against NDDB. I request you to start publication of " Milk Worker " at the earliest.

K. J. Thomas, Coimbatore

☐ Congratulations for Mr. S. A. Rahim's reinstatement Order by Hon'ble Bombay High Court with full back wages.

N. N. Patel, Ahemedabad

☐ Hearty Congratulations for winning the tough case against the crude and ugly department.

S. D. Gowli, Nasik

☐ Our employees felt much happy and I too join in the happiness, which our Federation brought by fighting with NDDB in our General Secretary's case.

B L. Rajendra prasad, Tenale

☐ I found your magazine worth and interesting to go through the matters which will give brief idea about our dairy Jndustry.

A. Devakumar, Ootty.

Note : Due to limitation of space we have decided to drop the inclusion of pending letters. We shall try to publish as much letters as possible from next issue onwards. We solicit your co-operation

NEW YEAR MESSAGE

Dear Dairymen,

We live in a nation with a variety of persons with varied interests, it may be national or antinational, it may be for the good of the public or it may be for selfishmess. All these persons are utilizing certain existent factors for their motives.

Our Country's existing factors are mainly poverty, ignorance, illiteracy etc. leading to fragmented groups ruled by emotions aud sentiments.

If one starts analysing these factors it may not be difficult to understond that certain people are exploiting these factors for their antinational and selfish interests and make capitol out of it. The very Concept of capitalistic society is to utilize everything to create capital which can be enjoyed by a few· where as certain people works to reform these factors for national interests and for the common interests. These persons interests reduces selfishness to the Common interests of all, who doesnot beleive in capitalistic concentration, when people work for this end, definitely at a later stage the interest of selsishness will be affected. The selflish knows this and for their enjoyment and to protect their interest certainly try to spoil any social movement, aimed at attaining common benefits by hook or crook. They uses agencies, they purchases paid servants who may be in the helm of affairs in the society or may be ordinary people to use against the social movement.

In modern times an important social movement aimed at attaining social benefits is the working class movement. History tells us how badly working class movements were attacked and suppressed by the fore runners of capitalistic and selfish society. But the efforts to kill this movement has given only more enthusiasm for the advancement of working class movement.

As everyone of you know, National dairy employees federation has started an important working class movement in the Dlairy field, where feudalistic structures are revived under new and pet names.

NDEF started on April 12th 81 at Erode (Tamil Nadu) with an aim to unite all the dairy workers throughout the country, to give a new life to the Indias Dairy Industry and to remove the barriers and blocks created for fragmentation for the benefit of dairy Industries working force along with the benefits of the toiling farmers and cousumers majority among them also is the toiling masses of the nation.

Definitely it attracted the anger from such interests who feared that their selfish motives will be affected & hence they with all their power, money and influence have started and doing everything at all levels to supress and kill the movement.

At this juneture I knew that the working class has got a history and this class has got the energy to withstand such shocks. This new year I would like to make you remember that we have done much work to link the dairy employees through out the country and much remains to be done. I request ycu all without wasting time realise the duty of dairy workers and start think and work to come together under Milkflag forgetting all mistakes & bads, throwing away political affiliations (limiting to personal politics) and emerge as the links of the dairy employees of National milk Grid. Let each one of us start feeling that all dairy employees irrespective of the organisations they work are one. Do yourself, practice yourself and link yourself with your brothren dairy workers. Your Milk flag is giving you ample opportunity for that, please use it.

With best wishes for a happy and prosperous new year.

S. A. Rahim
General Secretary

TO THOSE WHO FELT BAD

Dear sirs,

Our last publication carried articles, which were the expressions of Suppressed and harassed masses. None of us or the workers are going to be benefited by criticising or malaigning an individeal, and we have no intention to malaign Dr. V. Kurien, in fact we have praises also for him. But it is very difficult for us to digest the phenonenon that since the Power is vested on him or anybody else he can do anything.

We really feel Proud of our nation, and as the citizens of this Country we feel, we too have the right

to work for this Country's development and we can't be silent spectactors when the nations interests are affected. Also we cannot agree with him that, We are the 3rd class citizens of the country. The Government is the elected representative forum of the people for administration and for social Justice. If the Govt. appointed any citizens, who may be the highest intellectual for the dairy development programe due to his specialisation or efficiency, does not mean that, the power vested on him is to safe guard vested interests and to do whatever he likes. It may not be difficult for him if he personally looks back to what were happened, he can easily understand so hany innocent souls were injured, brutually harrassed and mnany bad things have happened Perhaps it may be possible that he fully trusted his reporters and he disliked to study the facts after reports, but it is a fact that many were the victims of the autonomous character and misuse of powar.

As a trade union we are interested only for the upliftment of the working class including the toiling farmers and we knew pretty well that, being after an indvidual or attacking anybody we are not going fo achieve this. we are more interested in Co-operation for solving issues and it is good if realising the facts the big bosses of dairy Industry comes forward to undo the harms already done.

Of course man is prone to err. Bnt those who comes forward to correct the mistakes attracts appreciation. If one is not ready to Corrcet and put the things properly, then the working class of the Industry can not keep quite. Stages will Come to expose, to vehemently criticise Gone days were gone but trying to construct the new days are real efficiency. Hence we request Dr. V Kurien and all those prejudiced to throw away the path of confrontation and come forward for Co-operation, if they really aims for nations beneifit. Beeause wasting the energy for quarrels is of no uses. neither for them nor for us, nor for the Country.

E. B.

SUCCESS OF TRUTH

Dairy Employees Established Their Right To Indulge In Their Trade Union Activities

Dharmaraj Ghatge

It is a happy news for the Dairy workers of our country that their Lordships Shri C. S. Dharmadhikari and Shri H. H. Kantharia J. J. of Hon'ble High court of Bombay ordered immediate re-instatement with full back wages of Shri S. A. Rahim, who initiated the working class movement to bring together the scatered dairy employees of the country, for a better fearless tomorrow. The decesion of the Bombay High Court is not only a boost for the dairy employees, but also for the working class as a whole. since Shri S. A. Rahim General Secretary of National Dairy Employees Federation was mercilously harassed by National Dairy Development Board in collusion with vested interests and anti working class managements for the legitimate trade union activities being carried out as per the constitution of India.

This important decesion is going to help the emploYees of N. D. D. B as well as other dairymen to file writpetition in various cases.

The brief history of National Dairy Employees Federation is the history of the harassement meted to Shri S. A. Rahim. It is a fact everybody knows that "India is implementing since 1970 the Biggest dairy development project" of the world namely "Operation Flood" aud a scheme was drawn up to create a strong National Milk Grid by linking all the big and small towns and villages of the country for the purpose of procurement, processiing and marketing of milk. Even though National Milk Grid is a need for our country, the lack of foresightedness, false prejudices of selfishness and the influence of the capitalist Forcess or both foreign and Indian agencies on the top decesion making persons of the country, has resulted in more harm than good, to the farmers, consumers and workers of our nation. Perhaps these decesion makers have forgotten their duties to concentrate on milk production enhancement, rational distribution of resources and bringing out an effective grid suitable and befeficial for the poor farmers, consumers, workers and for the unemployed youths of the country instead they have given

NATIONAL DAIRY DEVELOPMENT BOARD IS HELD AS 'STATE'

Their Lordships Shri C. S. Dharmadhikari and Shri H. H. Kantharia rejected the plea that National Dairy Development Board is an autonomous private society and held that "In the modern welfare state the activities such as those carried out by the board in question really partake the fuoctions of Govt.of India and in fact as can be seen from the for going paragraphs of judgement it is under the control of Govt. of India and would therefore come within the purview of "State"

more weightage for bye law amendments, creation of leadership ladder for political ends and attracted much big and small narrow politicians. Even for the single dairy industry scheme, under the co-operative lobby, the workers are being got fragmented and most of their rights, which the country's labour legislations and constitution would have given has been cunningly denied. A phenomenon has been developed to keep the contry's dairy professionals and workers, in as much fragmented organisations such as N. D. D. B., I. D. C., Federation, Corporations as possible. resulting in quarrels and differential status The top echolons very cunningly exploited, the poverty ignoranece of out populations and all ugly policies have been thrusted upon in the field of dairy industry. Shri Rahim from his 10 years experiences in the dairy field recognised the developing tragedy and the ugly administrative systems and thought"if the workers of the dairy industry irrespective of the orgsnisations they work, consider that they all are the' One Industriy's " procurement, processing marketing, workers"and if they comes together they can not only create or help for the coming up of a proper national milk grid but also they can remove all curruption & middlemen which will help the workers of dairy industry to attain a good status in there life and also put and end to the harassment meted to them. Apart from the workers benefit this will also help the country's moulthless poor farmers and consumers whos ignorence was always exploited by selfish politicians and beurocrats who are in the helm of affairs

In the Field of Dairy Industry, certain Big Bossess were blaming beurocracy and politicians, forgetting the fact that they are the worst beurocrats ever seen in the indian field.

However when preprations were started for uniting the dairy workers " the real enemy come out and programme of to cull the organisational movement at the nip itself. While Mr. Rahim was working with the Spear rhead Team at Erode National Dairy Development Board authorites started harassing him. He has been punished for guiding some] societies to give reasonable wages and other facilities to their employees. On knowing that National Dairy employees Federation was going to be formed, N. D D. B. has issued a transfer order transfering him from Erode to Sikkim and asking him to report within 3 days which was humanly impossible They planned this plot to keep him in a place where he don't know the language and to give troubles to him and his family. However the Hon'ble Madras high court stayed the order. But N. D. D. B. has given false affidavit in the court stating that his job was not available in South, but realising the bad motives of the Board, the Hon ' ble justice Padmanabhan ordered for transfering him to kerala, but N. D. D. B. went to full bench and finally before Hon'ble justice Satyadev a compramise was accepted for the transfer of him to Kolhapur. Sience April 12th 1981 along with all these troubles he slowy organised the dairy employees and various agitations for the workers also has been carried out.

He reached Kolhapur on April 12th 1982 and there too organisations of the workers under N. D. E. F. has been carried out. He has been asked by N. D. D. B.not to carry out the legitimate trade union activities and warned of severe consequences. N. D. D. B. With the help of Management, in Kolhapur cooked up false information and finally on 18th OCT. 1982 he has been terminated with immediate effect. On hearing the news all the workers in kolhapur dairy went on lightning strike and then on reaching compramise that he will be taken back, the srike was withdrawn. However the Board has not withdrawn the termination order. Then the employees federation approached the Bombay high court where the Hon ' ble justice S. K. Desai stayed the order and given notice for admission.

The case came before Hon'ble justice Chandurkar and Gadgil J. J. for admission but they summerly rejected, even though the case was of gross victimisation. Against this he moved in the supreme court as SLP and where the supreme court conssting of Hon'ble Justices A. P. Sen, Venketaramaiha and Mishra allowed the case and ordered the Bombay high court to hear it on merits.

Now on Sept. 12th the case came berore justice C. S. Dharmadhikari and justice H. H. Kantharia for final hearing but N. D. D. B. filed a contempt of court petition against Rahim and the Federation and the same also was taken along with the main petition. After full hearing of the case the judgement was reserved and finally the strong verdict of their lordships Shri H. H. Kantharia and C. S. Dharmadhikari came on 9-12-83. In their judgement they highlightened the in humen way the Board harassed Mr. Rahim.

Their Lordships have quoted in the judgement extensively the action of Board and in page 15, 16 & 17 & 18.

6. "Now the next question that arises for our consideration is whether the termnation of the services of petitioner No. 1 was malafide and was as a result of victimisation and thus illegal. In this connection, it is pertinent to note that petitioner No. 1 was a confirmed employee in the post of an "Extension Assistant". He became the General Secretary of the National Dairy Employees Federation, registered trade union, with its head quartersl atErode in Tamil Nadu State and it was

thereafter the officers of the Board started harassing him. As a measure of harassment and with a view to victimise him for his trade union activites he was transferred to Silkkim from Erode. He was constrained to challenge the said transfer in the Madras High Court and the transfer was stayed. Afterwards the matter was compromised and he was transferred to Kolhapur which was recorded by the Madras High Court in its judgment while disposing of the writ petition. After the petitioner No. 1 took over at Kolhapur, allegations were made against him regarding his trade union activities. It appears that the petitioner No. 1 and his Union had submitted certain demands and were carrying on agitations in support of the same on account of which he was singled out and was harassed. He had, in fact, complained to the Head of the Team under whom he was working at Kolhapur that he was not given work properly and that allegations were made against him that he was not working. He had replied to such allegations by offering to raise the sale of milk from 6000 litres to 25000 litres per day if marketing work was given to him. The record further shows that the Team Leader of the Board had issued a warning to him, that he should not indulge in his trade union activities and within a week thereafter he received the order dated 18-10r1982 from the Secratary of the Board to the effect that his services were no longer required and the same were terminated with immediate effect. It is pertinent to note here that before termination of his services, petitioner No. 1 was neither given a show-cause notice nor was charge-sheeted although allegations were made against him and stigmas were attached to his integrity and character and memos were issued to him complaining against his trade-union activities. Thus he was not given an opportunity to explain or defend himself before visiting him with a verdict of guilt. All this had happened because of his trade union activities which were not liked by the officers of the Board who showed vindictive attitude against him. The arbitrary act on the part of the Board was thus not only malafide but was also an ugly example of naked victimisation of a person connected with trade union activities " In terminating the services of petitioner No. 1 the Board violated the principles of natural justice with impunity and did not not give him an opportsnity to defend himself The defence of the Board that they lost confidence in petitioner No. 1 and, therefore, termination of his services was a " terminatcn simplicicer " does not hold water. We would presently point out that this is not a case where it could be said that there were reasonable grounds for the Board to have lost confidence in petitioner No, 1 so as to simply terminate his services. At any rate, on facts if it can be inierpreted that it is reasonably doubtful whether there was sufficient material before the Board to lose confidence in petitioner No. 1 and that petitioner No. 1 was victimised because of his trade union activities, the benefit of such reasonable doubt should go to him.

Hon'ble Jndges after quoting examples further states.

The facts of our case are so simple that there is absolutely no diffculty in coming to an irresistable conclusion that on account of the trade union activities of petitioner No 1 the Board not only acted malafide but also victimised him by terminating his services.

7. Mr. Rane emphatically urged that this is a case of "termination simpiciter" because of loss of confidence in petioner No. 1 He submitted that peti tioner No. 1 was sent to Kolhapur to work on a project of augmenting the milk production where what he did was the other way round by misguiding the employees of the clients of the Board viz. Kolapur Zilla Sahakari Dudh Utpadak Sang Ltd. Kolhapur (hereinafter referred to as "the Sangh") in various ways. Thus in the submission of Mr. Rane, petitioner No. 1 caused circulars to be issued and instigated the workers of the Sangh. He also addressed a press-conference announcing indefinite strike in support of the demands made by the workers of the Sangh. He also took a "Prabhat Feri" and Led Morcha of the workers of the Sangh at Kolhapur at the time of the meeting of the Board of Directors and as a result of such trade union activities of petitioner No. 1 a good deal of misunderstanding was created between the Board and the sangh, the principal client of the Board was very much embarrassing for the Board. Mr. Rane urged that the letters written by the Sangh to the Board highlighting the trade union activities indulged in by petitioner No. 1 do show that the Sangh had a lot to say against petitioner No. 1 But we give no credence to the allegations of the Sangh against petitioner No. 1 because admittedly petitioner No. 1 was organizing the workers of the Sangh and, therefore, the Sangh had an axe to grind against him. If the Board acted upon such allegations made by the Sangh against petitioner No. 1 without holding an inquiry into such allegations, it is a further proof that they did not act bonafide. The whole approach of the Board is indicative of the fact that the Board was prejudiced against petitioner No 1 because of the compaign of the Sangh against him and we do not see any reason why the Board should have lost confidence in petitioner No. 1 on account of his trade union activities. At least there were no reasonable grounds for the Board to do So. Mr. Rane submitted that petitioner No. 1 had been speaking a lot against his employers which gave rise to the Board to have lost confidence in him. As rightly submitted by Dr. Kulkarni, such an activity on the part of a trade union leader cannot be said to be that

unreasonable so as to lose confidence in him. If such a thing is allowed it is very easy for any employer, if he wants to get rid of his employee, to put such a label on him with a view to terminate his services without holding inquiry against him and call it "termination simpliciter." This cannot be and should not be permitted in labour jurisprudence. The material which prompted the action of the employer should be well scrutinised to find out whether the alleged misconduct on the part of the employee was the real foundation for an order of termination of his services. On the facts and circumstances of a particular case there may be reasons for an employer to lose confidence in his employee but the facts and circumstances obtaining in our case are certainly not of the kind that there was any reason for the Board to have lost confidence in petitioner No. 1.

8. In this view of the matter, we are more than satisfied that the Board malafide terminated the services of petitioner No. 1 as and by way of victimisation on account of his trade union activities and that too in flagrant violation of the principles of natural justice. Such an act on the part of an employer is illegal being arbitrary [and has got to be set aside in the writ jurisdiction of the High Court under Article 226 of the Constition of India We, therefore, set aside the termination order dated october 18, 1982 passed by the Board against petitioner No. 1 They are ordered to reinstate him forthwith.It is well settled law now that an order of full back wages should follow the order of reinstatement unless there are circumstances not permitting such an order, as for example, the employee was in employment carrying same emoluments or was otherwise gainfully occupied during the period of his forced unemployment. There is no evidence on record of our case that petitioner No. 1 was gainfully employed during the period of his forced unemployment. Again, since ours is the case of GROSS VICTIMI SATION We are more inclined to award full back wages to petitioner No. 1 Hence we order the Board to pay full back wages to petitioner No. 1 right from the day of termination of his services till the day he is reinstated. The writ petition is thus allowed. Rule is accordingly made absolute with costs.

This judgement clearly speaks the way in which N. D. D. B. authorities tried to suppress the working class movement. It is also pertinent to note that during the last 14 months N. D. D. B, with anti working class clients in various states tried to suppress the movement. In states like Tamilnadu and Maharashtra even Govt. machineries were used and completly false propagandas were made to cheat the poor workers unity. It is important to note that the N. D. D. B. tops are doing all nasty works to suppress the unity of dairy workers.

Any way even though troubles have given Mr. Rahim along with his devoted friends are working hard to unite the workers of the country's dairy industry for their benefits.

Now this judgement of Hon'ble justice C. S. Dharmadhikari and H. H. Kantharia is a boost to his work and it is blessing for the suppressed workers of dairy industry in the country. It is fact that all can not be cheated by all all the time. Somebody can be cheated by somebody for some time and now it is a proved fact. No doubt victory of the Federation and the justice given to Mr. Rahim is the success of truth, and a gift by the learned jurists for the working class. □ □

Dear Readers,

We Could not continue the Publication of milk worker after the first issue, since NDDB has filed a contempt of court case against the General Secretary and Federation with an aim to affect Rahims Case.

However the Honble bench of Their Lordships Shri C. S. Dharmadhikari and shri H. H. Kantharia has now dismissed this case filed by NDDB along with deciding the case of Genral secretary. Hence we inform you that from this issue onwards we shall try to publish continuously the issues. we regret for the in-convenience caused to our members.

News in Brief

- Govt. of India decided on December 2nd 1983 to go into the details of NDDB, IDC, working.

- Dr. V. Kurien, Chairman, NDDB while talking to newsmen regretted that " **It is a poor reward at the fag end of his career** "

- It is reported by Dr. V. Kurien that Soviet prime Minister Alexei Kosygin during his visit to Anand stated that " Dr. Kurien, it took you 30 long years to do it. Now you are doing in vegetable oil..... another 30 years. You are doing it in cotton..... another 30 years, with fish, jute, fruit and vegetable..... **may you be given a long life.**

  Such Significant Social and Economic transformations in your rural and agricultural sectors should not be brought about in this liesurely fashion..... they should be brought about suddenly, quickly, in all directions, all at once.

- Dr. Kurien expressed pain for giving LOAN to farmers and stated changing buffalo from one hand to another is not going to increase production.

- Dr. A. T. Dudhani stated if in this heartless and headless manner in which top professionals are treated in this country, it is no wonder that we are today in a blackhole. A good example of this is the dead ends in which kurien and his hired hands, with the help of beurocrats of the Government, have landeded this country in.

- Claude Alvares article "THE WHITE LIE" published on 30th October 1983 in Illustrated weekly of India says that "Operati Flood is a show piece programme" Ivan Fera and Bharat Dogra follows it up on January 1st 1984 edition.

- Kushwant sing in his write up in Hindustan Times recommended for giving "Bharat Ratna" to Dr. Kurien.

- N. N. Patel, General Secretary NDDB employees union stated that "The signatures of senior executives of NDDB were obtained on blank papers with the motivation of writing down such protest to the Government aganst the parliamentary probe as desired by Dr. Kurien,

- 7oo employees of NDDB submitted resignation in protest against Govt. probe and the same was rejected by Dr. Kurien Chairaman. It is learned that signatures are obtained by coercive methods in blank papers written with addresses, and it is a planned conspiracy to challenge, the Government of India's right to enquire. in to the affairs of NDDB & IDC

- It is reported by Mr. P. N. Singh from NDDB, Jullunder that he has been tortured under police custody to save a private security Contractor in relation to a theft case, by a conspiracy planned by some senior officials of NDDB working in Delhi region controlled by Miss. Amrita Patil.

Trade Union Brief

- Com. C. K. Madhavan, requested the Govt. of Tamilnadu to respect the Court order and take back about 1500 workers of Madhavaram Dairy, retrenched by Govt. of Tamilnadu. He also said that many workers died due to starvation, due to the anti working class policy of Government.

- The employees of Pradeshik Dairy Co-operative of Uttar Predesh have submitted charter of demands and have planned to go on agitation.

- The Govt. Milk Scheme employees in Maharastra have started agitations against transferring, Govt. Dairies to Co-operatives.

- The Milk workers of coimbatore, Erode, Salem and Nagercoil have submitted demands and are agitating. (Contn.)

Questtion of Trust ?

- ☐ Mr. A. M. Swaminathan. I. A. S, Milk Commissioner, Tamilnadu during concilation talks with General Secretary requested 15 days time. When General Secretary expressed difficulty he said "Can't you trust me, please believe me, I shall keep the promise " Com. S. P. Venktachalam asked to consider. when we complained that the Special officer is involving in politics, Commissioner replied and promised that "I will control my officers from entering in politics."
  (The whole episode will be published in detail later.)

- ☐ NDEF has requested the Govt. of Maharashtra to merge all the Govt. Dairies, Corporation and Co-operatives and form **Maharastra state Dairy Devclopment Corporation,** and treat all employees as the Corporation employees.

Elections & Nominations

NDEF Delhi Milk Scheme

1) Legal Adviser Shri. M. K. D. Namboodiry (Advocate Supreme Court) 2) President Shri. R. S. Rawat, B. A. LL.B. 3) Vice President Randhir Singh 4) Vice President Shri. Banwarilal 5) General Secretary : Shri. K. P. Pandey 6) Joint Secretary Shri. Radhey Shyam 7) Joint Secretary Shri P. D. Joseph 8) Office: Secretary Shri P. D Gupta 9) Treasurer Shri. Sant Ram Sharma, 10) Publicity Secretary Shri. Mahender Mehta, Shri. Ram Chander 14) Executive Members Shri. Ram Kumar, Shri. K. S. Cheema, Shri. Chhabil Das, Shri. Mahender Lal, Shri. Ram Saroop, Shri. Brahma Nand.

NDEF Uttar Pradesh State Council

1) President Shri. Sohatlal Gupta (Meerat), 2) Vice President Tejpal Singh, Meerat Vice President R. P. S. Chavhan (Faziabad) 4) General Secretary Shiva Bhakta Singh (Dalpastipur) 5) Joint Secretaries K. M. L. Kaushik (Muradabad) S. P. S. Rana (Gaziabad), & Anusingh (Moradad) 6) Treasurer Premsingh Varma 7) Office Secretary Arvind Kumar Sharma (Meerat) 8) Executive Members Show Singh, D. C. Sharma, Rajendej Singh Choudhari. D. P. Singh, G. S. Yadav, Balveersingh S. P. R., S. P. Tripathi, K. S. P. Sharma, Herbirsingh Talan (Kanpur) Jameel Ahamad, S. D. Pathak, S. Husain, Harbirsingh Talpat.

Regional Co-Ordination Committee

1) President Shri. K. P. Pandey 2) Organising President M. K D. Namboodiry 3) Organising Secretary R. S. Rawat, P. J. Kuriakose 4) Publicity Secertary Sant Ram Sharma, P. N. Sing, V. K. Sharma, P. D. Gupta Kashmir Singh, Harising, Chattar Singh, Delbir Singh Arvind Kumar Sharma, Ramphalsingh Chavhan, G. D. Goel, Shiva Baktasingh, Herbirsingh Talan, Show Singh, O. P. Chavan, R. Yadav, D. V. S. Rehilla.

LATE NEWS

Mr. Claud Alvares, in Illustrated weekly dated 8th January, Challenges Dr. Kurien to take him court if he feels that Claud is de faming him. Also he exposes the false affidavit given by NDDB against S. A. Rahim.

MILK WORKER

Bi-Monthly

Vol.-II

January-February 84

Printed & Published by : The Research and Analysis wing National Dairy Employees Federation.

400 G E. Near Krishna Ice Factory, Shahupuri, Kolhapur-416 001.

For Members Only.

FARMERS TOO RALLY ROUND NDEF FOR THE PROSPERITY OF DAIRY INDUSTRY

" We know that Dairy Workers being organised under "Milk Flag" by NDEF only can work for the cause of the rural milk producers. Farmers also includes the working class. The propaganda by NDDB and their agencies that Milk producers and workers are different is to cheat the farmers. Also we know that vested interests in the name of farmers, are trying to give colour politics for NDEF to suppress this strong working class movement in the Dairy Industry, but Milk Flag of NDEF, as pure as milk have no special affiliation to any politics except the interest of Dairy Industry workers and farmers.

With best compliments from

Shri Hanuman Co-Operative Milk Producers Society Ltd. Kerli, Tal. Karveer, Dist. Kolhapur.

Govind Doulu Pathare	Shankarao Baburao Gaikwad	Hari Jyoti Vharamble
Chairman	Vice Chairman	Secretary

BANK OF MAHARASHTRA
EMPLOYEES UNION,
KOLHAPUR UNIT
(Affiliated to AIBEA)

My Remembrances

Dear Rahim,

Please accept our hearty congratulations for your glorius victory against your Management, the National Dairy Development Board.

We remember the day of your illegal vindictive termination from your services. It is needless to say that the management like N.D.D.B. has received a blow from the Court of Law.

The workers from the Milk industry will defenitely take the lesson from your termination and they will be United under the banner of NDEF through out the country, and fight against the anti. labour policy of the managements.

Your organisation will work for the poor people from the villages and also will root out the corruption from your industries.

Perhaps you might be also remembering that the management of Kolhapur Zilla Dudh Sangh, playing fiddle to the wrong policies of NDDB, tried to disturb my services unnecessarly for helping you in the infant stage of your organisation, through some executives from our Bank. I also remember the days when you are thrown out and the tricks played by NDDB and the Kolhapar sangh management to put you and your family in to starvation in a far away place from your home town, when the workers planned to help you. This has forced you to sent your family back home. Also I am recollecting the challenges you have made both publiciy and officially to help the farmers and consumers of Kolhapur, when the Operation Flood Programme was not implemented for the benefit of the public of Kolhapur District by both NDDB persons and the managing Director. G. N. Malusare

Once again I am congratulating your leadership, and hoping every success in your future trade union movements.

L. S. Vaidya
Divisional Secretary,
Bank of Maharashtra Employees
Union, Kolhapur.

Com. Govindrao Pansare, Senior Trade Union Leader Kolhapur Says .....

The final Judgement of their Lordships Shri Dharmadhikari & Shri Kantharia Shows, the brainlessness of the so called brained people like Dr. Kurien, who try to suppress trade union movement. The working class which includes the milk producing farmers of rural areas may be confused for sometime by the claims of persons like Kurien and his representatives in various places. that they are representing the cause of farmers. But this can't continue for a long time, when the truth start comes out their pseudo nature will be exposed, & the workers and farmers will learn how they cheated them, enjoying their funds to live in five-star hotels, travel in Air Conditioned cars and live princely life. Hence Rahim's services for the Trade Union movement will not go waste which he should continue with full spirit to help the Dairyman.

MILK FLOOD

We are daily hearing for and against operation Flood, the implementation lacunae, the fear of employees, the worries of farmers, the difficulties of consumers. It is very unfortunate that eventhough we have two national level bodies, and national programme, we could not evolve a systamatic and acceptable formulae for Dairy Development.

A country like india with so much regional imbalances, coming up of a strong National Milk Grid is much useful. This in addition to solve the imbalances, also can help to solve the country's most of the difficult problems, such as unemployment, under nourishment poverty etc. But if we clearly look in to the facts there is no difficulty to find out that the authors of the scheme who talks much about the scheme are not at all interested in any of these laudable objectives except " **Business and Profits** " Ordinarly businessmen uses good words to attract customers for more business likewise the authors of " Milk flood " also is using nice propaganda words. Now through out India it is a common factor that even though the 'operation flood ' aim was told to be removing middle men only increased more middle men, more middle expenditure and more business men

Is it the type of milk flood we want ? or we wanted a programme suited to the needs of the country which can help to solve many of the alarming problems, of the nation. From the approach of the authorities till today, we found that they are not only least bothered about the national problems but also wanted to crush the labour movement being spearheaded by us in the dairy field. They were trying to subvert the labour legislations and constitutional rights. Aproper approach taking in to account national factors is necessary for the " MILK FLOOD "

—Menon

Alas ! ! Our Poor Nation

Group Captain Jasjitsing who not only denied to sell our Country's most secret defence information for the handsome money offered to him but also exposed the CIA espionage activities by bringing to book highest ranking retired defence officers (paid servants of CIA). Our congratulations to the great patriot.

The activities of Larkin brothers who were occupying many top posititions in the defence could not be identified even after retirement till Capt. Jasjitsingh came for the country's rescue, which helped the union defence ministry to unearth the secret operations of CIA. If this is the case in the defence establishment can we dream about the CIA links being established and being operating in our country to infiltrate among the massess because of their avenge towards socialism. There can be no doubt that the funds which finds origine from the European Countrys or America will also be keeping links for espionage as well as for political work. In indian Sub-Continents, even various govts are puppets of CIA, denying the Chance of Social Changes

But in India, since our Govt. led by Shrimathi Indira Gandhi was so capable to resist this they could not. But Continuous operations are going on through various reputed persons and organistations in the country, but to look in to the facts or making enquiry is also difficult because the press as well as reputed persons are in their hands mostly. We can find few Journalist's who are sinceere to the nation. At times of difficulties of those who work for the interests of CIA linked people, many journalists knowingly or unknowingly comes with articles of praise and they even go to the extent of recomending to the Govt. to provide awards. Even when enquiries are mooted, tricks are played and finally commissions also could not serve the purpose. The loss is for the poor of the Country. Alass our poor Nation. ! !

GUILTY CONSCIOUS

It is a pity that certain officers of NDDB, who were responsible for the poor show of operation flood programme and invited the biggest criticisms in recent days, out of their guilty conscious, tarnished the image of NDDB and IDC employees, by getting the "so called resignation" letters from about 700 staff including Executives, Extension staff, clerical staff and other workers of NDDB, with an aim to get cheap popularity. It would have been respectful, if Dr. Kurien and Mr. R. P. Aneja tendered their resignations, instead of enacting this nasty drama, involving the staff, who were not responsible for the draw-backs.

If Dr Kurien, himself looks back, it may not be difficult for him to understand that the power concentration in his hand made him a dictator, which has been used by certain outside and inside vested interests and it finally is bringing "this unexpected poor reward towards his fag end of his career. Shakespear's Mackbeth story is being repeated.

NDDB is having 'gems' but they don't have the upperhand, they are suppressed by certain incapable officers, who by influence got positions.

Even projectwise enquiries are made, virtually some of the so called experts will have to go out of NDDB. These officers who were involved in much Corruption and their in effectiveness, by suppressing hardworkers is primarly responsible for the present situation. These officers really fears about an independant enquiry, that is why they persuaded the employees to sign the "so ealled Resignation letters" Even those staff who knows that they are signing for resignation, were surely guaranteed that they will not loose their job, since the show is being done to save, the chairman and secretary and hence chairman's guarantee was there "that the resignation letters will not be accepted.

If the case was otherwise, he would have given the resignation letters to the Govt. for its decesion. He didnt done this, which clearly gives the inference that "Had he not done this resignation drama he would not have been able to attract the press this much" If Dr. Kurien and his other top brass is "as holy as cow" Why should they worry about the probe. or whether Dr. Kurien wants to dismiss him without a proper enquiry, as he used to do for his staff since 1973. But how he can expect from responsible Ministers to the status of Rao Birendra singh and Yogendra Mackwana to act like him so irresponsibly. If the Minister's of Govt. of India is not following certain proceedures to find out the facts, every thing will end in chaos. Hence their action was cent percent correct in a democratic country for which protesting is highly improper.

Anyway this childish behaviour of those guilty minded persons who initiated this resignation fraud really brought an awkward position for the NDDB staff. □ □

FEDERATION OF INDIAN CHAMBERS OF COMMERCE & INDUSTRY : NEW DELHI

MODEL SCHEME FOR RURAL DEVELOPMENT - INTERIM REPORT
(DAIRY DEVELOPMENT)

Introduction: This model scheme is based on our experiences of dairies in and around Bangalore viz. The Bangalore dairy, N D R I, The Mallur village milk co-operative, the Vishwaneedam dairy, the Hessargatta Indo-Danish farm and some individual single cow holders. It also keeps in view of the reports from Uruli-Kanchan (BAIF), Anand milk co-operatives federation and the critical analysis of the Kishore Bharati group on dairy development strategies.

Model Scheme

Description: The scheme envisages a slowly started well conceived co-operative farm of dairy development. The initiator of the development scheme is to be provided by the sponsoring organisation, and he will be responsible for acquiring dairy expertise, transfer of technology and financial management. It is felt that the crucial component for a successful venture in dairy is the transfer of technology to the weaker sections. Special attention is therefore to be given to this aspect, throughout the execution of the programme (Experience of Mallur and Magadi village). The key operational principle is to create motivation through demonstration and not by persuasion. Hence it is desired that the initiator keep a small farm of about 5 Milch animals and demonstrate the profitability of the venture in first phase of scheme.

Time Budget: The scheme will consist of the following phases:

1. Preparatory phase.
2. Initiation of a small farm.
3. Starting of the co-operative on a small scale.
4. Expansion of the co-operative both vertically and horizontally.
5. Stabilisation and preparation for retreat.
6. Evaluation and retreat.

1. Preparatory Phase: In this phase the sponsoring organisation will identify a suitable person to take charge of the whole operation. He will during this period acquire a sufficiently in depth knowledge of dairy and its associated problems by working in an established co-operative dairy farm for at least a period of 6 months. Incidentally, during this period he will visit the area in which the scheme is to be initiated and selects a village. It is felt that the village should not have any special features in order to ensure natural multiplication. One essential constraint is the availability of a very moderate amount of water resources which most villages in India have (wells may have to be dug). Another constraint is that it should be connected to a milk consuming town or city by a motorable road. Experience has shown that a village no farther than 150 kms from a city or town can be selected. After the selection of the village he shall study the village with respect to economic conditions, political situation, land distribution pattern, social and cultural traditions in order to suitably orient the future implementation of the scheme.

2. Initiation of a small farm: After the preparatory phase the initiator shall start living in the village and purchase a small land holding. He shall then start a dairy farm on a personal basis having about 5 milch animals. With the expertise, he has profitably run. Certain measures, to use local resources to meet feed and other requirements are to be taken such as growing of some of the feed components including concentrates. He shall also discreetly advertise his success.

He shall then spot the enthusiastic members of the weaker sections and give them employment in his farm (during which he shall see that transfer of technology takes place). He shall also indicate his capability of assisting them to help themselves.

3. Starting of the co-operative on a small scale: This phase starts when about 10 to 15 members of the weaker sections have acquired sufficient technical competence and motivation to start their own dairy ventures. The initiator shall assist these people to form a co-operative and get them loans to purchase milch animals and maintain them for a certain necessary period of time. He shall be responsible for the smooth functioning of the co-operative with respect to feed supply and milk marketing.

4. Expansion of the co-operative both vertically and horizontally: After the small co-operative has started functioning smoothly, the next step would be to expand the co-operative to the entire village. This step should not be taken (by not releasing loans) until the teething problems of the co-operative society have been overcome.

The loans should be given to those who have acquired technical competence to run a dairy. The flow of money can be ensured towards the weaker sections by transfering technology to them (for instance by employing only weaker sections to work in the initiators farm). All political support, and legal aid should be provided through the initiator by the sponsoring organisation. Expertise in management of co-operatives should be developed among the weaker sections in this period simultaneously. This will in the long run ensure the stabilisation process of the society.

The initiator should be on the look out at this point of time to initiate new economic activities which have now become viable in the light of increased economic status and technological competence. For instance, sericulture is a suitable occupation which not only produces silk (a profitable commodity) but also meets partial feed requirements. Mushroom cultivation as a side activity could also be considered.

5. Stabilisation and preparation of retreat: By the end of the previous phase, it expected that a self sustained co-operative without external inputs are evolved. The initiator should now remove himself from any key positions he has in the co-operative and pass on the leadership democratically. But he stays in the village in his capacity of an experienced and well meaning adviser. His conscious effort is now the education of the villagers which will form the back bone of a mature co-operative society. He should attempt, in whatever way he can think of, to promote healthy growth of capability of the individuals

to assert their own opinion rather than being blindly led by leaders. The initiator should convince the people that their increased economic and technical development has given them this choice.

6. Evaluation and retreat: When the initiator no longer feels that his presence is necessary for the smooth functioning of the co-operative, he will make preparations to leave the place gradually. Evaluation of his work should be based on (a) Growth of total economy of the village (b) Pattern distribution of wealth before and after the scheme implementation (c) Its multiplication over neighbouring areas.

Dr. Ravi Narayan

HLT.

Our. papers misplaced please send draft — format model scheme ~~decide~~ adopted Calcutta immediately

Need contact Rayudu immediately please. Send his madras ~~address~~ (home or hospital ...) address ~~[illegible]~~ at 163B Fourth Block Rajajinagar Bangalore —

THE LARGER DIMENSIONS OF DAIRY DEVELOPMENT IN INDIA

Dr. V. Kurien
CHAIRMAN
NATIONAL DAIRY DEVELOPMENT BOARD

Lecture delivered during
the Sixth Lal Bahadur Shastri
Memorial Lecture series at

INDIAN AGRICULTURAL RESEARCH INSTITUTE
NEW DELHI (January-1971)

THE FRAME WORK :

First one must look at dairy development within the frame work of the country's total situation. Of course, it is true that we dairymen often have to speak as if dairying were in some way unique-but, for our purposes here today, one must note the many characteristics that dairying has in common with other agricultural industries. It is important to recognise that dairying is an industry : even the most traditional approaches to the supply of liquid milk for our small towns, requires some organisation for transport, processing and marketing plus some investment in equipment. It follows that, since there is investment, some capital is involved and therefore-whether it be in the private, public or cooperative sector- some application of the concept of "return on capital" must also be involved. Moreover, even these simple" instustrial" characteristics of dairying oblige one to bear in mind two more : the importance in dairying of demand supply relationship and the fact that, whether planned or unplanned, all industries must in some sense compete for investment funds.

Then also, like other industries, dairying can develop satisfactorily only if its development is consistent with that of the country as a whole. I am thinking particularly of rural urban relationship many so-called developed countries are proud of the fact that only, say 5% of their people work on the land in a few years time We shall have an 800 million population- does this mean that we shall aim at having an urbanised population of 760 million, leaving 5% (40 million) on the land ? Surely not even if such a monstrous urbanisation were contempleted, we could not find the capital for it. Thus, atleast for many years the majority of our population well live in innumerable rural or semi-rural communities, where agricultural land is the major 'Capital' from which most people derive their liveli hood.

This widespread continuing dependence on the land has two practical implications for dairying (along with other agricultural industries) : one is that many people will continue to produce milk supply for their own families and at most, for their near neighbours-and the other is that the effective demand for a modernsing dairy industry's products will be limited to the demands of families who cannot better be supplied by their own or a nearby milch animals (plus, of course, any demand for exports).

....3/-.page.

Lastly, in considering the frame work within which our dairying must develop, one cannot ignore the fact that there is at present little that is idyllic about our dependance on the land. Most of the people who sight the loudest that they want to "get back to the land" are the very people who are least likely ever to be obliged to do so. Unfortunately for those who cannot escape it, the land is too scarce, and often too unproductive-for it yet to provide most of our rural people with an adequate/ resentrural proverty. Dairying-and in my opinion, all other agricultural industries- cannot ignore it.

/livelihood. This is the basis of our

Thus, the larger framework within in which one must view our dairy development has three main components :

i : Dairying is an industry-but its development must also serve our rural and semi-rural population;

ii : Planned or unplanned-public, private or cooperative in its development, dairying must compete for investment funds- and.

iii: Our dairying must develop in such a way as to contribute to the solution of the problem of rural proverty.

I believe that, if one accepts this framework, there are five larger dimensions of dairy development which must be observed.

1. <u>The Institutional Dimension</u> :

As in other areas of our national heritage, the main problem of our dairy development has not been that of knowing that to do; rather it has been that of knowing how to do it-or how to get it done. In practice, in our country as in others, only one institutional structure has proven effective in getting dairy development done that is a unified organisation of milk producers, which is responsible for procuring, processing and marketing its members' milk owned and controlled by milk producers and therefore responsive to producers' needs.

Such an organisation enables even the poorest producers to hire their own professional technical personnel and managers. It gives the producers command over the technologies which they require in order to market their milk to consumers who need it (as liquid milk and milk products). It also enables producers to invest in the facilities and services which they need in order to improve their milk production.

....4/-.page.

How does this work ? The structure is a familiar one : each village in the milkshed forms its own primary cooperative society. All such societies in the milkshed from a cooperative Union and this Union owns, manages and operates the dairy aprocessing plant, the procurement organisation and the marketing system for its members.

But note that each primary society is managed by a paid (and, in this sense, a professional) Secretary. Each primary society has its own trained men to carry out on the spot artificial insemination of members' animals, to provide first-aid veterinary care for those animals etc. Because they are paid by the society, however modestly, these men have to do their work conscientiously they cannot claim the immunity of a remote, entrenched bureaucracy.

Similarly, the cooperative union has it own managers and technical personnel, paid by the members out of the margins earned on their milk. If they fail to earn the appropriate margins, the members will soon instruct their Board of Directors to get them removed.

When, however the managers and technologists do perform, the producers find that they get a good price for their milk (plus a bonus at the end of the year) and they soon become keen to increase their milk production. And they soon become keen to increase their milk production. And ~~they~~ it is here, I believe, that the institution comes into its own. The Union can own and operate its own cattle-feed plant-the members' primary societies are ideal retail outlets for such a product : members come twice a day to sell their milk, they are paid twice a day for their milk so they readily purchase their concentrate requirements, if necessary on a daily basis.

Just as the Union has the managerial and technical resources to operate its own cattle feed plant, so also can it organise intensive systems to provide Artificial Insemination services, veterinary services etc. for all members. At Anand, for example, the Union has over 40 professional veterinary doctors, it carries out some 2,00,000 artificial insemination services yearly. It markets lucerne seed yearly to its members, to help them grow some ten thousand of hectares of green fodder annually. All this is one District only at no cost to Government.

Thus, as the organisation grows and gets a good return on its members milk, the members rapidly develop their-

..5/-.page.

their interest not only in improving their milk production but also in improving the market for their milk. So they use their organisation to obtain the services of people who are professional marketers and the organisation becomes increasingly consumer-oriented.

2. The Techno-Economic Dimension

I have described briefly the two main effects of a functional institutional structure for dairy development. These are that it builds and effectuates the milk producers' interest in improving milk production, while also making it in the producers interest to provide consumers with the mix of liquid milks and products that comes closest to satisfying consumers preferences visa-vis quality and price.

Here one is speaking of an industry evolving technologies which observe economic criteria-in-fact, "Techno-economics.".

The Techno-economics of our modern dairying must achieve three objectives :

a. They must evolve consistently through the production procurement, processing and marketing phases of the industry.

b. They must benefit producers and consumers who do not come within the ambit of the industry, as such directly.

c. They must have built in self improving factors.

This need for built-in self improving factors can be demonstrated by examining the present builtin "self-destru--ctive factors" of our traditional dairying's techno-economics. Our milk production, for example, is characterised by milch animals which are inefficient convertors and milk producers who are too poor to acquire improved animals. It is not worthwhile to feed inefficient animals well- so they continue to produce little milk and thus the milk producer remains too poor to acquire a better animal (and, in fact, the inefficient animals tend to multiply and deteriorate, generation by gen eareation) : this is the built-in self destructive factor on the production side of our dairying.

There are similar, self-destructive factors built into our dairying's traditional approaches to milk procurement, processing and marketing. ---

...6/-.page.

----This is precisely because our traditional milk trade has had for a long time to balance a stagnant milk production against a surging demand (in the major cities, milk and milk products account for 9.13 % of most consumers' expenditures).

In the face of a widening gap between production and demand the traditional trader extends and cheapens liquid milk by additing sugar, water rice, flour etc. (which we proudly call "dilution")-and, to be prepared for the lean season he frequ--ently tries to accumulate stocks of ghee mawa etc. during the flush season (which we proudly call "hoarding"). The traditional trader earns hand-some margins for these dilution and hoarding fuctions-but, really, he is doing only what the system requires of him even though it makes our dairying self dest ructive- and this is why the technoeconomics of our modern dairying must reverse such self destructive factors.

To achieve this reversal, the key is the consistancy of change (throughout the production, procurement, processing and marketing phase of our dairying)-and, of course, the major criterion through out these phases is " productivity" in the use of resources, in the use of capital. Hence the use of producers oriented institutions, to enable poor milk producers to acquire milch animals which are better converters and which make their family's labour more productive.

Similarly, in the processing and marketing phases (which have to be considered together), we have to evolve"Systems" for bringing milk and milk products more efficiently to urban consumers. For example, our present practice of building palatial Wester-style urban dairies in cities.where demand is less than 100,000 litres is to costly; it makes the modern dairy industry less competitive than ever with the traditional system. Hence our current efforts (which I believe are on the brink of success) to evolve a system known as the bulk--vending system" which would be enable several such cities to be served more conomically by a single larger dairy, we have yet to evolve such techno-economically improved systems for milk products such ghee and I shall discuss this need briefly later.

Meanwhile, however, let me illustrate the third achievement which I mentioned as being required of thenew techno-economics of dairying : namely, that they should benefit producers and consumers not directly within the ambit of our modernising dairying industry. Take the cross-breeding programmes which are being instituted in the selected milksheds, for example.

In effect, these programmes will encourage the rearing of more improved heifers than the producers will wish to retain.

..7/-.page.

They will keep the best (which will enable them to take in advantage of the better feeding and mangement available in the milksheds) and they will sell off the rest, which will thus be moved into the non milkshed areas, where they will be considerably better than the existing milch herds, to the benefit of the milk producers in those are-as and the consumers they serve.

Thus, in fact, the programmes for cross-breeding and upgarding milch animals in the milksheds will result in the multi--plication and distribution of improved animals in ever--widening circles of increasingly improved productivity. This must be the "trigger" which sets off a built -in change toward increasing productivity throughout or developing dairy industry.

3. The Industrial Dimension :

However, several isolated projects undertaken so far to produce crossbred animals in our milksheds have made little impact, partly because they are isolated efforts. Most of dairy modernisation cannot be achieved in small "Pockets". They industrial infra-structure required can be sustained economically only if the scale involved is rather large. This infrastructure is of two district kinds : that which is of a general industrial nature-and that which pertains to the food industry in particular.

The general industrial infra-structure required involved factories to produce veterinary immunological and biological products, factory-scale production of frozen semen and factories to produce the equipment that is needed for efficient milk processing and marketing. Nor is this just a matter of copying similar factories of Europe and America, whose availabilities of capital, stai-nless steel, human skills etc. are quite different from ours. We have not only to build new kinds of catories, but these must embody systems, processess and approaches to marketing which are designed expressely to enable us to serve our producers and consumers.

The second part of the industrial infra-structure required is the building of wheat we usually think of as "dairies" However, our experience shows that, while some storage and processing facilities are needed, it is certainly not approapriate simply to copy the dairies of other regions where dairying products are propagandised as something almost magical, rather than a the simple and wholesome foods which they should be.

..8/-.page.

In future, we must build "food factors", rather than things which, because we call them "dairies", must be reserved for the lactic secretion of the cow, even at the cost of very poor utilisation-and these "dairies" which are also " food factories" must be used simply to produce as much wholesome good, value food products as possible.

This relates to the new-techno economics which I outlined earlier. For example, most ghee is diluted in varying degrees with Vanaspati, to enable to traditional sector to provide consumers with a range of mixed ghees at an appropriate range of prices. If our modernsing dairy industry were to provide consumers with similar "vegetable ghees", properly labelled, consumers would know what they are paying for, these modern ghees would be both safe and pure-and the majority of consumers would be far better served. (and the nation's investments in processing facilities would be far better utilised). Thus, we must structure the techno--economics of our modernsing dairy industry so that it increasingly offers products which taste the way that good foods should at the best possible prices, regardless of whether we make them with 10% milk solids and 90% vegetable solids or vice versa. Properly marketed, these products would rapidly find consumer acceptance, because at better prices than the products which most of our consumers are now compelled to but from the traditional sector.

There are many such examples of how the desired techno--economics of our modern dairy industry indicate the industrial dimensions that the industry must assume. However, I hope, I have said enough simply to establish that there are two industrial aspects which have to be looked after (namely, the production of processing equipment, technical inputs etc.- and the establishment of processing facilities which will increasingly integrate dairying with our modernising food industry as a whole) and that this industrial infrastructure must completment the institutional and techno-economic development of our modern dairy sub-sector.

4. <u>The Dimension of Technical Modernisation in Rural Areas</u> :

I mentioned in my introduction to this Lecture that I do not believe that we can or should aim (in our life-time, atleast) at a society wherein only, say 5% of our people will be directly dependent on the land. Not only have we insufficient capital to create the number of industrial jobs that this would require-but I suggest that we also have not the social capital. No society has.

...9/-.page.

We have only to look at the racial tensions of many European and American cities, at the appalling neglect of the aged throughout the West. etc. Considering the inability of so-called "developed" societies to cope with mass urbanisation, it is not surprising that our own cities are becoming hell-holes and one can not wish the majority of our people to be obliged to live in such places.

Instead, one has to face upto the fact that our rual/urban priorities must change. While trying to make like for those who do have to live in our cities, socially and physically secure- we must also try much harder to see to it that the majority of our people can live in a rural society which will offer an increasingly satisfying and productive experience.

A food industry such as dairying has to deal with this task on two levels :

First : There is the fact that, we need good food in order to make the most of our lives. Those of us who influence the modernsation of any part of our food production, processing and marketing, must see to it that our people get the food they need. This sounds elementary, but it is disturbing to note how often people talk as if a man can eat something that is called a "Rural Labour Project"., or even an "Intensive cattle development programme". Those of us who are responsible for the agriculture-food sector really have to discipline ourselves to eschew such evasions.

Once this need for good food is accepted, then it is our duty also to consider that man does not live on food alone: we have also to create what I have referred to as the "Social capital" which will enable our majority to lead and increasingly productive and satisfying life in rural comminities. There is nothing unreal or intengible about this dimension. It calls for nothing less than the technical modernisation of rural society.

Taking the example of dairying, consider the fact that one third of our Districts are potential areas for efficient milk production. This means that a modernising dairy industry, based on organisation owned and controlled by milk producers, implies nothing less than the buildup of institutions which can reach into the heart of even the smallest villages in one third of the country.

Consider what this means in a village where the majority of its people own a milch animal, when they find what there is now an organisation which enables them to employ a literate man to manage their business, that this organisation really does pay them the fair and declared price for

...10/-.page.

their milk and even that the same organisation can enable them to employx technical people who will really work for them to help them improve their milk production : veterinary doctors, green fodder speciallsts etc. At the same time, they find that, if they wish to market more milk this way, they can also get their processing plant expanded, they can hire people who will work to evolve and market products which give them a better return on their milk.

What does it do to their lives? They find that they are all" economic equals" that they can each take their turn regardless of caste when they line up to sell their milk and that milks of the same quality fetch the same price, that milk has an "objective value". They find that the remote and perhaps "citified" sciences can help them to use such very partical technologies as artificial insemina--tion to improve their milk production. Thus, technical modernisation enters into their lives via the new institutional structures which I mentioned earlier.

The industrial dimension which I have mentioned are also essential to this technical modernisation. The producers' processing plants become focal points for modern rural industries with which the producers identify, such as cattle feed plants, small scale industries making milk testing equipment, containers for semen for artificial insemination etc. Thus, on the one hand, agricultural production becomes more viable through the modest and practical application of modern technology and at the same time more" industrial" jobs are created, both directly in the producers own organisations and also in the burgeoning industrial infra-structure.

Moreover, once a given group of milk producers has an institution capable of making, say milk powder-then it is only natural for the producers to ask why they cannot process and market, say their paddy in the same way. They find that the by-products of a modern rice mill can be used efficiently by their cattle feed plant. Perhaps also they find that their milk powder and their cereals can be combined into whole some milk beverages, the marketing of which gives them a better return on both their milk and their cereals (and which, I may add, certainly gives consumers of such beverages better value than they now get from such products).

.... 11/-.page.

Thus, relatively simple programme for improving milk production, intergrated with the provision of the necessary processing and marketing facilities, can become a spring board for the technical modernisation of the vast rural areas involved. Milk producers find that modern technologies can help them and that they can obtain the services of technical and managerial people to enable them to apply these modern technologies to an increasing range of their agricultural produce. Moreover the industrial infrastructure which supports this modernisation provides an increasingly wide range of jobs within the region. Thus dairy development can set in motion the " technical modernisation" of our rural areas, making life for our rual majority more productive and more satisfying without the excessive urbanisation which has engulfed the West and which we must avoid.

5. The Social Dimension :

I have tried to show how technical modernisation can be the "means" for improving the lives of our rural majority but it is of course, certainly not the "end". Such modernisation is theoretically neutral in its social content. It is up to us to see that, its impacts on our people's lives are socially desirable. We have already found that the institutional structure, if properly built, can provide its rural participants (in our case, milk producers) with * organisations wherein the socially dis-advantaged people get a fire deal. Each partici-pant finds that he can live up to sell milk, without any particular caste or community taking precedence-and that this institution can be the means of achieving other kinds of change in all walks of life.

*an experience which shows them how they can set up----

The milk producers' society, for example, can accumulate funds for the village of build a road which connects it to the route followed by the milk truck. It can help fund the building of a primary school, a domestic water supply or even a clinic or library.

These can be said to be social extensions of the techno-economics of a modernising agricultural industry. Such extensions are, however, much wider in their implication : for example, if a po or producer observes that you get a better calf if you give better food to a pregnant cow even though she is dry, then that producer soon extends this experience to the idea that, if a human mother gets better food, she produce a healthier baby.

..12/-.page.

If a veterinary doctor can use modern medicines to cure milch animals, than it is even more logical to seek ways whereby doctors for humans can use modern medicines to keep our infants healthy. If artificial insemination demonst-rates that the reproductive process can be controlled so as to produce healthy calves when desired, it becomes more logical that human conception could be controlled when desired.

In other words, " technical modernisation" does not proceed in isolation. In fact, it cannot proceed if it is confined to technical factors. It can proceed only as what we can call a process of " social modernitation" also proceeds, where by rural people find that they can increasingly command modern science and technology to achieve their social objectives.

6. Conclusion :

I will conclude with a short summary.

I have tried to show briefly what I believe to be the larger dimensions of our dairy development. I started by pointing out that, to achieve this kind of change an appropriate institutional structure has to be built up, which is owned and controlled by the producers concerned and is sensitive to their needs. This institutional structure can identify and effectuate the techno-economic changes which must be made, in order to move from a low-productivity high margin traditional dairy structure to a modernising one which enable milk producers, processing and marketing to become increasingly compelitive & efficient. This of increasing the dairy sub-sector's productivity leads to a rational build up of the industrial infrastructure, including not only processing and marketing facilities for milk and milk products, but also the industrial units required to produce the equipment and technical inputs of a modernising dairy industry.

I want on to outline how this process of modernisation really implies the beginning of the technical modernisation of our vast milkshed areas-and that this modernisation is larger than one might think in two ways; namely that although it may start through dairy development by handling milk and milk products, it can and should increasingly embrace/ This process of modernisation cannot merely demonstrate to producers the application of such techniques as artificial insemination, improved animal feeding etc.

/ the major crops of the producers concerned.

....13/-.page.

On the contrary, it inevitably shows the producers that they can use modern science and technology to achieve the larger objectives of their lives.

Thus, I concluded that the ultimate end of such develop-mental programmes is not the more or less mechnical modernisation of the production of a give fo-od, such as milk, but it is rather the beginning of the process where by our rural majority can get command over their future and build themselves a richer and more satisfying community.

These are the dimensions of dairy development, I believe, which our first Prime Minister saw when he came to open the first dairy at Anand. He was accompanied by his daughter, our present Prime Minister- and I believe that she remembers it too, because she also has been insisting that we should multiply the Anand Pattern, in order to involve the people of all our milksheds of their own development.

And, as I said when I started this lecture, this is what Shri Lal Bahadur Shastri saw, when he stayed at the village of Ajarpura. These are the dimensions of the job which the country is trying to achieve and I am happy to be able to take this fitting opportunity to record here Shri Lal Bahadur Shastri's role in helping us to initiate this programme of development within our rural society.

++++++++
++++++++
++++++++
++++++++

/fo&ah/sns/bpt/500/
date: 16-1-1978.

DEV 1 4

Surveys
December (8), 1978
(ANAND)

COOPERATIVE DAIRYING AND THE PROFILES OF SOCIAL CHANGE IN I N D I A *

BY

A. H.SOMJEE AND GETTA SOMJEE
(Simon Fraser University)

The cooperative dairy movement in India has induced changes, social as well as economic, which have gone far beyond the expectations of men who pioneered it. Among the various districts of India, the people of Kaira district, for example, where the cooperative dairying has been in existence for more than a quarter of a century, have experienced far-reaching changes as a result of their exposure to the norms of cooperative economic enterprise, organization, and technology provided by the well-known milk cooperative, namely the Amul Dairy. In this paper we shall identify some of these changes under two broad categories, specific and general. So far as the specific changes are concerned, we shall support our presentation by means of case-studies of three rural communities. The three rural communities, which were exposed to the milk coops, were specifically surveyed by us for the purposes of this paper. The model that we have used in order to interpret our data, by means of a qualitative analysis, can be referred to as a constraint catalyst model.

Cooperative dairying in the district, even after its acceptance,[1] as the most effective means of organising and marketing of milk and milk products, had to work within the framework of certain constraints imposed by the rural economy and the social organization in general. Such constraints did not question the feasibility of the cooperative enterprise as such. On the contrary, after an initial resistance, the people of the district took it for granted as the most effective approach to the milk producing the marketing. Nevertheless, the constraints on cooperative dairying were imposed by the very nature of the milk economy. Being a

---

* We are grateful to the ARDA for their travel grant, transportation facilities and hospitality for doing field-work for this paper. We are also grateful to the general manager and the staff of Amul Dairy for their help in collecting data.

1. Here we shall not go into the question of the resistance of co-op. dairying shown either by the bureaucrats, interested politicians, and/ or the vested interests but only examine some of the constraints arising from the nature of the economy and the traditional society.

sub-economy, the production and sale of milk was subject to certain limitations imposed by the total economy. Added to these were the constraints imposed by the hierarchical nature of the traditional Indian Social organization. Despite such constraints, as we shall presently see, the cooperative dairying in the district acted as a powerful catalytic agent stimulating and inducing far-reaching changes in the social, economic and political fields.

For the different social groups within the society the milk economy, as a sub-system within total agricultural economy, became either an auxiliary, intermediate or subsistence economy. Let us explain each of these in some detail.

In his socio-economic survey of a village called Valasan in Kaira District Professor RK Amin reported that in 1958-59, the net income from the sale of milk was nearly one-half of the total agricultural income[2]. In the 1970s, however, it would be extremely unlikely that a village in the district would earn half of its total income from the sale of milk. In fact the three case-studies undertaken reveal the following proportion of income from the sale of milk :Asodar(33 p.c.):Ode (10 p.c.), Khadgodhara (25 p.c.). The relatively higher rate of investment in agriculture, increasing preference for cash crops such as tobacco and cotton, and above all the new and improved methods of cultivation have made the persistence of Valasan phenomenon extremely unlikely. In most villages of the district, therefore, the income from the sale of milk constituted for the bulk of the farmers an auxiliary income.

Even as an auxiliary economy the production of milk underwent a change with the gradual increase in the economic resources of the average farmer. The farmers who in the past had heavily depended on the sale of milk showed a marked preference for diversifying their investment between additional buffaloes and land. So far as the upper castes within the Hindu social organization are concerned their preference for land was unmistakable. Such social groups also possessed resources to be able to get greater yield from land. Lower down the social scale, economic considerations often got mixed with status considerations resulting again

---

2. See in this connection RK Amin, Valasan (Vidyanagar, Sardar Vallabhbhai Vidyapeeth, 1964). P.26.

in preference for land. Within the different socio economic groups one could even identify the optimum milk producing capacity. Sucha phenomenon, which was a product of a mixture of economic as well as status considerations, necessarily constrained milk economy to an auxiliary position. While the bulk of farmers supplemented their agricultural income by means of the sale of milk, and even welcomed the year round income which it brought, the more prosperous ones took more and more to agriculture.

The desire for social mobility on the part of the milk producing group compelled them to treat milk economy also as an intermediate economy. The two of the major milk-producing castes in the district were the Kshatriyas and the venkars (ex-untouchables). While the possession of buffaloes gave steady income, it, however, did not add much to one's social standing or the sense of security. Consequently, the Kshatriyas in search of higher social recognition, after a quantum of investment in buffaloes, gradually shifted their investment to land.

The case of the Venkars was, however, different. In an economic sense they were an upwardly mobile caste. They worked very hard and ploughed their savings back into the building up of their capital resources. In the traditional rural settings of India they displayed the Weberian "protestant ethic" at its best. In the bulk of the villages in the district, the Venkars were the mainstay of the milk producing peasantry.

For the average Venkar his economic standing was way ahead of his social position, as an ex-untouchable, within the social heirarchy. Obsessed with the need for social mobility the Venkars put an enormous emphasis on education and urban employment for their children. Within the urban mass the Venkars could function, to a great extent, without the disadvantages of their sodal origin. Consequently, the Venkar families continually sent their young men to the urban centres for employment. In the absence of their young man the old Venkar families often switched their investment from buffaloes to land. The possession of additional land enhance the Venkar prestige not only amongst their own kinsmen but also in the village as a whole. Furthermore, the ownership of land gave them the hope that their children, after a spell of work in the cities, would eventually return to the village and look after the land.

For the average venkar, therefore, the income from milk become an instrument of economic development and social mobility which, after a point, within his own scheme of things, became secondary. In that sense the Venkars also treated the milk economy as an intermediate economy in their own social and economic mobility.

Finally, the segment of rural community which tends to treat the milk economy as a means of partial or total subsistence. In the bulk of villages in the district they constitute nearly 15 to 20 percent of the total population. Such a segment consists of the seasonally employed labourers, widows without relatives or resources, etc. They also possess, in some cases, small pieces of land. Whenever, the village coops. came out with a programme of making loans for the purchase of buffalces available, this group made the maximum use of it. There were a few defaulters in the repayment of the loans but they were mostly from the higher income groups.

Since this group depended for its subsistence on the income received from the sale of milk it could increase its resources only through the mechanism of loans. So far as the milk coops were concerned each case of its inability to recover the amount of loan potentially threatened it with the lowering of its audit rating by the head quarters at Anand. Consequently the village milk coop often tried to play safe by not activating the lean mechanism itself. The milk coop thus could not always reach, with the best of intentions, the segement of village social which needed its help the most.

Despite such constraints, largely imposed by the nature of the milk economy, on the one hand, and the social character of the milk producers, on the other, the cooperative dairying in rural India was able to trigger off changes in different areas of society, economy, and polity. The three case-studies undertaken by us revealed the emergence of :
i. rational economic perceptions and priorities; ii. the ethnic reshuffles; and iii. the managerial shift. We shall examine each of these in some details. And then go on to analysing. iv. certain general aspects of social change which were common to the bulk of rural communities in the district as a result of their exposure to cooperative dairying.

i. Rational Economic Perceptions and Priorities : ASODAR

In one of his perceptive papers Professor Raymond Firth, the wellknown anthropologist, had argued that in smaller units of operation farmers are often able to make rational economic decisions. In his words:

> "..... In the micreeconomic sphere peasants are well aware of the possibilities of rational economic actions and make strong endeavours to better their economic position." [3]

This observations was borne out by our case-study of a village called Asodar, especially with reference to the working of its milk coop. Situated approximately twenty miles from the dairy headquarters at Anand, the village had a population of 5,000 and was located in a relatively less prosperous sub-district of Kaira.

The establishment of popular institutions in rural India stimulated among the people the desire to participate across the social and economic divisions. Initially social groups which could muster large numerical support from among their own ranks started entering public institutions and controlling them. Their participation drives were motivated by the considerations of power and status. To this, however, there was one exception, namely, the milk cooperative society. The public participation within it reflected a concern for certain rational economic priorities. That is to say that the high tide of popular participation had voluntarily refrained itself from dislodging those people from office who had proven their ability to run an economic institution like the milk coop. most efficiently and in a business like fashion.

Right from the early year of the establishment of the milk cooperative the villagers made a decision not to drag their conflicts based on ethnic cleavages into the cooperative body. Such a resolve remained unabrogated.

The milk coop as an organization, the people of Asodar maintained, was a means of their livelihood and economic development and therefore, ought to be managed by those who were likely to run it with utmost efficiency. By contrast the same people did not feel the need to conform

---

3. See in this connection "Social Structure and Peasant Economy: The Influence of Social Structure on Peasant Economy" by Raymond Firth in Subsistence Agriculture and Economic Development, edited by Clifton R.Wharton (Chicago, Aldine Publishing Co.,1969),P.35.

to such a self-imposed discripline when the panchayat (local council) was in question. The panchayat thus became an area for the expression of one's power and status drives where as the milk cooperative remained an organization for getting the best returns, in tangible economic terms, for one's milk output.

The village had acquired its milk coop during a drive for increased membership launched by the Amul Dairy. After completing the first decade of its most successful existence, the top leadership of the Dairy penetrated deeper into the district to increase its membership. Asodar was one of the village on which it had concentrated its efforts.

The village came to have its milk coop in 1956 amidst its own hopes and fears. Earlier it had tried its hand at various kinds of coops but each time the intense ethnic conflicts between the two agriculturist castes in the area, namely, the patidars and the Kshatriyas-- over land, social status, and political power--- had wrecked the possibility of a cooperative venture. Such conflicts were also reflected in all other public bodies including the panchayat.

Of the two contending groups, the Patidars and the Kshatryiyas, the latter, being economically more backward, had a greater need for the milk cooperative. At the time when the milk coop came into existence, a young Kshatriya leadership which happened to be in power in the panchayat, was able to work out an operative relationship with an equally young Patidar leadership across the ethnic divide. Together they prepared the groundwork for a milk coop. in the village.

When the milk coop finally came to existence, the large number of Kshatriya shareholders could have elected officebearers for it from among their own ranks but they did not. Instead they elected merchant caste men, generally known for their business acumen, or Brahmins or even Patidars. During each milk coop election for electing office-bearers, over a period of nearly two decades, the average Kshatriya showed a preference for someone who would enhance his economic interests rather than a more kinsman.

Functionally speaking, the two public bodies, the panchayat and the milk coop, catered to two different needs of the village. Unlike the bureaucrativcally well-oilded machine of the milk co-op, where very little

was left to human chance the panchayat had remained a scene of sponteneity and confusion. The only discipline the members of the panchayat could exercise was the self-discipline and that was hard to come by. As opposed to the could staristics and the ledger-bond world of the milk coop, the members of the panchayat were often engaged in guesswork while trying to solve their problems.

Despite this the panchayat complemented the rigidly structured situation of the milk coop. The members of the panchayat seemed aware of the wide range of freedoms which the institution had conferred upon them together with a relatively higher formal status and substantive village wide powers vis-a-vis the milk coop. While the milk coop imposed a rigid discipline in the name of economic interests of its shareholders, the panchayat became an arena for the search of human dignity and equality often mistaken for squabbles.

What was extraordinary in all this, however, was the distinction which the same group of villagers had learnt to make whenever they switched from one institution to another. Temporally speaking, the milk coop had come after the panchayat nevertheless, it had succeeded in driving home the substantive difference between the two public institutions.

While the villagers needed the milk coop for their livelihood, they also needed the panchayat as an instrument of ethnic reshuffle. The middle and the lower ethnic groups in the village had often used the panchayat for their own social mobility.

The Kshatriyas, despite their search for a higher status than what was accorded to them by the social hierarchy of the village, had learnt not to use the representative mechanism of the milk coop for their social objectives. As a group they used the panchayat for their status drives but refrained from using the milk coop for a similar purpose.

Over the years the milk coop had succeeded inculcating the need to make a rational distinction between the two different public bodies. What is more it had also succeeded in inculcating a healthy respect for a public insituation as such. After the establishment of the milk coop in the village the earlier tendency of indiscriminately running down the public institution had tapered off. There was now praise for the work which the milk coop had done without attempts at harsh comparative

judments as to the performance of other public bodies.

Over the years the average shareholder in the village had perceived the need to run the milk coop by means of a different set of rules then these he had adopted in other institutions. Such a separation, within a common democratic process of the community, was indeed a grate step forward. It, as a matter of fact, reflected the growing maturity of judgement on the part of the villagers based on a rational estimate of priorities for the working of different public institutions. In all this the milk coop itself, as a public body, had played no small part in making a rational discriminatior of priorities possible.

ii. The Ethnic Reshuffles : ODE

Within the hierarchically ordered social organization of India any ethnic struggle for human dignity and social equality is bound to involve, sooner or later, all major public institutions of the community including the milk coop. Such a social involvement of the milk coop, if it takes place at a certain level of economic development, then the chances are that it will serve a twin purpose of continued economic advancement and of ethnic reshuffle, the latter especially through the respresentative mechanism of the milk coop. In this section, we shall identify the dual purpose served by the milk coop. of an economically prosperious rural community called Ode.

Ode is one of the most prosperous communities in the district and because of its population of fifteen thousand, it is now classed as a small town. Its income from the sale of milk constitutes a small proportion of its total agricultural income especially from cash crops such as tobacco and cotton.

While the villages surrounding Ode had their own milk coop. the rich farmers within the community had successfully resisted the idea of having one in Ode itself. Whenever the small landowners and the seasonally employed labourers approached the leaders with a request for a milk coop, they were invariably told that such an organization would not be in the interest of the poor. The rich farmers brought milk from the milk producers, made ghee (purified butter) for themselves, and gave away the chhas (butter milk) free of charge to the poor. The rich therefore claimed that to many a poor villagers the chhas was a great

source of nourishment.

The chhas argument was essentially phoney. At the root of it there was the unwillingness on the part of the rich farmers to have a milk supply of their own. What they wanted, on the other hand, was a regular as well as inexpensive supply of milk from those who maintained buffaloes. Consequently, the milk producers of Ode had to wait for a number of years till the ethnic cleavages among the rich farmers themselves led to the establishment of a milk coop.

The inauguration of the milk coop in Ode came at the climax of a prolonged ethnic struggle for power and status between the two segments of an agriculturist caste, namely, the Patels. The Patels of Ode were divided into the Patidars (the local residents), and the Kunbis (the migrant labourers who came to work on the farms of the Patidars a long time ago). For a number of years the patidars considered the Kunbis as their social inferiers. On their part the Kunbis resented the status of inferiority. In 1951 when the electoral roll for the first general election in India was under preparation, the Kunbis petitioned for the dropping of the name "KUNBI" in front of their home. Like the Patidars they too wanted to be known as Patels.

By early 1960s, the bulk of the Kunbis, who worked as tenants on the farms of the Patidars, came to acquire very fertile tracts of Patidar land under the Land Tenancy Act. Nearly half of the Patidar land came into the possession of the Kunbis. While the Patidars could not check the growth of Kunbi's economic power they still hoped to keep the Kunbis out of the public institutions of Ode. It was against such a background that the Kunbis decided to listen to the clamour of the milk producers for a milk coop.

Earlier the Patidars had consistently opposed the idea of a milk coop for Ode. The Kunbis, on the other hand, having made up their minds in favour of a milk coop, proceeded first of all to deposit the required amount with the dairy headquarters in Anand and then began enlisting shareholders. Most of the shareholders were either Kunbis or from the poorer segments of the community. Even the subsequent expansion of shareholders was confined to these two segments only. The bulk of the milk producers were grateful to the kunbis for their efforts. So far as the Kunbis were concerned, for the first time they came to enjoy formal status in a

public institution. Although the Patidars deeply resented the Kunbi entry into the public life of Ode, their own political skill failed to match with that of the Kunbis.

The Kunbis of Ode did a remarkable job of managing the milk coop. Not only did the milk coop bring economic prosperity to the milk producers, the very cooperative endeavour was extended to the establishment of a cooperative bank and a cooperative consumer store in Ode.

So far, as a public institution, the milk coop had facilitated an ethnic reshuffle between the Kunbis and the Patidars. In that respect the milk coop had become an instrument of social justice at the hands of a socially oppressed group. Nevertheless, its real test as an instrument of social justice would come when ethnic groups socially lower than the Kunbis begin to seek its instrumentality for their social mobility and participation.

iii. The Managerial Shift: Khadgodhara.

For centuries women have looked after milch cows and buffaloes but their role as the principal manager of the milk economy has reraly been recognised, let alone their managerial input into the economy as such. In the words of Professor Raymond Firth:

> "Most anthropologists and economists have probably consistently under rated the role of women as manageress in the economic process." 4

In a rural community called Khadgodhara the situation was different. So very far-reaching was the extent of social change in it, as a result of the impact of cooperative dairying, that it was not difficult for its women folk to acquire the formal recognition for themselves as the principal managers of its milk economy. Right from the chair person and the members of the executive committee of the milk coop down to the average shareholder, the women of the village looked after its entire milk economy. The village as we shall see, was neither typical nor indicative of a new trend, What it represented, on the other hand, was a situation wherein the social change and its implications were assimilated by the community enough to allow its women folk to man the organization of the milk coop.

Situated nearly fifty miles from Anand, in a relatively backward sub-district of Kaira, the village Khadgodhara gave the impression of being in the middle of nowhere. The main road leading to it, relatively speaking, was in poor shape. Unlike most other villages in the district, Khadgodhara did not even have electricity. Furthermore, because of its past notoreity as an outlaw village, it was even considered to be a penal colony for the district administrators. From such a position, Khadgdhara, a village of thirteen hundred population had indeed come a long way. The establishment of a milk coop there, less than a decade ago, had transformed the economic and social life of the community.

The circumstances which brought into existence a milk coop, entirely managed by women, were most unusual. Before Khagodhara came to have its own milk coop another village, at a distance of a mile, had one. While the womenfolk of Khadgodhara took the milk to the neighbouring village, twice a day, they did not particularly relish the idea of walking such a long distance. Moreover, as nonshareholders the milk producers of Khadgodhara did not get their share of the annual bonus. Instead the additional amount of bonus was distributed among the share holders of the village where the milk coop was located. Consequently, in 1964 the villagers approached the officials of the Amul Dairy with a plea for a milk coop, but were unable to convince them.

Meanwhile the village witnessed the emergence of a dynamic women leader. A Brahmin widow was first of all elected to the panchayat as a member and later on, in 1967, as its chairperson. For a backward village such as Khadgodhara this was indeed an important event. During the following year she happened to attend a seminar where some top officials of Amul Dairy spoke on the need of improve economic conditions of the rural masses by means of cooperative dairying. That gave the lady her much awaited opportunity. After the seminar she approached the same officials at the Amul Dairy. Their response to her plea for a milk coop was that since Khadgodhara was so close to another village with a milk coop what might justify an additional coop is a noval idea on which it could be based. Looking at the enthusiastic lady their suggestion was that if the women of Khadgodhara undertook to look after the milk coop then the allocation of a coop there might be justified.

The lady was simply thrilled at the prospect of enlisting women to look after the coop. The women of the village were equally enthusiastic and in the shortest possible time they got a milk coop going. What started as a gimmick, of women looking after a public institution, caught on. The women who ultimately manned the organization became deeply involved in what they were doing. In a sense they found an institutional expression and formal recognition for an activity that they were engaged in all along.

Such an extra ordinary managerial shift in a sector of rural economy would not have been possible but for the availability of leader-ship and the assimilation of the norms of social equality by the community.

The ethnic composition of the buffalo owning group also made such a response all the more easier. Of all the social groups in the village the Venkars (ex-untouchable) and the Muslims possessed relatively larger number of buffaloes. The milk coop in the neighbouring village despite directive from Amul, had not encouraged Venkar women, because of their low social origin, to bring their milk. And so far as the Muslim women were concerned, their husbands, with their traditional protective attitude to women, were the least keen on their womenfolk going out to another village twice a day. Consequently, when the campaign for enrolling women as share holders in Khadgodhara was afoot, the Venkar and Muslim women were the first to enlist. The Brahmin lady in fact succeeded in enrolling one women per household, a feat which literally astounded the organizers at Amul. To-day all the shareholders along with their organizers are women.

The entry of women into the formal positions - as shareholders, members of the executive, and chairman - has had far-reaching consequences on their outlook. They now face the males in their business as well as social dealings more confidently than before. As could be expected, they are less inhibited while dealing with men from outside than inside the village.

The women organizers of the milk coop are to doubt aware of the fact that they have intruded into a domain traditionally reserved for men. In the past women looked after the cattle, milkshed them, and took the milk for sale wherever necessary. But it was always the men who occupied formal positions in organizations connected with the purchase and sale of milk. Now that the women were in, at least in one such organization, they had to give a good account of themselves. They were therefore, forced to

display a level of efficiency and organization which they thought will meet with the approval of the scrutinizing men of the village, the district, and the Amul Dairy. The standard of their performance was thus expected to be higher than what was required elsewhere.

The village Khadgodhara was mercifully free from the intense ethnic conflicts normally to be found in this district between the two agriculturist castes, namely the Patidars and the Kshatriyas. Consequently, the organizers of the milk coop could draw support from all the social groups of the village. With the establishment of the milk coop there came into existence a cross-ethnic managerial group of women which at once represented the whole village. Unlike the Panchayat, the organizers of the milk coop represented a cohesive group.

The women and more particularly those who were involved in the day to day running of the milk coop, well across the ethnic divide, gave a secondary position to their personal ambition or status. Having boldly entered man's traditional domain of formal organization and status, it was far too important for them to succeed in what they had undertaken to do collectively. Consequently, their obsession with success shielded them from potential divisiveness.

Between the men and women of the village, because of the milk coop, no conflict situation had arisen. The fact that the women had constituted its organizing personnel had helped the village to have its own coop. The men did not grudge it. Nevertheless, the real test of their attitude to women would have come in a mixed situation where men and women worked side by side. An organization entirely run by the women fell short of arousing the jealousy and suspicion of men as to what the women were upto. So far as the women were concerned their organizational activity, despite its formal aspects, was the natural extension of a managerial activity they were already engaged in at a non-institutional level.

Some General Aspects of Social Change.

This then brings us to the identification of certaingeneral aspects of social change which were noticeable in the bulk of rural communities in the district as a result of their exposure to cooperative dairying some of them are as follows:

1.The milk coop as a conjoint economic activity across the ethni divide.

Within the traditional rural economy no specific economic activity can be considered to be jointly under taken by the community across its social barriers. That is true even of the traditional Indian Jajmani system whereby the various castes take on their basic occupational functions of mutual exchange of goods and services. While the Jajmani system doubtlessly complemented the mutual need for goods and services, its benefits to the different social groups were grossly dispropertionate. As a system, it was heavily weighted in favour of castes which produced agricultural products with an unfair deal for those who had nothing but their services to offer. Moreover, within it as a rule the lower the social stratum offering, its services, the greater was the element of injustice done to it.

Cooperative dairying, on the other hand, cut across such an arrangement of disproportionate benefits by ironing out the economic disadvantages imposed by the social hierachy, particularly on the lower and the ex-untouchable castes. Regardless of their social background the milk coop treated all its shareholders as equals. It thus proved to be a great social equalizer and also a maker of a new community of the milk producers.

The greatest beneficiary of the new economic community were the ex-untouchables who constituted roughly about ten percent of the population. Since milk is an edible substance, in the traditional society the ex-untouchables could not even dream of selling it for common consumption. Once the social barrier to their milk producing activity was removed by the milk coop, the ex-untouchables became the largest producers of milk in the district. Apart from the great increase in their income, through the sale of milk, the opening up of an opportunity to contribute to any thing that was ediable for the community as a whole was psychologically most reassuring to them. The milk coop, in other words, helped them to circumvent the disadvantages imposed by the hierarchical social organization. Once the response of the entire community to the milk coopwas secured, the expansion of its organization became the responsibility of all the shareholders alike. The milk coop thus forged fresh bonds in the community by giving it a new economic identity and purpose.

2.The Potential for the economic development of the poor through the milk coop.

In a sense the milk coop seemed to favour those milk producers who could minimise their own consumption and exchange their product for cash. As a rule the poor kept very little milk for their personal consumption and took the rest to the coop. The rich, on the other hand, did not think in terms of saving milk. Their domestic milk consumption was heavily weighted in favour of the use of ghee (purified butter). Consequently, they had proportionately much less milk to sell to the milk coop. Such a situation often aroused the jealousy of the rich. On their part, therefore, they often floated the rumour that the children of the poor, due to the deprivation of milk, had very weak eyesights and were forced to put on glasses at an early age.

The segments of society which benefitted the most as a result of the milk coop were mostly from the lower half of the social organization. Among them the propensity to produce and sell more milk, buy buffaloes or land with the help of one's savings, was about the highest. Some of the social groups which, barely two decades ago, were classed as economically backward, had registered marked increased not only in their income but also in their ability to invest in capital resources.

The income from sale of milk, psychologically speaking, came to be looked upon in a number of cases, as an extra income, and therefore not meant from subsistence as such. It was often considered to be meant for something which would give or enhance one's economic security. So strong was the desire to save, despite the lack of capacity in all cases, that in certain villages the milk coops were requested to make weekly instead of daily payments for milk.

Moreover, the income from milk was considered to have been earned by the women, who in most cases looked after the buffaloes and took the milk to the coop. Men, therefore, often conceded the claim of the women that it was their income and in the spending of which they should have the maximum say.

Despite pressures of subsistence spending women often saved pin money which gradually accumulated into a sizable sum for the higher items such as the purchase of additional buffalo land, repairs of dwelling,

ornaments expenses for wedding, etc.

Over the years there have been significant increases in the number of buffaloes owned by the social groups that were not considered to be economically well off. Not only that such groups also used their income from milk in order to increase their land holdings. For instance the Venkars of the village Asodar made use of their income from milk to increase their land holdings as well as the number of buffaloes. In 1918, 30 families of Venkars had 100 acres of land. Whereas in 1974, 60 families of Venkars have 250 acres of land. Nearly 25 acres of the additional land was acquired in the last ten years by increasing their milk output among other sources of income.

Again, the Kshatriyas of Asodar made use of their extra income from milk to pay off their loans for requiring land under the Land Tenancy Act. While the older generation of Kshatriyas put a great emphasis on land acquisition, the younger Kshatriyas used their savings from milk income to buy land as well as buffaloes.

3.The Milk Coop as an Outpost of Rationalities within the Rural Community.

The milk coop was a symbol of what all could be achieved by means of organization, technology and social concern. The various facets activity - insistences on the quality of milk, the way it was collected, tested and transported, regular cash payments, specially prepared cattle feed, unfailing visits by the vets, artificial insemination, etc., - had made the farmers marvel, right down the line, at the organization, technology, and the trained low-keyed personnel who regularly visited them. Through its diverse and yet interconnected activity, the milk coop had exposed the farmers to a highly technologized problem - resolution culture.

Consequently, in their search for solutions, in other compartments of life, the farmers had often used the expression, "something like the Dairy" or "similar to what the dairy does". For the farmers therefore the milk coop had become the symbol of the modern technological culture which could be put to use in solving other problems.

The farmers often expressed their amazement at the details of milk procurement, processing, and marketing worked out by the dairy organization at Anand. They often contrasted its efficiency with the frustratingly cumbersome bureaucratic machinery of the government.

To be exposed to various aspects of dairying meant an insight into a series of intricate disciplines that were implicit in its working. Such an exposure had oriented the average farmer, particularly in related areas, to view his own problems much move rationally.

The exposure of the farmers to the concept of an organization based on the principle of cooperation also had a salutory effect. Apart from the fact that every one in the organization was assured of his own fair share, some farmers even underlined the concept of organization for dealing with extra-ordinary situations such as famines or epidemics. In their view the villages which were exposed to the working of milk coops were likely to organize themselves more efficiently in order to face extra ordinary situations.

4.Gradual Assimilation of the Importance of Time:

Work in the traditional society, by and large, is guided by the cycles of seasons and agricultural crops. When the work is there in the fields what matters is its disposal. The notion of appartioning specific time to specific work was not required by most forms of economic activity which the farmers undertook. Even in the case of employment of agricultural labour, wages were mostly paid either on the basis of day's work or the disposal of the specific work.

So far as the concept of hourly time is concerned, it was imposed in recent years by the state transport buses and in certain cases by the bidi (cigarette) factories. But in the agricultural activity proper, the notion of hourly time had not made any inroads. With the coming of milk coop, however, and the need to deposit milk twice a day at specific times, made the average milk producers aware of the importance of hourly time. Through the milk coop the concept of bourly time became a matter of universal concern for the entire village.

For the farmers who lived on distant farms, an interpretation of time, without a watch particularly during winter months, often became very deceptive. Consequently, a number of milk coops used powerful motor driven sirens to inform such farmers of the milk delivery times. A number of milk coops also had their own buildings with clock towers. These were most helpful to the villagers.

The slow in road of the hourly time into the life of an average villager is bound to have far-reaching repercusions of his economic activity. It remains to be seen whether the wages of agricultural labour come to be determined, in practice, on the basis of hourly time or not. Such a possibility in the near future cannot be ruled out.

5.The Changing Health Perception:

The perception of health care of the milk producers, wherever the milk coop was located, rapidly changed. Having been exposed to the entire range of activity connected with cattle health the farmers have increasingly demanded more extension health-services for themselves. Their changing perception of healthcare had often made them extremely critical of what was available, in terms of health service, in district clinics. In one village the farmers stated that their animals were better off than themselves.

Such changes in health perceptions of the villagers, as a result of their exposure to the range of health care activity undertaken by the milk coop, particularly in the field of artificial insemination of the buffaloes, had its own effect on their attitude to family planning. While it is difficult to establish a causal relationship between the widespread practice of the artificial insemination and the attitude to family planning, what became evident, nevertheless, was the changing view of the farmer that the size and the health of his family was a matter of manipulation rather than something on which one had no control.

The three rural communities surveyed by us, for the purposes of case studies, revealed an extraordinary interest in family planning. Over and above, the milk coop, the district and state employees, together with the scheme of awarding prizes such as watches, transistors, and bicycles for taking individuals to the clinics had given a momentum to the family planning activity. In the rural communities the people of all the social segments expressed the view that family planning was most desirable for one's standard of living as well-being. Since it was considered to be most desirable the male leaders upto the age group of mid-forties uniformally claimed that they had got themselves operated. While their claims were no doubt exaggarated what was nevertheless evident was the emerging social norm, to which such leaders felt the need to conform, if not in deed, in words at least. Given the time such a norm was bound to

translate itself into practice.

The various regional clinics reported an uneven family planning activity in the three communities. Between November and February, the winter months more people visited the clinics than during the rest of the year. In certain year (1971), intense campaign resulted in a five-fold increase in the incidence of family planning and then it tapered off. Between 1966 and 1971, sterilizations were mostly confined to women but in 1971 males visited clinics in big numbers and out numbered women.

Socially speaking, the ethnic groups which stood in an emulative relationship with each other also followed each other to the clinics. For instance, the agriculturist caste of Patidars was followed by the Kshatriyas to the clinics.

The same was true of the members of the extended families, one always led the others to the clinics. The groups at the top and bottom of the social hierachy, namely the Brahmins and the Vankars, despite relatively high education, did not show much interest in going to the clinic. Finally wherever the religious minorities such as the Muslims and Christians were not densely located in a community, they tended to conform to the general pattern of visit to the clinic.

These than are some of the profiles of social change in rural India as brought about, directly or indirectly, independently or in conjuction with other forces, by cooperative dairying. The social change, as is evident was preceeded by a structural change. The establishment of the institution of milk coop in various rural communities acted as a catalytic agent, despite a number of constraints, bringing about a number of changes in the social and economic life of the district.

The foregoing pages merely indicate the beginning of work in the area of social change that has been undertaken by us. We hope to follow this up by means of a more intensive and regorous analysis of the various facets of social change that is taking place in a traditional society in transition.

fo&ah:np:vnu:300:27.7.78

DEV 1.5

Sumnya
December 18, 1978
(ANAND)

IDENTIFYING THE CRITICAL COMPONENTS IN A SUCCESSFUL CO-OPERATIVE:

By: Dr. A.A. Chothani
Director (FO&AH)
NDDB, Anand.

A bright spot on Co-operatives in India is the successful experience of the Kaira District Co-operative Milk Producers' Union Ltd. (AMUL). This Cooperative, centres on the formation and operation of hundreds of village milk producers' cooperatives (a typical member owns two buffaloes and tills less than one hectacre). These village level cooperatives are welded together into a cooperative Union (AMUL) which owns and operates its own facilities for milk and feed processing, collection and distribution and provides its members a full range of technical services. The Union is responsible for setting milk prices and never refuses to buy milk in any quantity from its members. Besides being assured of a round the year market for their milk, members are provided with a package of services which include routine veterinary health, breeding coverage, concentrate feed, fodder seeds and training.

The village cooperatives are practising democracy by living it. There is no favour shown to any individual or community nor a sense of caste, creed or status prevails. These cooperatives besides collecting milk, paying twice a day to the members supplies on the basis of quantity and quality and having an intensive system to infuse technical inputs in collaboration with the union also serve as the retail outlets for the sale of balanced cattle feed and fodder seeds. Using a part of their annual net returns, these societies contribute substantially towards the community development work in the villages. This includes the building of schools, libraries, health centres, youth activities, roads, water supplies, cattle development and cooperative extension.

The Union, which now is a cohesive apex of some 2,40,000 farmers from 837 villages of Kaira, has a Board of Directors elected on a complete democratic pattern from these villages. This farmers' elected Board governs the Union whereas the market oriented management of hired professionals operate it. Since beginning the Union realized that viability of a milk producer will depend on the difference between his cost of milk production and what he realizes out of it. Consequently, the market was created at his door where he pours his milk, gets paid twice a day and is free from his worries. The on-ward transportation of milk is the responsibility of the Union. Side by side AMUL has always tried to upgrade its services with a package of inputs. ?

Following the spectacular success of AMUL, other unions in different districts of Gujarat were organized on similar lines, and have amalgamated themselves into a State level federation. Not only this, the experience has encouraged the Government of India and other states to foster the establishment of similar programmes in other parts of the country.

contd....2/-

Therefore in dentifying the critical components of a successful ccoperative, we may take AMUL as a standard and analyse it. The various components which can be listed, therefore may be:

1. The system itself.
2. The Bye-laws.
3. The organization of village cooperatives.
4. Pricing, Payment & Procurement.
5. Responsibilities of the Chairman, Members of the Managing Committee and staff of the village cooperatives.
6. Responsibilities of the Union.
7. The leadership.
8. Timely solution of the problems arising in the process.

We will now enumerate the various parts:

It must have been clear from the foregoing lines that the whole system is a two-tier one. The base level unit being the village cooperatives and the apex unit being the district union. This has enabled the farmers to derive the direct benefit from their own organisation and at the same time put before their federated body, their demands, suggestions and grievances, if any. The unique postal system operated by the milk transport trucks has bought the farmers members in contact with their federated body twice a day. This two-way twice-a-day system has helped to bring the scientific ideas organised/adopted by the union to the individual members at the quickest possible time. On the other hand any suggestion/requirement/complaint from the farmer's side can be brought to the notice of the Union within almost no time.

Had there been any third agency in between these two there was possibility of getting lost somewhere or the Union getting the distorted/delayed information. If we analyse it in the light of economics, the entire overheads on any intermediary organization have been wiped off leave alone any Operational losses- and thereby the Union has been able to pay better prices to its member-producers. If we analyse it in the light of the healthiness of the set-up, any possible chances of creeping by politics, vested interests, etc. are minimised.

2. THE BYE-LAWS:

We will discuss the broad outlines of the Bye-laws of both the primary societies and the Union. Of course, to discuss the complete Bye-laws, may not be possible within this short span of time, we will take up the salient features of these Bye-laws. However, it will be worthwhile to indicate that as both of these units (Society & Union, are an out and out democratic set-up and hence it has been framed in such a manner that every member has a say in it and that the policies are framed not on the vindication of a single individual but on the common agreement of all the participating members.

.....3/-

A: Bye-laws of Primary Societies:

We can deal this under the following sub-heads:-

i. Object:

The objectives of a society are mainly:

a. To provide facilities for more profitable marketing of the commodity (milk in this case) through the Union.

b. To take necessary steps to increase (milk) production per unit (animal) and to give necessary guidance and assistance to its members to achieve this.

c. To undertake necessary (dairy) extension activities and sale of nutritional inputs (cattle feed & fodder production in this case).

It may be apparant by looking into the objectives that the society not only strives to provide ready market for the commodity (milk) produced in the village but also helps in maintaining the inflow of it by providing necessary technical and extension inputs to enhance the production. It is worth while to note that these aspects are a part of the obligation on the society and that any member has got his right to demand for these/or question any deviations from these objectives.

ii. Funds.

Various sources have been indicated for raising funds for the society but two clauses are of significance:

a. Amount on fixed or current deposits may be received at such a rate of interest and for such a period as may be decided by the managing committee, but the rate of the interest on this fixed and current deposits should be one percent less than the rate on such deposits offered by the banks.

b. The total loans and deposits should not exceed ten times the total amount of share capital, accumulated reserve fund and building fund minus the accumulated losses. This means that the liability of the society has been limited.

iii. Membership.

Although there are some pre-requisites which must be observed while enrolling the members in a society, there is no restriction of any race, caste, creed, social status etc. The important points that are worth mentioning are:

....4/-

a. Any man who wants to be a member of the society should have a cow/ buffaloe (raw material production unit, with him.

b. He has to supply milk (commodity) for atleast 100 days or 500 litres to make his right of vote effective and make himself eligible to contest the election for the Managing Committee of the society.

c. The liability of a member does not exceed any unpaid amount on shares subscribed by him. This means that by paying only the share money he can be rest assured of the benefits rendered by the Society and at the same time his liability towards the financial position of the society is always limited.

d. No member shall have claim or any interest on the shares of the society exceeding 1/5th of the paid up share capital or Rs. 1,000/- whichever is less. This means that the share is always open to the majority of the people and participation from all sectors is ensured, and,

e. A member is entitled to receive back his share/s after completion of two years of his possession of the share/s but before making the claim the person shall have to give a three months prior notice to the society. However, the total amount of such refundable share capital shall not exceed 1/10th of the total paid up share capital as shown at the close of the previous cooperative year (30th June).

iv. General Meeting:

The General Meeting of the society has the supreme powers subject to the state cooperative Act, rules & bye-laws. The general meeting will be held every year within a period of three months after the end of the cooperative year. Among its numerous functions, the important ones can be emmerated as below:-

a. To receive the Managing Committee report on the working of the society for the preceeding year together with the statements of trading account, profit & loss account and Balance sheet for the year and to sanction the appropriation and distribution of profit.

b. To appoint the internal auditor and to sanction the budget for the next year.

c. To fix the limits of funds to be raised as permissible under the Bye-laws.

d. To make necessary amendments, additions, alterations etc. in the Bye-laws and sub-laws of the society.

.....5/-

c. In a general meeting, 2/5th of the total members or 20 whichever is less will form a quorum. If, on the day of the general meeting there is no quorum, the meeting shall be held on another day and time notified accordingly. If on the day to which the meeting is adjourned, no quorum is obtained after waiting for 30 minutes, the business shall be disposed off without a quorum. At all the general meetings, the president shall be elected by the members present. No resolution passed in the annual general meeting can be put for a change or cancellation within six months from the date of resolution but if 2/3rd of the members of the Managing Committee are of the opinion that a particular resolution is required to be changed or altered in the interest of the society, and if the District Registrar agrees to such change, the Managing Committee may call a special general meeting within six months for carrying out such work.

A special general meeting of the members may be convened at any time by a majority of the managing committee, or on receipt of a requisition from 1/5th or 50 members, or from the directions of the federal body. The Chairman of the society is duty bound to call such meetings within a month of the receipt of such requisition.

Each members has one vote irrespective of the number of shares held by him.

In case of any tie or any matter, the president has a casting vote, over and above his general vote.

v. Managing Committee.

The elected managing committee of the society consists of nine persons of which 1/3rd retire every year in rotation. In any meeting presence of more than half of the members of committee forms a quorum. The eligibility of a member to become or to continue as a managing committee member has been elaborated in the Bye-laws. Some of the salient points are:

a. He should not have direct or indirect interest in the property purchased or sold by the society or any other dealings with the society.

b. He should not be a paid employee of this or any other society and should not be related to any of the paid employee of the society.

c. He should not have performed duty as a paid employee for the last three cooperative years.

d. He or any member of his joint family should not have any business of the kind carried by the society nor has any partnership interest in such concerns.

....6/-

Any member who absents himself for three consecutive times in the meeting, will cease to be the member of the managing committee. The committee may meet as many times as is deemed fit, but atleast once in a month. The Chairman of the committee is supposed to preside over the meeting but in his absence the members elect the Chairman for the day among themselves.

The decision taken by the Managing Committee is always by a vote of majority. No member shall remain present and vote on any matter in which he has personal interest but if any decision is to be taken against him, he shall be given full opportunity to explain.

One of the duties of the Managing Committee enumerates that besides making arrangements for raising funds and framing administrative rules for the society, it has to take steps to increase milk (commodity, production and conduct necessary animal husbandry activities as per the directions of the Union. This means that the society is a dynamic one and strives for better production, hence better-returns, to its members.

For the day to day working of the society, the Managing Committee appoints the necessary staff. The staff thus appointed are all paid employees and have to furnish a surety (tangible). The surety papers are kept in the district cooperative bank to avoid any chance of tampering or loss.

The Secretary is duty bound to ensure payment to the members of the society twice a day, i.e. after every twelve hours from thetime of his supply of milk.

Thus we can see that the whole set-up is a democratic one and the participant farmers are the sole masters of their organization.

In the case of any serious mismanagement on the part of the managing committee/society, the Registrar can suspend the managing committee and appoint an administrator.

vi. Distribution of Profit:

The gross profit for the year is declared in the annual general meeting and the following deductions are made:-

a. Interest.

b. Working expenses of the society.

c. Losses.

d. Depreciations.

e. Bad debts sanctioned by the Managing Committee and approved by the District Registrar.

f. Contribution, if any.

The balance is taken as net profit and is distributed as under:-

a. 25% reserve fund.

b. Dividend @ 9% of the share holders on the value of their paid-up share capital.

c. 2½% cooperative Education Fund.

.....7/-

The remaining balance is distributed as follows:-

a. 65% as bonus to the members in accordance with the price of milk supplied by them to the society.

b. 10% cattle development fund.

c. 10% charity fund.

d. 10% staff bonus.

e. 5% cooperative propaganda fund.

vii. Miscellaneous:

a. To maintain uniformity, accounts and records are maintained in the forms prescribed by the Registrar, Cooperative societies.

b. The Chairman, or one or more members of the managing committee and the Secretary, as may be authorised by the managing committee have the powers jointly to execute documents, grant receipts, sign share certificates, make transactions with Bank and sign cash book of the society.

c. Any member of the society may inspect any of the registers or records during office hours so far as it relates to his own business.

d. Each member is given a pass book and all his transactions with the society are recorded in it.

e. The election for the managing committee is by secret ballot system.

B: Bye laws of the Union:

Among the objectives of the Bye-laws of the Union, the following may be listed as important ones:-

a. Purchase, pool, process, manufacture & distribute commodities from the member of the affiliated societies.

b. Purchase, process, manufacture, distribute and sell cattle feed.

c. Give veterinary and artificial insemination services and provide medicines etc.

d. Render technical, financial, administrative and other necessary helps to other similar schemes.

This makes clear that the Union has three main broad objectives:-

a. To develop the marketing facilities for its members.

b. To plough back the inputs to its members to maintain a profitable relation between his investments and recovery and at the same time maintain a continuous flow of the raw materials.

c. To create conditions and render help to let grow similar organizations and there by proving a faith in co-existence.

....3/-

ii. The funds for the union can be raised by almost similar sources as that enumerated for the societies except that it can obtain grants, aids and subsidies from the Government and International Agencies and foreign collaborations.

The membership of the union is open to all the registered societies engaged in similar work (Milk Producers' Cooperative Society) and no society once affiliated can be disaffiliated with out the sanction of the Registrar, unless it is dissolved.

The face value of each share is Rs. 100/- and the liability of a member does not exceed the amount, if any unpaid on shares subscribed.

iii. The supreme authority vests with the General Meeting, which is convened every year. The Chairman of the societies affiliated as on 31st March of the previous year shall be invited and may cast their votes. A special General meeting can be called by the majority of the Union or by the Registrar cooperatives or a federal body to which the Union is affiliated. In meetings, a member can bring forward any proposal by a majority of 2/3rd of those present for any matter not specified in the agenda, provided he does not propose the expulsion of another member or amendment in the Bye-laws. Only the General Body has the powers to remove the General Manager.

The Board of Directors consists of 15 members as indicated below:-

a. 12 elected represenatives of affiliated societies.

b. One nominee of the Registrar of Cooperative Societies.

c. One to be co-opted by the Board of Directors from experts in the business.

The Board of Directors elect a Chairman and a Vice Chairman. No member can be present or vote on any matter in which he has personal interest. This Board in the Interest of the smooth execution of the working of the Union, may appoint two sub-committees. Although the Board appoints the General Manager, fixes his remuneration etc. The General Manager is delegated with the powers to appoint other staff fix their remuneration and terminate them.

It is worth while to note that although the Board of Directors appoints the General Managers, he can be removed by the General Body only, and thus giving him a free administrative limits to act his best. Also the other professionals are being appointed by the General Manager, the administrative decorum is always maintained. However, it does not mean that the Managing Committee is not aware of the day to day developments, rather for any policy decision, the powers are with it always.

iv. Distribution of Profit:

The gross profit made is declared in the Annual General Meeting and the following deductions are made:-

a) Interest; b, Working expenses; c) Losses
d) Depreciations; e) Land assessment, cess and rent;
f) Contribution to staff provident fund.

...9/-

g. Gratuity for staff.

h. Staff bonus not exceeding three months salary and

i. Income tax and its provision.

The net profit thus remaining is distributed as follows:-

a. 25% to reserve fund.

b. To educational fund to the state cooperative union as required under the State Cooperative Societies' Act.

c. 9% of the value of the paid up share capital as dividend to members.

The remaining money is then distributed as under:-

a. Upto 80% towards bonus to the members in proportion to commodity sold through union.

b. 10% towards charity funds.

c. 2% towards dividend equalization fund.

d. 5 % towards cooperative propaganda fund.

e. 3% for research work in allied industry.

Any change in the distribution of profits is to be made with the prior approval of the Registrar of Cooperative Societies.

3. ORGANISING OF VILLAGE COOPERATIVES:

We definitely do not want to enumerate the various proceedures involved in the process nor we want to list the various extension methods used to organize a village society. Mahatma Gandhi once said " That Co-operative societies should be the link binding parties together like a silver wire that holds the pearls together. They can function like a water tight compartment of the ocean liner and be the shock absorber in the economic organization. The secret of a successful cooperative effort is that members must be honest and know the great merits of cooperation and it must have a definite progressive goal".

This means that while organising the village cooperatives, we have to see that it has participation from all sections in the village and that they all strive, together to progress towards a better social and economical goal. Experience says that no sooner one is economically better off, he may prove a socially better-off man.

This means that the organization of the cooperatives should primarily aim at the economic viability of the set-up and the participant. The base level unit should have always a profit showing balance sheet. To ensure this we may enlist few essentials:-

...10/-

a. The society should be in a position to procure enough raw meterial (here-milk) to earn a gross income of 7 to 8% of its volume of business.

b. The society should ensure that there is no spoilage/wastage while collecting as well as despatching the milk to the union.

c. The society should not spend more than 2.5 to 3% of its income on the staff, etc.

Some of the important points for consideration in organizing & efficient running of a society may be put as:-

a. Before starting the society proper spade work must be done in the villages to create confidence in the farmers/producers.

b. When a society is organised in a particular village, the members of the Managing Committee should be elected in such a manner, that each locality/community of the village is represented. This would avoid any party politics and the whole marketable surplus milk of the village can be brought to the society.

c. Farmers of the village should have full reliance on the staff. The selection of these persons should be decided by the Managing Committee and not by those who organise the societies.

d. Training of the staff of the society should be undertaken before starting a new society. Hence, no haste should be done in organizing and starting.

e. After the start of the society regular supervision should be done every 4th and 5th day for atleast four months.

f. Managing Committee members should meet every month, where profit & loss account, breakage of equipments, sourage of milk miscellaneous expenditure are produced by the Secretary and proper resolution is passed and recorded. For any loss, the person responsible should be punished accordingly.

4. PRICING, PAYMENT & PROCUREMENT:

As already indicated the Union of the cooperative societies always looks that the price a producer gets from the sale of his commodity should be greater than what he invests on its production. Apparantly, this means that the price paid to the producer suppliers should always be remunerative and if this is not done, the commodity may find a better avenue for disposal.

Hence, the union formulates to pay on quality. As the commodity in this case is mostly buffalo milk, the fat is taken as the basis for payment. Better the milk, higher the fat, higher the price. As time advanced, the need for formulating some different methods for the purchase of cow milk was envolved, and the two axis pricing payment on fat as well as on solids-not-fat in milk was introduced.

....11/-

The aim is not to discuss the proceedure adopted and other aspects in this, but to bring out that the changing times have not stopped the union in adopting the best possible pricing structure to ensure remunerative payment to its members. Round the year the producer is paid a provisional price which is subject to increase at the end of the year, not any decrease. The provisional price structure always gives a margin on the price paid to the producer during the year and the actual price worked out at the end of the year.

Apart from the price fixation, the frequency and the mode of payment tell a lot on the smooth running/success of a cooperative. The payment to the farmer members must be directly linked with his daily needs. Although in a village farmers have limited wants, the need of ready cash to meet these is of paramount importance. Therefore, the payment has been scheduled for every twelve hours. A farmer brings his milk to the society in the morning and gets paid in the evening and for evening gets paid the next morning. This has enabled him not to stretch his hands before anyone for meeting his day to day needs. One can find invariably, a man getting paid for his milk and buying the cattle feed from a part of the same money. This twice-a-day payment is ensured by the village level society.

The society in turn gets paid every ten days. All transaction from/to the society and the Union is through the cooperative Bank. This bulk payment has ensured the society to buy the other inputs for its members (e.g. cattle feed) on a credit basis from the Union. It pays back to the union from its bill for the sale of commodity (milk).

Each member has been provided with a 'Pass Book' where in entries are made, each time he delivers, milk, for his quantity, butter fat content and the value thereof. Every month at the end, the total milk delivered by the individual member and the value thereof, is recorded for the calculation of the bonus he will earn at the end of the year.

The procurement of raw material is also a planned operation. It is designed to ensure quick reception of the raw material at the processing dock. Milk being such a highly perishable commodity the effectivaness of the AMUL will be revealed from the fact that the annual sourage of milk is 3% only. This becomes more significant when we analyze it in the light of the vast difference in the ambient temperature of summer & winter and the area covered for procurement (it covers almost 2,500 sq. miles). Needless to emphasize that any lapse on the procurement arrangements, especially in milk, is going to result in huge spoilage and thereby reflecting bad on the balance sheet. The organization which has to give the economic uplift to its members, cannot afford to go negative.

In AMUL today, each society has a pre-determined time to have its milk lifted by the Union & each route has a pre-fixed time to reach at the dock. Anyone causing a lapse has to pay for the spoilage. The members obligation is only to deliver milk at time declared by the society.

.....12/-

5. RESPONSIBILITIES OF CHAIRMAN MEMBERS OF THE MANAGING COMMITTEE AND STAFF OF A VILLAGE CO-OPERATIVE SOCIETY:

Besides those indicated in the Bye-laws there are certain points to be considered by these persons for ensuring smooth day to day working. Enumerated below are some of the points in respect of a milk cooperative society. With slight amendments, these can be incorporated for any cooperative:-

i) The building for milk Collection Centre rented or owned by the society in the village should be at a place where the milk truck can easily passthrough and every producer can have easy access.

ii) The milk collection centre should be kept clean.

iii) Work should be distributed among the employees and ensured by the Managing Committee that it is properly followed.

iv) Chairman or one of the Managing Committee members must be present at the time of collection to solve the problems that may come up.

v) Arrangements should be made to deliver the milk at the time laid-down by the plant/Union.

vi) The appliances used for milk collection and testing should be cleaned properly.

vii) Before starting the milk collection, the empty milk cans should be cleaned.

viii) Testing Machine should be cleaned after each operation. It should be numbered inside.

ix) The name of the society should be clearly written on the milk cans.

x) If the society is sending cow's, Milk it must be clearly indicated on the cans and should be entered in the truck-sheet.

xi) After the milk collection isover, the total quantity of milk received from the individual suppliers should immediately be worked out and checked.

xii) A routine should be formed to take the signature of the milk collector and tester in the milk pruchase register.

xiii) The pooled sample, for finding out the general test of society's milk, should be collected from all the cans on equal proportion after mixing thoroughly.

xiv) Tester of the society should not be allowed to see the number of milk bottles of indivisual milk supplier at the time of milk collection.

xv) There should be a separate test register and the tester should sign it every day after completion of testing.

xvi. After completion of testing, the tests should be entered in the Purchase register from the test register. The amount to be paid to the individual producers, should be entered, after verification from the payment table.

xvii) After the testing is over, the Secretary should do random testing every day.

xviii) Arrangements of retesting of milk of the producers should be done after the testing is complete.

xix) Arrangements should be made to train all the employees in milk testing work

xx) Dairy Register should be written regularly from the daily weight and fat slip.

xxi) Routine should be made to write all the registers regularly.

xxii) On each account register, page numbers should be given & each page should be stamped. The Chairman should sign on the last page.

xxiii) File should be maintained subjectwise.

xxiv) Vouchers and correspondence file should be maintained properly.

xxv) Routine should be made to write separate letters for each subject.

xxvi) All the employees should know the use of truck sheet.

xxvii) When can or acid jar is no received, it should be noted in the truck-sheet and a separate letter should be written to the plant/union immediately.

xxviii) Request for retesting of milk and information for non-receipt of any material from the plant should be written in the remarks column of the truck-sheet.

xxix) Only Secretary should sign the truck-sheet. If secretary is absent the next man should be assignedwith the job.

xxx) The Secretary, Milk Collector, Tester etc. should fully understand the information given in the fat and weight slips received from the plant/union.

xxxi) Outgoing letters should be signed by the Chairman or Secretary of the society only.

xxxii) All employees of the society should know how to work out costlier or cheaper purchase. It should be recorded every day in the purchase register.

xxxiii) Staff should know to findout SNF, besides knowing general test of the pooled milk.

xxxiv) If there is problem of SNF, the lactometer should be used at the time of milk collection.

xxxvi) Staff should know the reasons for sourage and low SNF . If there is a problem of sourage of milk, arrangements should be made to accept the milk only after smelling the individual milk.

xxxvi) The employees should know how to calculate the kilofat and the rate.

xxxvii) New stock of acid and alcohol should be tested for traces of any fat to avoid loss to the society.-

xxxviii) Whenever new stock of butyrometers and pipettes is received it should be checked for their variations.

xxxiv) Testingequipments such aspipettes, butyrometers etc. should preferably be procured pruchased from the plant or from the Union.

xxxx) Secretary should always check the milk bills received from the plant. Discrepancy, if any should be intimated to plant/union.

xxxxi) A package of policy for the money to be brought from the Bank should be obtained.

xxxxii) Money for more than sixtimes the payment should not be kept in hand by the Secretary.

xxxxiii) Arrangement should be made for giving Cooperative Training to the Secretary of the Society.

xxxxiv) The behaviour of the society employees should be courteous and they should be fair in their dealings.

xxxxv) Chairman or Managing Committee members should seek guidance fromthe staff engaged in the work of procurement.

6. RESPONSINILITIES OF UNION

From the very begining, the Union, realised that it is the small and marginal farmers who are increasingly dependent on milk production to maximise their meagre resources. The privilege of milk collection and marketing must, side by side, carry the obligation of helping these producers to increase their milk yield. The viability of a milk producer depends on the difference between his cost of milk production and what he can get from his milk.

While the prices realised from milk & milk products are governed by the National Market, the Producer's income can directly be enhanced by helping increase his milk yield through the optimal technical input mix which will substantially reduce his cost of milk production. With these aims in mind the Union has the following responsibilities to shoulder:-

A. Collection and Marketing of Milk:

Of course, the Union collects milk from feeding sources (societies) and sells it in the consumer market, but its marketing is incomplete unless the producer gets back the better value of his produce. Therefore, it is binding on the Union to take care of all necessary steps so that the producers are given a remunerative cash price of milk round the year.

B. Handling and Processing:

Economy of the two tier cooperative system is the biggest factor to be always kept in view. To handle and process the milk economically is the greatest responsibility of the Union and unless this economy is maintained, it may not be able to give better prices & the input mix to its members.

C. Supply of optimal Technical Inputs:

In the course of building a sound of milk procurement system, the Union comesto processthe input giving machinery as a complementary system, which isthe cheapest and most effective way of providing technical inputs and services to the producers. The package of technical inputs includes Artificial breeding, Animal Health Cover, Balanced Cattle Feed, Green Fodder Development and Extension services.

Artificial breeding of milch animals is the most important single service-cum-technical input and is directly related with the annual rate of calving and milk production. The attainment of success in artificial breeding programme depends largely on how sound and vigilantly, the optimum results could be shown to the producers. To provide the best sperm to produce better calves, the selection of the best sire is a single factor to be kept in mind. The Union ensures how best the semen collection, itsprocessing, packing, distribution and insemination can be done and the results obtained.

The production efficiency brought about by better breeding can best be maintained by giving a better health coverage to the animals. The Union therefore provides Veterinary medicines and treatment to the animals at the producers door.

The increase in milk production is likely to go down if the animals are left to graze or are fed unscientifically. To replace the uneconomic traditional feeds, the Union has manufacturedand marketed a balanced cattle feed which is palatable, nutritious and economical. Green fodder development cannot be separated from the input-mix programme. A nutritious protein rich and succulent green fodder is not only the cheapest source of feed nutrients, but also substantially enhances the milk yield,

reducing the cost of milk production and increasing thereby the net returns from milk. The union arranges to demonstrate the economic impact of feeding green fodders like Lucerne, Berseem etc. to convince the Producers for its adoption at the optimum level.

To carry out such responsibilities, the best extension activities become a part and parcel of this system. The village societies can serve as best centres for initiating new services, ideas and extension programmes. The important media used are mass campaigns like the milk yield competitions, A.I. Campaigns, Incentives, Newsletters and other publications, mobile exhibitions, Film shows, Visits and interviews.

D. Ploughing back the Returns:

To complete the cycle, the returns of the economical milk marketing are ploughed back in the form of bonus or other kinds to the producers for giving them a feeling of belonging to the Union.

7. LEADERSHIP:

Napolean once said that he would prefer to have an army of rats with a leader as a lion rather than an army of lions with a rat as a leader.

Definitely he meant some one who can have the individuality and make his presence felt among others as well as under:

A. He should have faith in the movement:

Unless a man has faith a firm faith in what he is going to lead for, he will always have a half-hearted participation to the organization. The role of this aquality is most important at the initial stages when the whole affair is in a fluid state.

A man having no faith, will most probably like to compromise his efforts for some other activity, than this.

B. He should have the dynamism to impress his ideas on others in the interest of the organization:

By this, we mean that he should have clear understanding of what is to be done about the organization and that he should have the dynamism to communicate the ideas to others in the interest of the organization. Over and above, he should be able to impress upon others not to have undesirable interference in the day to day working of the organization. The cooperatives may be known and heard to many persons, but the leader should be in a position to infuse the real essence of cooperatives in others especially those who are going to have ctive participation.

C. He should preferably be a man free from foul politics and in case he is in politics, he should not bring it in to the organization:-

It is a decided fact that once foul politics is brought in to any organization, the seed of destroying it has been sown. The leader therefore refrains from such activity. Even though he may be an active politician, he should maintain a clear demarcation between politics and cooperatives. A cooperative is supposed to be a democratic set up in the right sense of the term and the participants (mostly farmers) are very suceptible to the term' politics. Hence, the leader should have the quality to get the cooperative run in the true sense rather than create a sense of insecurity by infusing foul politics.

D. He should resist himself from interfering in the day to day administration of the organization:

The leader of the cooperative (especially the apex body-Union) should have the quality to take right type of work from the professionals and technocrates employed for this purpose rather than meddle the whole affair by intervening into the management unnecessarily. In doing so, it is necessary that he should have an open mind and heart to allow the right man to operate freely so long as it is in the interests of the organization. This never means that he should be unaware of the development going on in his organization.

E. He should have no personal interest in the business:

To have interest in the organization and to have personal interest in the business of the organization are definitely two different things. By personal interest, we mean the vested interest. Corruption, it is said, always percolates from top to bottom it never ascends from bottom to top. Co-operatives especially in India are a weapon of the multitude to use against their low social and economic standards and not a weapon of the mighty. The leader should be clear in his mind to use it as a weapon for those whom he represents and not as a sword for them.

F. He should have Dedication:

A cooperative formation has no short-cut because it is a change against the resistance of the people till they understand. We have not been able to develop any magic wand by which we can hasten the process. Therefore, the leader of a cooperative organization should have dedication towards it.

G. He should be able to bring results up to the hopes of his followers:

No one accepts a man as a leader unlesshe proves himself by bringing out the results in a way anticipated by the majority of the people, A cooperative organisation is a cohesive structure of masses varying in their ways of life but aiming at a common point their social and economical upliftment. A leader should therefore prove that he has been able to lead them to achieve these. Apparantly enough, only words are not going to convince the masses to accept anyone as a leader unlesshe has been able to deliver the goods.

8. PROBLEMS AND THEIR TIMELY SOLUTION:

An organization which hasthe participation of persons from different starata is liable to develop problems. An efficient cooperative organization should, therefore, act in all readiness to solve these problems lest they may not become complicated.

The problems may arise at various levels. In a village primary society, problems may come from the participants almost every time they transact with it. In a milk cooperative society, it is twice a day and may be regarding testing results, payments etc. It is essential that these problems are looked into by the Managing Committee of the society at the spur of the moment and solutions sought.

The primary milk Producers' cooperative society transacts its business through the village level workers where knowledge of the subject is comparatively low in the initial stages. It is at this juncture where a continuous guidance, persuasion and checking is required. To achieve this, the union employs a team of supervisors.

It is evident that most of the farmers supplying milk in the society belong to low income group and look forward to get the payments regularly. If the society is unable to cope up with this aspect, it may create a misunderstanding among the farmers and they may loose confidence in their own organization. They society should in association with the union, therefore, ensure a regular payment.

The basis of payment for the milk supplied by the farmers is quality. The Managing committee should therefore ensure that person (s) engaged in this work neither favour nor deprive any one he should be impartial.

The society may face other problems like competition in milk trade, low fat %, low SNF %, spoilage of milk, loss due to costlier purchase of milk at the society. If not checked in time, these problems may effect the business of the society and it may incure loss. Whenever, such problems arise, the reasons for these should be detected immediately. Solutions should be worked out, keeping in mind the conditions prevailing in a particular area. Apart from these, the Managing Committee may hold regular meetings to review the work of the society and problems faced. Managing committee and supervisors should ensure that they meet regularly.

The society may also come across problems arising at the Union level such as shortage in weighment of milk, transporation of milk transportation on head load, irregularities in payments, supply of chemicals, equipments, balanced feed etc.

An efficient Cooperative Organization takes the problems, whether at society or at Union level, as its own and tries to find out solutions/ jointly at the appropriate time.

Our experience tells that where these components were missing the whole organization has met two ends:

1. If at all it has existed it has almost remained dormant.
2. Otherwise, it has vanished in due course of time.

Any organization, the moment it loses its dynamism, fails to deliver the results and ultimately vanishes.

We have come across cooperative organizations which advocate and practice a three tier system. Here the base level unit is a village cooperative but it is affiliated to an intermediary, Taluka level union, which in turn is federated to the district level union. This system has been followed for a long time but has failed to bring the desired result. The farmers, who are the real participants could never know whom to look forward for help in need. The federation in this case was never represented by the farmers directly, but from the members of the Board of Directors of the Taluka level union. Any discussion and decision on the policy laid down or to be adopted always remained between these two units and the real participant was always in dark. Further more, no scientific programme could be launched as the 'UNION' and the FEDERATION could never decide whose responsibility it was.

Similarly Bye-laws at various places have no provisio for an employed staff for the society. It was always a case in these sort of cooperatives that they had an elected cashier and an elected Secretary. Both these persons were supposed to work on an honorary basis. Naturally, only two types of people could come forward for these jobs : Either those who had their vested interests and wanted to use it as an instrument to achieve it or those who had nothing to do with it and came forward only because they selected the simplest men in the village who can furtherbe used as tools by the others to fulfill their interests.

Usually, we have come across with societies, where bringing of money from the bank was the responsibility of the cashier and the expenditure was done by the Secretary. This always resulted in misappropriation of accounts and in turn quarrel between these two persons, the system advocated and adopted by a model cooperative dairy has a provision of getting staff as an employee of the society against a tangible surety and that this staff is supposed to handle cash and maintain the books of accounts and records.

These cooperatives also failed to bring any result where the apex body had no representation on the farmers. There are some apex body of the village cooperatives where the District Magistrate/Collector has been made the Chairman and the political leaders as the Board of Directors.

Evidently no one ever know what really the problem was and at the same time all the suggestions floated by the Chairman, was acceptable to all. It was therefore in short, working in autocracy than in democracy.

Though there are cooperative dairy societies which give payments to the members after a gap of a week, ten days or fifteen days, the accumulation of accounts in an organization which is handled by the villagers always resulted in some faults mischiefs with the accounts and ultimately the society failed because of dissatisfaction among its participating members.

Last but not least almost all dairy cooperatives aimed to buy the milk from their membe s but only those succeeded which tried to increase the milk production in their areas of operation by floating a package of inputs. This is one single factor where the cooperatives could boast of differentiat-ing themselves from the various organizations engaged in dairying.

opt/pns
16-10-78

Insurance ?

DEV I 6

December 18, 1978
(ANAND)

DAIRY INDUSTRY - A LINK BETWEEN RURAL MILK PRODUCER AND URBAN CONSUMERS

Domestication of buffaloes, in India, for milk production (which is believed to have come much later than cows) was taken up some 4000 years ago. So milk and milch animals became an important part of the Indian way of life even before our written history began. However, dairying in India is entirely different from most of the countries. In countries where dairying is more modernised, the industry is often largely shaped by the end of its highly efficient milk producers to compete for consumers' food expenditure while also pursuing parity with industrial earnings whereas in India where the modernised dairy industry handles some 5% of the milk produced, the dairy sector as a whole is dominated by the fact that almost all households are avid milk consumers. The sector's structure is shaped mainly by the spectre of a demand for milk which uses with incomes, as the country modernises itself, and which confronts a milk supply based on production through millions of inefficient and totally unmodernised milch animals. But despite its unmodernised production base, dairying in India is a big purvasive business. The milk consuming population is over 500 millions. The bovine population is 228 millions. The average Indian milk producer probably supplies not more than two other households with milk.

An estimated 70% of India's human population depends on land. This population has naturally tended to concentrate where conditions are more favourable to man. With this human population comes also the bovine population. Every small farmer who can do so keeps a pair of bullocks - and every rural household keeps one or two milch animal.

This means that because the human population hastened to concentrate an area where the environment is most favourable to man, the bovine population is also most concentrated in these areas. The milk production in India can be summarised as follows:- Millions of farmers crowded into small holdings: little land for pastures or forage production: reliance on highly seasonal rains, often causing severe dry season, shortage of food stuff: milch animal largely self-selected by their ability to produce some milk: the ever increasing number on the land etc.

India's milk production continues to increase. (Of course more slowly than the human population). This increase must be mainly attributed to certain characteristics of demand for milk and milk products. Always a significant part of the Indian diet, urban consumption of milk and milk products is believed to have increased dramatically in our towns and cities during the century.

...2

This consumption makes the spatial distribution of India's urbanipopulation particularly important. We have already noted that rural population has tended to concetmrate in areas where agro-climatic conditions are most favourable to man and these rural concentrations are of course accompanied - by the growth of marketing centres: say one such centre with a population with 50 - 100,000 in a distribt having a rural population of 1.5 - 2.5 millions. In addition to these, marketing centres, over the centuries, the main ports of India, certain cities located of old for their defensibility implies of course Delhi, the country's centre of governance —have all grown faster than the population at large, with the result that by 1971 India had 9 cities with over one million population containing 25% of the country's 109.0 million urbanised population and of these some 20 million (18%) were believed to be living in the four cities of Bombay/Calcutta/Delhi and Madras.

The increasing pace of industrialisation and emphasis on export of manufactures has, particularly since India's independence in 1947, encouraged the growth of urban centres — and of the incomes earned by their inhabitants. The calculus involved is (to say at least) professionally tendentious — however, it can be estimated that per capita monthly expenditures on milk and milk products by those living in Bombay, Calcutta, Delhi and Madras rose from Rs.4.80 in 1961 to Rs.10.80 in 1971. The effect of these increases on urban demand for milk has been significant, for a 1% rise in urban incomes is estimated as causing a 1.5% rise in demand for milk products. Thus, even after taking the price rise into account, total effective urban demand for milk and milk products in our four major cities rose by an estimated 93% in 1961-71, whereas milk production rose by an estimated 21%.

Long ago a craft cum mercantile dairy sector arose which procured milk and milch animals from the rural producers, the animals to be sent to cities for in-city milk production.

The flux of transaction, movement of milk and milk products and milch animals mainly centred around the four big cities - Calcutta, Bombay, Delhi and Madras. Borrowed capital, hired stables and family labour were the inputs for the trade to begin with. The milch animals brought from the principal breeding areas became the production units of the industry. The rich dividends from high milk prices, use of best milch animals in the country, effective dairy herd management and cheap family labour provided the impetus for the growth of the trade within the city. The enterprenuers promptly responded to the financial incentives by expanding with increasing numbers of new animals, additional stables and hired labour.

....3

The cycle continued with every passing year and eventually the owners of city kept cattle gained almost a total monopoly in the city market. This movement of milk on four legs which started long ago and looked so insignificant became a signal source of perpetual genetic drain to such magnitude that it puzzled all the dairy planners.

The organised sector which initiated the procurement, transportation, processing and distribution of milk came as the first competitor to the trade. Simultaneously because of over crowded stables, unclean and unhealthy surroundings the load on the sewage and other public utility system, and the vehicular trafic the local Governments promulgated an ordinance to shift the milch herd from the main city to the suburbs. In some cases, it went to Government organised cattle colonies e.g. Aarey, Haringhatta, etc.

This continued shifting of cattle, besides creating the health hazards to the cities and maintaining a perpetual drain of the genetic potential (as seldom the animals once shifted to cities, come back and bore their progeny) also went on delinking the real producer from the consumers. We have instances where any white fluid was sold in the name of milk in these cities, leave aside the adulteration of milk. We also have come to know how artificial scalation of prices were made in case of milk and milk products. This detachment of a producer from the consumer was having a two pronged attack. The producer never know what is the real price of milk produced by him and the consumer never know what actually he is paying for or what actually he should pay for.

A number of methods were tried to over-come the situation. Government laws were enforced. But rarely did any of these produced the desired result. The customer and the producers were getting every day apart and apart. The dairy wizards of those days were a helpless spectators.

However, the problem seemed to have a solution when the Operation Flood - a grant scheme to kill the giant evil - was formulated. This scheme aimed at the problem in what looks to be the most appropriate aspect. It aimed at establishing a link between the producers and the consumers by providing a

....4

remunerative market at the place of production – say in form of a village cooperative society — collecting this pooled milk through an agency owned and operated by them and then meeting the demand of the consumers at a reasonable price.

It is expected that this process will help in establishing the desired relation between the producers and the consumers. As a matter of fact, it has already started giving the results which indicate that the calculations will come true.

Of course, there is a long way to go; and we must continue to try conclusions. But then, in a dynamic society, no industry which is involved in social and economical change ever reaches an ultimate finality. Thus our conclusion can be very modest: Dairying in India will grow taking together all the time both the producers and the consumers and that too maintaining the most harmoneous link between them.

****

fo&ah
sns
csk
300
181077

DEV 1.7

Shrinya
December 18, 1978
(ANAND)

BENEFITS OF MILK COOPERATIVES TO SMALL FARMERS, MARGINAL FARMERS AND THE LANDLESS IN GUJARAT.

D.S. Thakur
National Dairy Development Board, Anand

Dairying has a vast potential for raising the income of the small farmers, marginal farmers and landless labourers in rural areas through the establishment of milk cooperatives which are owned, operated and controlled by the milk producers themselves. Such milk cooperatives have been first conceived and initiated as early as in the year 1946-47 in Gujarat State on the now well known Anand Pattern of milk cooperatives having milk producers' cooperative societies in different villages and a district cooperative milk producers' union which owns a dairy, at the district level. These milk cooperatives are now widely spread in twelve of the nineteen districts of Gujarat and it is further planned to establish a dairy on the Anand Pattern in every district to cover all the villages under the fold of milk cooperatives in this State.

The present article is based on a recent study* of the milk cooperatives of Gujarat conducted at the instance of the Indian Council of Social Science Research. It shows the different services and facilities provided by the milk cooperatives to the farmers and examines the actual benefits accruing to the milk producers especially to the small and marginal farmers and the landless families from the milk cooperatives.

Development of the Milk Cooperatives

The first milk cooperative organised in Gujarat is said to be the Choryasi Taluka Cooperative Milk Marketing Society which was registered on December 21, 1939 in Surat District. It collected the surplus milk of the farmers in Choryasi Taluka and sold the same in raw form in Surat City. The real entry of Cooperatives in the milk industry of Gujarat however was made with the organization of the examplary Kaira District Cooperative Milk Producers' Union Ltd. Popularly known as Amul Dairy at Anand in 1946. Since then district after district has been following this pattern by organising more and more milk cooperatives.

---

* S.M.Patel, D.S.Thakur, M.K. Pandey: Impact of the Milk Cooperatives in Gujarat, Institute of Cooperative Management Ahmedabad, 1975.

The milk unions have made a remarkable progress right from the beginning and especially during the last few years. The working capital of the milk unions during the last seven years has increased by more than seven times. The share capital and reserve and other funds have increased by more than three times. Also, there has been a considerable progress so far as the organisation of milk societies in the villages, total membership, procurement of milk, sale of milk and milk products and total savings of the milk unions and societies are concerned. The number of milk societies as well as membership have almost doubled. The value of milk purchased by the milk unions has registered an increase of more than three times. The value of milk and milk products sold and the net savings of the milk unions show an increase of more than four times.

Provision of Technical Inputs and Services

The Anand Pattern of milk cooperatives practised throughout Gujarat consists of the two-tier structure of the village milk producers' cooperative societies at the village level and a district milk producers cooperative union at the district level. The milk societies in the villages collect surplus milk from the milk producers twice a day and also make payments for the same every 12 hours or as decided by the producers. The milk collected at each society is transported to the dairy by the private contractors engaged by the milk union. At the dairy, it is pasteurised and then sold as liquid milk as much as possible. The remaining quantity of milk is converted into milk products.

Besides milk collection and twice-a-day payment to the milk producers on the basis of quantity and quality (fat and solids not fat) of milk, the milk cooperatives also have an intensive system to provide all the essential technical inputs and services needed by the milk producers in the villages through the same machinery which is engaged for milk procurement. When a new milk society is started in any village, the milk union provides financial assistance mostly in the form of milk testing equipment and other necessities. To start with, a union

supervisor helps the new milk society for a few days to organise its day to day business. Thereafter, the union guides, supervises, rectifies and controls the activities of each milk society constantly so that they run efficiently and remain strong and viable. Besides, there is a continuous and concurrent audit of all the cooperatives on quarterly basis to ensure a clean milk business.

The milk union through each of the milk societies provides a number of technical inputs to the villagers for milk production enhancement. The most important of these are: artificial insemination services through use of semen from high pedigreed or proven sires, veterinary first aid treatment, weekly veterinary visits and round the clock emergency visits as a part of animal health cover service; routine extension work; supply of quality seeds and root slips for production of green fodder and supply of balanced cattle feed. All these services are provided on no profit no loss basis to the farmers in every village covered by the milk cooperatives.

Using a part of their annual savings, the milk cooperatives - unions as well as societies in collaboration - have built up an extensive system to provide various rural development services. They assist in cattle development, cooperative propaganda and education; establishment of schools, libraries, health centres, youth clubs, construction of roads and provision of water supplies and electric connections in the villages. The producers are paid dividend on their share. A part of the net savings is also used to pay a bonus to the producers in relation to the contribution they make towards the business of the society, bonus to the staff of the cooperatives and to build reserve funds to ensure the financial stability of the cooperatives. The reserve funds can be used partly for building up assets such as milk collection centres, telephone facilities, store room etc.; to help the cooperatives to function efficiently. The general pattern of use of the annual net savings of milk cooperatives for various welfare purposes is shown below:

Particulars	Per cent distribution at Union Level	Society Level
Reserve fund	25	25
Dividend on shares	9	9 (of the paid up share capital)
Education fund to the State Cooperative Union	As required under the State Cooperative Societies Act.	
The balance, after above deductions is distributed for the following purposes as under		
Bonus to the members	80	65
Charity fund*	10	10
Dividend equalisation fund	2	
Cooperative propaganda fund	5	5
Research work in dairy industry	3	
Cattle development fund		10
Bonus to the staff		10

* Charity fund can be used to give financial assistance for youth welfare, poor children, village roads, schools, hospitals, water tanks, street lights and various relief funds.

It can be seen from above as to how the milk cooperatives are stimulating many phases of the economic, educational and social development of villages which have been brought under the fold of these cooperatives. It is found that those benefited most from the services of milk cooperatives in the villages are the weaker sections who, if left to their own, would not have been able to take advantage of such facilities at all. Moreover, milk production is mainly an activity especially suited to the small and marginal farmers and the landless labourers because keeping milch animals is very labour intensive and therefore of less interest to those farmers who have sizeable land holdings.

Direct Economic Benefits

In order to analyse the impact of milk cooperatives on the economic and social conditions of villagers, the status of milk producers in the villages covered by the milk cooperatives (experiment) have been compared with the status of milk producers in the control villages selected for the study within the same districts. It is found that most of the milk producers in both type of villages keep generally one or two milch animals - preferably buffaloes. The buffaloes account for 86 and 69 per cent of total milk production in experiment and control villages respectively. The remaining quantity of milk is contributed by cows in general and even by goats, sheep and camels particularly in dry areas of the State. The goat, sheep and camel milk is used for domestic consumption. However, the proportion of wet animals possessed by different categories of milk producers including weaker sections as well as the milk production per animal are quite high and statistically significant in experiment as compared to control villages. Such differences are understandably due to the facilities provided by the milk cooperatives in the villages covered by them. It is found that the milk producers in the villages having milk cooperatives are producing on an average one litre of milk more per animal per day than their counterparts in the control villages.

Again, marketed surplus and consumption of milk which are primarily functions of total production of milk per family differ significantly in the experiment and control villages. It is observed that more than 70 per cent of milk production is being sold in the experiment as compared to only about 55 per cent of total milk production in control villages. The marketed surplus of milk as a proportion of total milk production is highest in case of small and marginal farmers and landless milk producers who sell as much as more than 72 to 80 per cent of their milk production to raise as much income from milk production as possible. The percentage of marketed surplus as a proportion of total milk production goes on decreasing considerably with the increase in the size of land holdings. The per capital consumption of milk and

milk products comes to 234 gm and 224 gm per day for the experiment and control villages respectively which are above the minimum requirement of 210 gm of milk per day per person. This shows the common belief that the creation of marketing facilities for milk derive the milk producers away from the normal consumption of milk is not true. The milk cooperatives have helped to raise milk production significantly thereby raising both marketed surplus and consumption of milk per family.

The milk cooperatives buy as much quantity of milk from the milk producers as they want to sell depending upon their marketable surplus and cash requirements. This has enabled the villagers to earn sufficient income from dairying year after year. The overall income from dairying in the experiment villages is almost double as compared to the same in the control villages. The day to day dairy income obtained from sale of milk to the cooperatives is constantly used for the purchase of technical inputs for milch animals, purchase of milch animals and partly for procuring essential agricultural inputs like improved seeds, fertilizers and pesticides etc. which further help the farm families to boost up their income.

Amongst the different categories of milk producers in experiment as well as control villages, the importance of dairying as a source of income is strictly in the order of landless followed by marginal, small, medium and large farmers respectively so far as the proportion of their income coming from dairying is concerned. Landless and marginal farmers earn as much as 65 to 70 per cent and small farmers about 25 to 30 per cent of their total income from dairying. The proportion of total income from dairying in case of large and medium farmers ranges between 8 to 20 per cent only. Thus, the organization of milk cooperatives is most important from the point of view of ameliorating the economic conditions of the weaker sections in the villages. It is also found that on the whole, total as well as crop and dairy incomes are higher in the villages covered by the milk cooperatives as compared to control villages. The small and marginal farmers and landless people in the experiment villages where milk production has become an important source of income are comparatively less dependent on off farm income than their counterparts in the control villages.

Indirect Benefits

Apart from providing opportunities for gainful employment and raising income of the milk producers in rural areas directly as discussed above, every milk union employs a few hundred people as soon as it starts functioning. The employment in the union goes on increasing year after year along with the increase in its business. Besides, every milk society employs 3 to 10 persons in each village depending upon the volume of business handled. What is more important is that the largest group of employees of the milk cooperatives consists of the unskilled labour especially recruited from the rural areas.

The democratic way of functioning of the milk cooperatives has an immense impact on the life of villagers. Every milk cooperative union as well as society, has an elected managing committee to look into the day to day functioning of the cooperative. Every milk producer who becomes the member of the milk society can cast his/her vote for election of members for the managing committee for the society. Similarly, the board of directors at the union level is elected by the representatives from the milk societies. In this way the villagers constantly learn the fundamentals of democracy by living it.

The milk unions regularly publish news letters on dairying and cooperation for the benefit of their members and also hold film shows and practical demonstrations on the proper use of technical inputs and scientific methods of milk production enhancement by the cattle owners. The procedural elements of the milk cooperatives like reaching of the motor trucks two times a day at the given time in every village, formation of the same que of all the milk producers to deliver their milk at the society strictly on the basis of first come first stand basis, testing of milk sample of each milk producer and making to them payments two times every day to ensure a fair deal to each milk producer, completing the relevant records at the society every day etc. also have a far reaching impact on the social life of villagers. The only common

felt need aroused on their part to organize themselves to market their milk at remunerative price has also served as an instrument in eliminating the age old barriers of cast, untouchability, communalism, feuds and factions in the villages.

The milk cooperatives have also gone a long way in raising the status of women in the villages. The cooperatives are found to play a significant role in involving women in the running of milk societies in their respective villages. As the feeding and management of milch animals is mostly in the hands of women and as they deliver the milk to the milk society, the income from milk is generally regarded to be the income earned by the women of the house. The analysis of data shows that income from two buffaloes can enable a landless widow to look after herself and her family. The milk cooperatives organise the rural womens' trips to their milk unions and dairy plants, educate them about the health, well being and maintenance of milch animals, emphasize the need for and explain the technique and programme of artificial insemination, give them suitable rewards on the progress of milk raised by their cows and buffaloes and even encourage them to get nominated to the managing committees of the milk cooperatives. All this makes women face men and people coming from outside with more self confidence.

The milk cooperatives are also found to create certain other intangible impacts on the villagers such as the sense of discipline, receptiveness to innovations, better knowledge of human nutrition through the knowledge of cattle feed in general and special feeds required at the time of pregnancy and lactation etc. and better idea of family planning through the knowledge of reproduction process gained by them from the activities of artificial insemination in dairy animals.

Concluding Remarks

On the whole, it is observed that the Anand Pattern milk cooperatives of Gujarat have not only helped to raise milk production and the economic conditions of especially the rural poor significantly by providing them effective facilities, employment and daily cash income but this pattern of milk cooperatives also has in it the seeds of an entire social revolution. Besides serving as effective instrument for milk production enhancement; these cooperatives are helping to break down the barriers of cast, class and sex and to stimulate interest in all worthy social services including literacy drives and family planning.

fo&ah:dst:mr:500:11177.

Advertisement

DEV 1.8

Shungu
December 18, 1978
(ANAND)

Reprinted from the Indian Dairyman, Vol. XXX, No. 4, April 1978

MILCH ANIMAL IMPROVEMENT AND THE RURAL POOR*

D.S. Thakur**

Introduction

Improvement of milch animals forms a crucial component of the strategy for upliftment of rural poor such as small and marginal farmers, landless agricultural labourers, petty shopkeepers, village artisans and the like who constitute over 70 per cent of the rural population. In areas where organised facilities for marketing of milk at remunerative prices have been created, it is found that income from two improved cows or buffaloes earned by a landless family, for example, a poor widow —is sufficient to support the family. Government of India has been constantly giving greater emphasis alongwith other programmes to dairy development with a view to ameliorating the economic and social conditions of the rural poor throughout the country.

However, it is generally found and argued these days that the benefits of the transfer of improved technology including that of cattle breeding are usually siphoned off by the already economically and socially powerful rural elites without touching the rural poor[1]. This shows the need for modifying our rural development policies to directly benefit the poor people. The aim of this article is to describe the way the national policy of crossbreeding nondescript cows and upgrading of buffaloes owned by the cattle owner farmers is being implemented under the Operation Flood Programme by setting up the Anand Pattern milk producers' cooperatives in the specified milksheds in the country in order to pass on the benefits of cattle breeding programme directly to the weaker sections of population in the rural areas.

Unique features

The main feature of Anand Pattern of dairy development is the provision of : (i) an assured lucrative market for surplus milk, and (ii) a complete package of technical inputs needed by the milk producers in the villages. These are in fact considered to be the two basic pre-requisites for the success of any dairy development programme and especially so for the success of the cattle breeding programme with

---

* Views expressed in this paper are the views of the author and not necessarily of the organisation he is connected with.

** National Dairy Development Board, Anand 388001, Gujarat.

1 See for instance, the extracts from a letter, "Does Cattle Breeding Help the Rural Poor", Science Today, Vol.12, No.2, p 9, August 1977.

Anil Sadgopal's Paper

Major requirement is that there should be a Marketable surplus of milk existing to a large extent in that area. Only then a Union of Co-ops can survive.

respect to the rural poor. It is only under this pattern that the cattle owners particularly the poor cattle owners are enabled to own crossbred cows produced out of their local stock, can get remunerative price for their surplus milk and also have an access to effective supply of technical inputs required to sustain profitably the crossbred animals produced on their farms.

Therefore, the Government of India has been constantly giving greater emphasis for dairy development through the replication of milk producers cooperatives based on the Anand Pattern of Gujarat. The Anand Pattern milk producers' cooperatives being replicated now in the specified milk-sheds in the country consist of a two-tier structure of the village milk producers' cooperative societies at the villages level and a district cooperative milk producers' union at the district level. These cooperatives are owned, operated and controlled by the milk producers themselves and the society and union staff has to work as servants of the farmers.

would it not be blind to adopt something that worked due to certain reasons?

The surplus milk from every milk producer who becomes a member of the cooperative is purchased both in the morning as well as in the evening at remunerative prices and transported to the dairy plant through the trucks of the private contractors hired by the milk union for this purpose. Besides milk procurement, processing and marketing; the milk cooperatives also provide all the technical inputs and services needed by the milk producers for milk production enhancement at their door steps in each village. The same system as evolved for milk collection from each village is also used for delivery of the technical inputs to each of the milk producers.

why private

The union owns and operates a stud farm and artificial insemination centre with the required number of buffalo as well as purebred exotic and crossbred bulls, mobile veterinary clinics, round the clock emergency service, balanced cattle feed factory, fodder development programmes and an extension service for the benefit of the milk producers. The milk societies in different villages provide inputs like facilities for artificial insemination of cows and buffaloes, veterinary first aid and marketing of balanced cattle feed and fodder seeds etc. in addition to milk procurement, testing and making payments to every milk producer twice a day.

Where is decentralisation of Technology what all achieved was organised way of giving inputs & elimination of middlemen

The liquid semen collected at the artificial insemination centre of the union is sent to every village milk society every day (in the specially designed containers) through the milk trucks going to fetch milk to the Union's dairy plant. Even the frozen semen now available from various institutions in the country and imported and distributed by the Indian Dairy Corporation in the liquid nitrogen containers is procured and distributed by the unions to the frozen semen sub-centres established in the villages to carry out artificial insemination work with frozen semen. One of the employees of the village milk society who is trained in the technique of artificial insemination including liquid as well as frozen semen handling, performs the inseminations to the animals in heat. The follow-up of inseminations is done by the trained stockmen and veterinary officers coming regularly to every village from the union.

Anand did not use any cross-bred cows till recently. They tried to improve the quality of existing Surti Buffaloes and succeeded too. [illegible] in the cross.

Special Incentives

It is an agreed fact that one should not go into dairying but should grow into it. Under the Anand Pattern the arrangements are made to produce the crossbreds out of the milch animals possessed by the milk producers in general and the rural poor in particular rather than purchasing the crossbreds from outside. In this way the cattle owner has not to spend anything to own the crossbreds and also gains the required knowledge and skill for maintaining the crossbreds profitably by living and growing with them on the farm. The required advice is freely available from the milk union. In order to ensure that the inseminators will inseminate every cow and buffalo in heat through the semen sent from the union, the inseminators, farmers and even the milk societies are given certain incentives. The inseminator like any other employees gets salary for his work. Besides, in addition to this salary, he is given a further incentive of Rs 6 to Rs 10 (as decided by different unions) per crossbred calf born out of the animals inseminated by him so that he tries to cover the maximum number of animals in the village and even outside irrespective of caste, class and status of the cattle owners. In case of buffaloes, he is generally given half of the amount that given in case of cows. Half of the total amount to be given to the inseminator is paid on confirmation of pregnancy and the other half is paid after the delivery.

Similarly, the cattle owner coming forward to get his cows and buffaloes inseminated through the inseminator of the milk society is also given Rs 5 to Rs 10 per animal covered, calf starter subsidy @ 25 per cent of total cost, free vaccination, health coverage and advice from the union. The union also gives three prizes of Rs 250, Rs 150 and Rs 100 to the first three societies covering maximum number of cows and buffaloes under the artificial insemination programme.

The above mentioned incentives given to the inseminators, cattle owners and milk societies in each village under the Anand Pattern of dairy development are going a long way in helping the rural poor. It can be seen now in the different milksheds in Gujarat and elsewhere where the Anand Pattern has been successfully implemented that the small and marginal farmers, landless agricultural labourers, landless widows and such other poor people are increasingly owning the crossbreds produced out of the local milch animal stock already owned by them.

In addition to the various incentives described above, the milk producers are also given the entire service including the semen from bulls with the highest yielding characteristics available for artificial insemination, free of cost on behalf of the milk union. The farmer members are also provided with the services of the mobile veterinary clinics equipped with necessary medicines, instruments and appliances and the qualified veterinarians visiting every village once a week at an appointed time to treat sick animals. The union also provides emergency service of veterinarians visiting the farmers' door with the mobile clinic round

the clock to treat the serious cases. The balanced cattle feed and improved varieties of fodder seeds are provided to the milk producers in each village on no profit no loss basis. The development of common grazing lands (Gauchars) in the villages is also undertaken as a part of the fodder development programme. Besides, various campaigns, trips of farmers and farmers' wives, mobile exhibitions and film shows and monthly newsletter in local language are also arranged to impart all useful information to the milk producers from month to month.

The Anand Pattern has proved to be the most effective system for providing the necessary technical input services especially to the poor milk producers who if left to themselves will never be able to avail of such services. This system has also proved to be the cheapest way of providing the complete package of technical inputs to milk producers in every village at their door steps. The entire cost of these programmes when included in the milk price structure comes only to about 3 paise per kg of milk production.

Fodder production

The white revolution in the country is possible only through rearing crossbred and upgraded cows and buffaloes as they are 4 to 5 times superior milk producers over the non-descript milch animals kept under the village conditions. At the same time however, farmers need not and in fact they do not convert valued land under cereal production to the cultivation of fodder as is sometime argued by some to meet the requirements of crossbred animals. After all, milk production in our country is only a sideline activity and also an activity mainly suited to small and marginal farmers and the landless labourers because keeping milch animals is very labour intensive and therefore of less interest to those farmers who have sizeable land holdings.

In the villages, fodder is generally being grown in such areas which remained previously uncultivated (marginal lands) or on lands not suitable for the profitable cultivation of other crops. Some of the farmers grow fodder as catch crops during the fallow period between the two cereal crops and also on the boundaries and bunds of their fields and land holdings. It is a common observation that majority of cattle owners in our countryside who maintain only one or two milch animals as a part of mixed farming mainly raise these animals on agricultural byproducts; freely available grasses, tree leaves, weeds and other foleage collected from the fields; river and canal beds, roadsides and elsewhere; some quantity of cattle feed and chance grazing. The farmers do not devote good land and other inputs to fodder cultivation at the cost of other crops that can be grown more successfully and profitably.

Hence, there is no problem of converting cereal lands to fodder production in practice so far as the implementation of the national policy of cattle breeding under the Anand Pattern is concerned. On the other hand, milk production which is mostly in the hands of weaker sections in the country-

side (as nearly 70 per cent of milk producers in rural areas belong to this category) can best be described as production of costly proteins in the form of milk for human consumption out of the wastes and agricultural byproducts which are mostly unfit for human consumption. The rural poor, in particular under the Anand Pattern of dairy development are considerably benefited. They are helped to produce the costly proteins in the form of milk by owning the high yielding milch animals mostly fed on the otherwise waste material, sell it at remunerative prices to increase their purchasing power and in turn use the money so earned to procure for their families so much needed less costly proteins and sufficient calories in the form of cheaper cereals and pulses.

Some wider implications

The country has raised its food grain output from 47 million tonnes in 1950-51 to about 120 million tonnes last year and has now a buffer stock of about 20 million tonnes of grains. This is the second-biggest reserve of food grains in any country, next perhaps only to the one in America. Amidst reports of large quantity of food grains being wasted due to inadequate scientific storage facilities, realization is growing that a large number of our people are too poor to be able to buy the food grains even from the fair price shops. A few recent studies have estimated that the people living in abject poverty constitute 40 to 50 per cent of the total population. Obviously, the Government today would not have had so much grain in stock if the masses had the requisite purchasing power.

It is, therefore, imparative that the steps to increase the purchasing power of the rural poor are urgently taken up. In order to do so, those programmes which concentrate on creating more jobs and are readily acceptable to these people need to be given immediate attention. It is in this context that dairying particularly on the Anand Pattern has assumed a great significance. Apart from providing opportunity for gainful employment and increasing the incomes of the entire unemployed or under employed rural population directly, each milk union employs a few hundred people to start with and the employment opportunities in the union goes on increasing every year with the increase in its business. Besides, each of the milk societies in the villages employs 3 to 10 people depending upon the volume of business. The largest number of employees of the milk cooperatives consist of unskilled people recruited from rural areas who are given the required training by the milk union for the specific jobs to be done by them. Even the higher cadre employees including managers are mostly sons of the farmers in case they are competent enough and especially trained for the jobs.

The Dairy industry supplies milk and milk products to the urban markets and to that extent depends upon the urban areas to siphon off the money for the urban areas to pay for milk produced in the rural areas and thereby to raise the purchasing power of the rural poor who are engaged

in milk production. No doubt, some marketing and advertising efforts are involved in doing so from the point of view of creating consumer awareness and information however it is interesting to note that the total investment on these comes only to a fraction of one per cent of the total annual turnover as compared to many times over this in that of other industries. At the same time, the urban population is also benefited from the organised dairying as the dairies provide clean milk at much lower prices than they pay to the traditional milk vendors who generally sell adulterated milk in the urban areas.

The argument often being raised now that milk has no special advantage over a combination of cereals and pulses is also a mere ideological obsession rather than a reality. It must be realised that milk and milk products are the only source of animal protein for 35 to 40 per cent of the 630 million people living in this country. It has been found that even the non-vegetarians need milk and milk products to supplement and enrich their diet. Thus an assured supply of milk is not only an urgent necessity to enable millions of people to have a balanced diet and develop a healthy body but is also necessary to raise the income and purchasing power of the rural poor. We are reminded of a remarkable passage of Darling in this context who while writing about the importance of cattle and milk in India says, without them food and drink lose half their savour, for in a vegetarian country what can be worse than to have no milk, butter or ghee[2].

Alongwith the crossbred cows, improvement of buffaloes and goats - the poor man's cow, can be taken up to increase milk production in rural areas. However, the genetic barriers and other factors like soil erosion and crop damage etc. associated with goat rearing are likely to place more emphasis on the development of the cows and buffaloes for milk production except of course in certain specific areas where the local conditions may warrant something different. It has been observed that production and sale of milk as encouraged under the Anand Pattern of milk producers' cooperatives, is sustaining a number of poor families who have no other means of livelihood from utter starvation. Already a few million rural milk producers' families are benefitting from their membership of such cooperatives in different milksheds in our country. Also, it is found that in general with the setting up of these cooperatives, landless and marginal farmers are earning as much as 60 to 70 per cent and small farmers about 30 to 40 per cent of their total income from the sale of milk and livestock including crossbreds produced out of their cattle. The importance of dairying as a source of total income decreases with the increase in size of land holding. Thus, the development of animal husbandry and dairying on the Anand Pattern has a great future from the point of view of ameliorating the economic and social conditions of the rural poor.

---

2 M.L. Darling : The Punjab Peasants in Prosperity and Debt, p 31.

Concluding remarks

The Anand Pattern of Milk Producers' Cooperatives as described in this article has been quite successful for the development of milch animals and organised dairying in the specific milksheds where it has been implemented so far. The national cattle breeding policy under this pattern of dairy development can be used as an effective tool for overall rural development by putting into the hands of the milk producers the instruments for increasing milk as well as crop production to raise overall farm income and profits of the farmers throughout the country. It is hoped that State Governments and voluntary agencies engaged in cattle breeding programmes in the country will take note of this and provide the impetus for replication of Anand Pattern of Dairy Development for the benefit of the rural poor in the different milksheds throughout the country under Operation Flood-II programme which will be shortly off the ground.

fo&ah:dst:mr:500:9v78

DEV 1.9

Shrinujas
December 18, 1998
(ANAND)

Dept Praise

Reprinted from the Maritime Co-operator,
July 1975

SPEAKING OF CO-OPS.

* Alex Laidlaw

I'VE SEEN IT

Yes, I've seen it - the highly successful milk-marketing co-operative known as AMUL, located at Anand in the State of Gujarat, in India. It is not the largest co-operative organization in all India, but it is one of the most modern and efficient, no matter which way you view it, and it would bear comparison with any farmers' co-operative anywhere in the World.

On previous visits to India, I missed seeing "Anand" as the cooperative is popularly known, and I am thankful for the events that brought me to visit it this time. It stands as a rich fulfillment of dreams which cooperators often have. Promoting cooperatives in developing countries can often be a discouraging task, but Anand is proof that the effort can be very rewarding too.

This cooperative is called either AMUL, which is the brand-name of its dairy products, or Anand, the place where the headquarters and processing plant are located. Either way, it referes to the Kaira District Cooperative Milk Producers' Union Ltd., Kaira being a district in Gujarat with over 1000 villages covering about 2500 square miles, roughly the size of P.E.I. For many thousands of people from all over the world, Anand has become a sort of Mecca to which cooperators journey to have their faith in the cooperative idea strengthened and confirmed.

The Beginning.

The story of this cooperative begins in 1946, the year before India became an independent nation. Even as today, the city of Bombay, 260 miles away, then depended on the Kaira District for a substantial part of its milk supply. But farmers were dissatisfied-with prices, marketing conditions and the attitude of government. They took a decisive step: they went on strike and withheld milk from the market. At the end of two weeks, government and the distributors were ready to come to terms. The producers then set up their own cooperative marketing system. They have never looked back, and in almost thirty years of spectacular growth have gone from one success to another.

The first year of operation (1948), the cooperative handled only 250 litres of milk a day from just two villages. Now it handled over 300,000 litres a day collected from over 800 villages. Since 1965 all processing is done under one roof in a modern central plant which operates non-stop twentyfour hours. In addition to fluid milk, the plant produces butter, powdered milk, baby food, cheese and other dairy products which enjoy the highest consumer favour under the AMUL label.

---

* Formerly, Secretary-General of the Cooperative Union of Canada
At present, Consultant in Cooperatives and Community Education.

contd..2/-

Probably the best proof of the outstanding record of this cooperative is the fact that the National Dairy Development Board, which had its headquarters placed close by so as to be near the model, has launched a big campaign called "Operation Flood" with the objective of creating "eighteen Anands" in other parts of India.

Unique Features.

A Canadian visiting Anand will immediately spot certain features different from what we are accustomed to, especially its organizational structure. In Canada, we seem to have no confidence in the federated type of organisation for marketing, especially of milk. All Canadian milk-marketing co-operatives are centralized organisations with branch operations where necessary.

In contrast, Anand is a federation of 846 primary societies, each independent but of course relying heavily on the central facilities of the mother organisation. The total membership of the local societies is about 240,000.

Milk is collected twice daily at the primary society and believe it or not, paid for in cash twice a day to put sorely-needed money into the hands of the villagers immediately. Grading is done at the local level and co-operative members have learned that adulteration does not pay.

The primary society maintains a service centre for members, distributes cattle feed and other supplies, acts as the distribution point for the various services of the Federation and is the main educational and community development agency at the village level. The dairy co-operative in Kaira is described as "the focus and initiator of modernization and village improvement". In some villages the co-operative has taken responsibility for building schools and constructing water systems.

The impact of these village societies on the whole district must be enormous, for they distribute each day about one million rupee to milk producers, big, medium and small. And here again is a great difference from the Canadian situation: the small producers are important to the co-operative, just as the co-operative is the economic mainstay of the small producers. Indeed, one-third of the total production of Anand comes from members who are actually landless, for example, the poor widow who keeps a buffalo or two alongside her house as her only source of income and security.

The factors of success.

Many visitors to Anand ask the question: How do you account for the remarkable performance of this particular co-operative? I asked this question in New Delhi before my visit to Gujarat and was told by one who had watched the development of the co-operative from the beginning that there were five basic factors for its success: 1/ Outstanding, even inspired, leadership that bred deep loyalty among farmers and staff alike. 2/ Professional management, which was able to carry on without political or bureaucratic interference 3/ Modern technology was always respected. 4/ The organization concentrated on better marketing methods, always to the advantage of producers but for the benefit of consumers as well. 5/ A large proportion of the earnings (profits) were ploughed back into services to the producers. Co-operatives all over the World, Canada included, would do well to keep these five cardinal points in mind.

To these five I would add one extra from my observation of Anand: the officers and personnel from top to bottom seem dedicated to one overriding

ideal: the improvement of living conditions in the village. Several times during interviews I heard the words that seem to be the powerful motivating force behand this co-operative: "We are servants of the farmers". The rural scene in developing countries around the World would be very different if this were the rule that guided all who come to the village in the name of helping the people.

Services for Members.

The services which the federation supplies to the 846 primary societies at the village level are a vital part of the whole system, services which no one village society, or even several, could provide on their own. Three are particularly valuable: central supply of cattle feed, artificial insemination of buffaloes and a veterinary service available 24 hours a day.

The first two are familiar enough to Canadian readers, but the third is not, for I am not aware of any farmers' co-operative in Canada with a veterinary service like the one at Anand. I watched it swinging into action early one morning. Twenty-one white panel trucks, each with a driver and veterinary doctor carrying a kit of drugs, remedies and equipment were setting out on their daily rounds of primary societies, where sick or injured buffaloes are treated. In this way each village is visited weekly without individual charge.

The federation has 43 veterinary doctors and staff, with service round the clock for emergencies, for which a charge is paid by a member.

These services (balanced feed rations, improved breeding and veterinary services) have paid rich returns: the production of milk per buffalo in Kaira district is about twice the average national yield in India. And through the cooperative the cost of an individual basis becomes negligible. As the director of the veterinary service explained: it costs only a few paise per litre of milk.

The Lessons of Anand.

I left Anand by car for the air port at Baroda with many thoughts running through my mind. Some of them were what I would call "the lessons of Anand": that cooperatives in India, in some parts at least, can employ technology at the highest level; that cooperatives in the Third World can be made to serve people at the lowest economic level, in this case even the landless; that good cooperatives can excel in competition with private-profit business: that cooperatives are most successful when operated without internal government control; that a central marketing co-operative in a developing country needs the base provided by primary societies, which in turn have a distinctive role at the village level; that members in a farmers' co-operative, even poor members, appreciate the value of extra services instead of the last marketing cent; finally, that a good co-operative like Anand cannot be built in a short while - here it has taken over twenty-five years.

.....4/-

International Aid.

The Anand(or Amul) story has another lesson of great value to all who are engaged in international development work: funds and technical assistance given to sound co-operative projects yield the highest possible returns, in terms of both economic and social development. At various times in the past, this cooperative has received aid from OXFAM, FAO, UNICEF and the Government of New Zealand, to mention some of the principal donors. Denmark has also been an important contributor in support of the work of the Dairy Development Board and FAO presently has a team working on Operation Flood. And by the way, Canada has under consideration a scheme to provide heifers to farmers for the production of cow's milk to supplement the buffalo milk, which has a very high fat content. A recent visitor from Europe was heard to remark: In our experience this is the best use of aid funds we know of.

Someone told me that the brand name AMUL also means "priceless" in the Gujarati language. Priceless it is, indeed.

Readers who doubt that the cooperative idea will ever work well in a developing country, should go to Anand and see for themselves. There the machine is not just off the ground: it has already entered the jet age.

.....o.....

FO&AH/Mrs:gop/500
25.9.'78.

DEV. 1.10

Shrinagar
December 19/1978
(ANAND)

MILK PROCUREMENT THROUGH PRODUCERS COOPERATIVE AND THEREBY REPLACTING ANAND SYSTEM

Dairying through cooperative has long been known in the country. However, due to some reason or the other, desired result could not be achieved for long. The main problem has not been that of knowing what to do ; rather it had been that of knowing how to do it- how to get it done.

Dairying in India has always been linked with agriculture rather than becoming an independent profession. Land and animal have gone together. Therefore, even cooperative dairying was tried in number of ways e.g. advancement of loan for purchase of cattle, milk supply societies etc. the results could not be achieved. What exactly was needed was an organization which chould safegurd the interest of small farmers in adopting dairying as a subsidiary occupation by providing a remunerative market for the rurally produced milk all along the year and guarantee of package of inputs which could safe guard against the health hazards of their animals and provide them necessary facilities for adopting better animal husbandry practices. Such a bold and right step was taken in late 1946 when the farmers of Kaira District joined together to form a cooperative structure which could provide them all these essentials at their door steps through integrated organi-zation owned and operated by them. This institution which has now become a pioneer in cooperative dairying is known as Kaira District Cooperative Milk Producers' Union Ltd.(AMUL).This cooperative centres on the formation and operation of hundreds of village milk producers' cooperatives (a typical member owns one or two buffaloes and deals less than 1 ha.) These village level cooperatives are fused together into a cooperative union which owns and operates its own facilities for milk and feed processing, collection and distribution and provide its members the full range of technical services. It also sets milk prices and never refuses to buy milk in any quantity produced by its members. Besides, assuring around the year marked for their milk members are provided with a package of services which include routine veterinary health, breeding coverage, concentrate feed, fodder seeds, training etc. The village cooperative-practicing democracy by living in it, besides, collecting milk, paying twice a day to the members supplies on the basis of quantity and quality and having an intestive system to infuse technical inputs in collaboration with the Union also serves as the retail output for the sale of balanced cattle feed and fodder seeds. Using part of their annual net returns these societies contribute substantially towards community development work in the village.

The Kaira union is now a chhesive apex of some 2,40,000 farmers from some 840 villages in Kaira. It has a Board of Directors elected on a completely democratic pattern from these villages. This farmers' elected Board governs the

(pto)..

Union whereas the market oriented management of hired profe--ssionals operated. The Union, since beginning realised that viability of milk producers will depend on the difference between his cost of milk production and what he realise out of it. Consequently the market was created at his door step where he pours his milk, gets paid twice a day and is free from his worries. The onward transportation of milk is the responsibility of the Union. Side by side Amul has always tried to upgrade its services with package of inputs.

The Anand Pattern which has now become an accepted pattern for dairy development in the country as it is genesis from this Kaira Union. This system is a two-tier system where the primary village cooperative societies' formation is a basic unit and the district level union as an apex one. The micro inputs like first aid veterinary services, sale of cattle feed, sale of fodder seeds etc. are marketed through the primaries and macro inputs e.g. veterinary health care, AI programme, manufacture of cattle feed and the extension services is taken care of by the apex body- district Union.

Sometimes in mid 60's the dairy wizards of the country were thinking seriously of developing dairying all over the country on a pattern similar to Amul. It was during this process that Operation Flood was conceived and it was decided to create a number of Anands in the various parts of the country. 58 districts of 10 states in the country came forward--ed to participate this programme. It was conceived to create 18 Anands in these 10 States out of the funds generated from the Operation Flood programme. The process is going on since 1970 and a number of Anands are now in the offing

Looking into the success of the Operation Flood other International agencies which were keen in financing various dairy projects in the country, also agreed to go in for this system. Even these projects have now taken off and the progress achieved are encouraging.

ooo

fo&ah/mks/bpt/500/15vi78

Reprinted from the Indian Dairyman, Vol. XXX, No. 4, April 1978

MILCH ANIMAL IMPROVEMENT AND THE RURAL POOR*

D.S. Thakur**

Introduction

Improvement of milch animals forms a crucial component of the strategy for upliftment of rural poor such as small and marginal farmers, landless agricultural labourers, petty shopkeepers, village artisans and the like who constitute over 70 per cent of the rural population. In areas where organised facilities for marketing of milk at remunerative prices have been created, it is found that income from two improved cows or buffaloes earned by a landless family, for example, a poor widow —is sufficient to support the family. Government of India has been constantly giving greater emphasis alongwith other programmes to dairy development with a view to ameliorating the economic and social conditions of the rural poor throughout the country.

However, it is generally found and argued these days that the benefits of the transfer of improved technology including that of cattle breeding are usually siphoned off by the already economically and socially powerful rural elites without touching the rural poor[1]. This shows the need for modifying our rural development policies to directly benefit the poor people. The aim of this article is to describe the way the national policy of crossbreeding nondescript cows and upgrading of buffaloes owned by the cattle owner farmers is being implemented under the Operation Flood programme by setting up the Anand Pattern milk producers' cooperatives in the specified milksheds in the country in order to pass on the benefits of cattle breeding programme directly to the weaker sections of population in the rural areas.

Unique features

The main feature of Anand Pattern of dairy development is the provision of : (i) an assured lucrative market for surplus milk, and (ii) a complete package of technical inputs needed by the milk producers in the villages. These are in fact considered to be the two basic pre-requisites for the success of any dairy development programme and especially so for the success of the cattle breeding programme with

---

* Views expressed in this paper are the views of the author and not necessarily of the organisation he is connected with.

** National Dairy Development Board, Anand 388001, Gujarat.

1 See for instance, the extracts from a letter, "Does Cattle Breeding Help the Rural Poor", Science Today, Vol.12, No.2, p 9, August 1977.

respect to the rural poor. It is only under this pattern that the cattle owners particularly the poor cattle owners are enabled to own crossbred cows produced out of their local stock, can get remunerative price for their surplus milk and also have an access to effective supply of technical inputs required to sustain profitably the crossbred animals produced on their farms.

Therefore, the Government of India has been constantly giving greater emphasis for dairy development through the replication of milk producers cooperatives based on the Anand Pattern of Gujarat. The Anand Pattern milk producers' cooperatives being replicated now in the specified milk-sheds in the country consist of a two-tier structure of the village milk producers' cooperative societies at the villages level and a district cooperative milk producers' union at the district level. These cooperatives are owned, operated and controlled by the milk producers themselves and the society and union staff has to work as servants of the farmers.

The surplus milk from every milk producer who becomes a member of the cooperative is purchased both in the morning as well as in the evening at remunerative prices and transported to the dairy plant through the trucks of the private contractors hired by the milk union for this purpose. Besides milk procurement, processing and marketing; the milk cooperatives also provide all the technical inputs and services needed by the milk producers for milk production enhancement at their door steps in each village. The same system as evolved for milk collection from each village is also used for delivery of the technical inputs to each of the milk producers.

The union owns and operates a stud farm and artificial insemination centre with the required number of buffalo as well as purebred exotic and crossbred bulls, mobile veterinary clinics, round the clock emergency service, balanced cattle feed factory, fodder development programmes and an extension service for the benefit of the milk producers. The milk societies in different villages provide inputs like facilities for artificial insemination of cows and buffaloes, veterinary first aid and marketing of balanced cattle feed and fodder seeds etc. in addition to milk procurement, testing and making payments to every milk producer twice a day.

The liquid semen collected at the artificial insemination centre of the union is sent to every village milk society every day (in the specially designed containers) through the milk trucks going to fetch milk to the Union's dairy plant. Even the frozen semen now available from various institutions in the country and imported and distributed by the Indian Dairy Corporation in the liquid nitrogen containers is procured and distributed by the unions to the frozen semen sub-centres established in the villages to carry out artificial insemination work with frozen semen. One of the employees of the village milk society who is trained in the technique of artificial insemination including liquid as well as frozen semen handling, performs the inseminations to the animals in heat. The follow-up of inseminations is done by the trained stockmen and veterinary officers coming regularly to every village from the union.

Special Incentives

It is an agreed fact that one should not go into dairying but should grow into it. Under the Anand Pattern the arrangements are made to produce the crossbreds out of the milch animals possessed by the milk producers in general and the rural poor in particular rather than purchasing the crossbreds from outside. In this way the cattle owner has not to spend anything to own the crossbreds and also gains the required knowledge and skill for maintaining the crossbreds profitably by living and growing with them on the farm. The required advice is freely available from the milk union. In order to ensure that the inseminators will inseminate every cow and buffalo in heat through the semen sent from the union, the inseminators, farmers and even the milk societies are given certain incentives. The inseminator like any other employees gets salary for his work. Besides, in addition to this salary, he is given a further incentive of Rs 6 to Rs 10 (as decided by different unions) per crossbred calf born out of the animals inseminated by him so that he tries to cover the maximum number of animals in the village and even outside irrespective of caste, class and status of the cattle owners. In case of buffaloes, he is generally given half of the amount that given in case of cows. Half of the total amount to be given to the inseminator is paid on confirmation of pregnancy and the other half is paid after the delivery.

Similarly, the cattle owner coming forward to get his cows and buffaloes inseminated through the inseminator of the milk society is also given Rs 5 to Rs 10 per animal covered, calf starter subsidy @ 25 per cent of total cost, free vaccination, health coverage and advice from the union. The union also gives three prizes of Rs 250, Rs 150 and Rs 100 to the first three societies covering maximum number of cows and buffaloes under the artificial insemination programme.

The above mentioned incentives given to the inseminators, cattle owners and milk societies in each village under the Anand Pattern of dairy development are going a long way in helping the rural poor. It can be seen now in the different milksheds in Gujarat and elsewhere where the Anand Pattern has been successfully implemented that the small and marginal farmers, landless agricultural labourers, landless widows and such other poor people are increasingly owning the crossbreds produced out of the local milch animal stock already owned by them.

In addition to the various incentives described above, the milk producers are also given the entire service including the semen from bulls with the highest yielding characteristics available for artificial insemination, free of cost on behalf of the milk union. The farmer members are also provided with the services of the mobile veterinary clinics equipped with necessary medicines, instruments and appliances and the qualified veterinarians visiting every village once a week at an appointed time to treat sick animals. The union also provides emergency service of veterinarians visiting the farmers' door with the mobile clinic round

the clock to treat the serious cases. The balanced cattle feed and improved varieties of fodder seeds are provided to the milk producers in each village on no profit no loss basis. The development of common grazing lands (Gauchars) in the villages is also undertaken as a part of the fodder development programme. Besides, various campaigns, trips of farmers and farmers' wives, mobile exhibitions and film shows and monthly newsletter in local language are also arranged to impart all useful information to the milk producers from month to month.

The Anand Pattern has proved to be the most effective system for providing the necessary technical input services especially to the poor milk producers who if left to themselves will never be able to avail of such services. This system has also proved to be the cheapest way of providing the complete package of technical inputs to milk producers in every village at their door steps. The entire cost of these programmes when included in the milk price structure comes only to about 3 paise per kg of milk production.

Fodder production

The white revolution in the country is possible only through rearing crossbred and upgraded cows and buffaloes as they are 4 to 5 times superior milk producers over the non-descript milch animals kept under the village conditions. At the same time however, farmers need not and in fact they do not convert valued land under cereal production to the cultivation of fodder as is sometime argued by some to meet the requirements of crossbred animals. After all, milk production in our country is only a sideline activity and also an activity mainly suited to small and marginal farmers and the landless labourers because keeping milch animals is very labour intensive and therefore of less interest to those farmers who have sizeable land holdings.

In the villages, fodder is generally being grown in such areas which remained previously uncultivated (marginal lands) or on lands not suitable for the profitable cultivation of other crops. Some of the farmers grow fodder as catch crops during the fallow period between the two cereal crops and also on the boundaries and bunds of their fields and land holdings. It is a common observation that majority of cattle owners in our countryside who maintain only one or two milch animals as a part of mixed farming mainly raise these animals on agricultural byproducts; freely available grasses, tree leaves, weeds and other foleage collected from the fields; river and canal beds, roadsides and elsewhere; some quantity of cattle feed and chance grazing. The farmers do not devote good land and other inputs to fodder cultivation at the cost of other crops that can be grown more successfully and profitably.

Hence, there is no problem of converting cereal lands to fodder production in practice so far as the implementation of the national policy of cattle breeding under the Anand Pattern is concerned. On the other hand, milk production which is mostly in the hands of weaker sections in the country-

side (as nearly 70 per cent of milk producers in rural areas belong to this category) can best be described as production of costly proteins in the form of milk for human consumption out of the wastes and agricultural byproducts which are mostly unfit for human consumption. The rural poor, in particular under the Anand Pattern of dairy development are considerably benefited. They are helped to produce the costly proteins in the form of milk by owning the high yielding milch animals mostly fed on the otherwise waste material, sell it at remunerative prices to increase their purchasing power and in turn use the money so earned to procure for their families so much needed less costly proteins and sufficient calories in the form of cheaper cereals and pulses.

Some wider implications

The country has raised its food grain output from 47 million tonnes in 1950-51 to about 120 million tonnes last year and has now a buffer stock of about 20 million tonnes of grains. This is the second biggest reserve of food grains in any country, next perhaps only to the one in America. Amidst reports of large quantity of food grains being wasted due to inadequate scientific storage facilities, realization is growing that a large number of our people are too poor to be able to buy the food grains even from the fair price shops. A few recent studies have estimated that the people living in abject poverty constitute 40 to 50 per cent of the total population. Obviously, the Government today would not have had so much grain in stock if the masses had the requisite purchasing power.

It is, therefore, imparative that the steps to increase the purchasing power of the rural poor are urgently taken up. In order to do so, those programmes which concentrate on creating more jobs and are readily acceptable to these people need to be given immediate attention. It is in this context that dairying particularly on the Anand Pattern has assumed a great significance. Apart from providing opportunity for gainful employment and increasing the incomes of the entire unemployed or under employed rural population directly, each milk union employs a few hundred people to start with and the employment opportunities in the union goes on increasing every year with the increase in its business. Besides, each of the milk societies in the villages employs 3 to 10 people depending upon the volume of business. The largest number of employees of the milk cooperatives consist of unskilled people recruited from rural areas who are given the required training by the milk union for the specific jobs to be done by them. Even the higher cadre employees including managers are mostly sons of the farmers in case they are competent enough and especially trained for the jobs.

The Dairy industry supplies milk and milk products to the urban markets and to that extent depends upon the urban areas to siphon off the money for the urban areas to pay for milk produced in the rural areas and thereby to raise the purchasing power of the rural poor who are engaged

in milk production. No doubt, some marketing and advertising efforts are involved in doing so from the point of view of creating consumer awareness and information however it is interesting to note that the total investment on these comes only to a fraction of one per cent of the total annual turnover as compared to many times over this in that of other industries. At the same time, the urban population is also benefited from the organised dairying as the dairies provide clean milk at much lower prices than they pay to the traditional milk vendors who generally sell adulterated milk in the urban areas.

The argument often being raised now that milk has no special advantage over a combination of cereals and pulses is also a mere ideological obsession rather than a reality. It must be realised that milk and milk products are the only source of animal protein for 35 to 40 per cent of the 630 million people living in this country. It has been found that even the non-vegetarians need milk and milk products to supplement and enrich their diet. Thus an assured supply of milk is not only an urgent necessity to enable millions of people to have a balanced diet and develop a healthy body but is also necessary to raise the income and purchasing power of the rural poor. We are reminded of a remarkable passage of Darling in this context who while writing about the importance of cattle and milk in India says, without them food and drink lose half their savour, for in a vegetarian country what can be worse than to have no milk, butter or ghee[2].

Alongwith the crossbred cows, improvement of buffaloes and goats - the poor man's cow, can be taken up to increase milk production in rural areas. However, the genetic barriers and other factors like soil erosion and crop damage etc. associated with goat rearing are likely to place more emphasis on the development of the cows and buffaloes for milk production except of course in certain specific areas where the local conditions may warrant something different. It has been observed that production and sale of milk as encouraged under the Anand Pattern of milk producers' cooperatives, is sustaining a number of poor families who have no other means of livelihood from utter starvation. Already a few million rural milk producers' families are benefitting from their membership of such cooperatives in different milksheds in our country. Also, it is found that in general with the setting up of these cooperatives, landless and marginal farmers are earning as much as 60 to 70 per cent and small farmers about 30 to 40 per cent of their total income from the sale of milk and livestock including crossbreds produced out of their cattle. The importance of dairying as a source of total income decreases with the increase in size of land holding. Thus, the development of animal husbandry and dairying on the Anand Pattern has a great future from the point of view of ameliorating the economic and social conditions of the rural poor.

---

2 M.L. Darling : The Punjab Peasants in Prosperity and Debt, p 31.

Concluding remarks

The Anand Pattern of Milk Producers' Cooperatives as described in this article has been quite successful for the development of milch animals and organised dairying in the specific milksheds where it has been implemented so far. The national cattle breeding policy under this pattern of dairy development can be used as an effective tool for overall rural development by putting into the hands of the milk producers the instruments for increasing milk as well as crop production to raise overall farm income and profits of the farmers throughout the country. It is hoped that State Governments and voluntary agencies engaged in cattle breeding programmes in the country will take note of this and provide the impetus for replication of Anand Pattern of Dairy Development for the benefit of the rural poor in the different milksheds throughout the country under Operation Flood-II programme which will be shortly off the ground.

Dairy Development and Improvement of Milch Animals

D.S. Thakur
National Dairy Development Board.

This Page

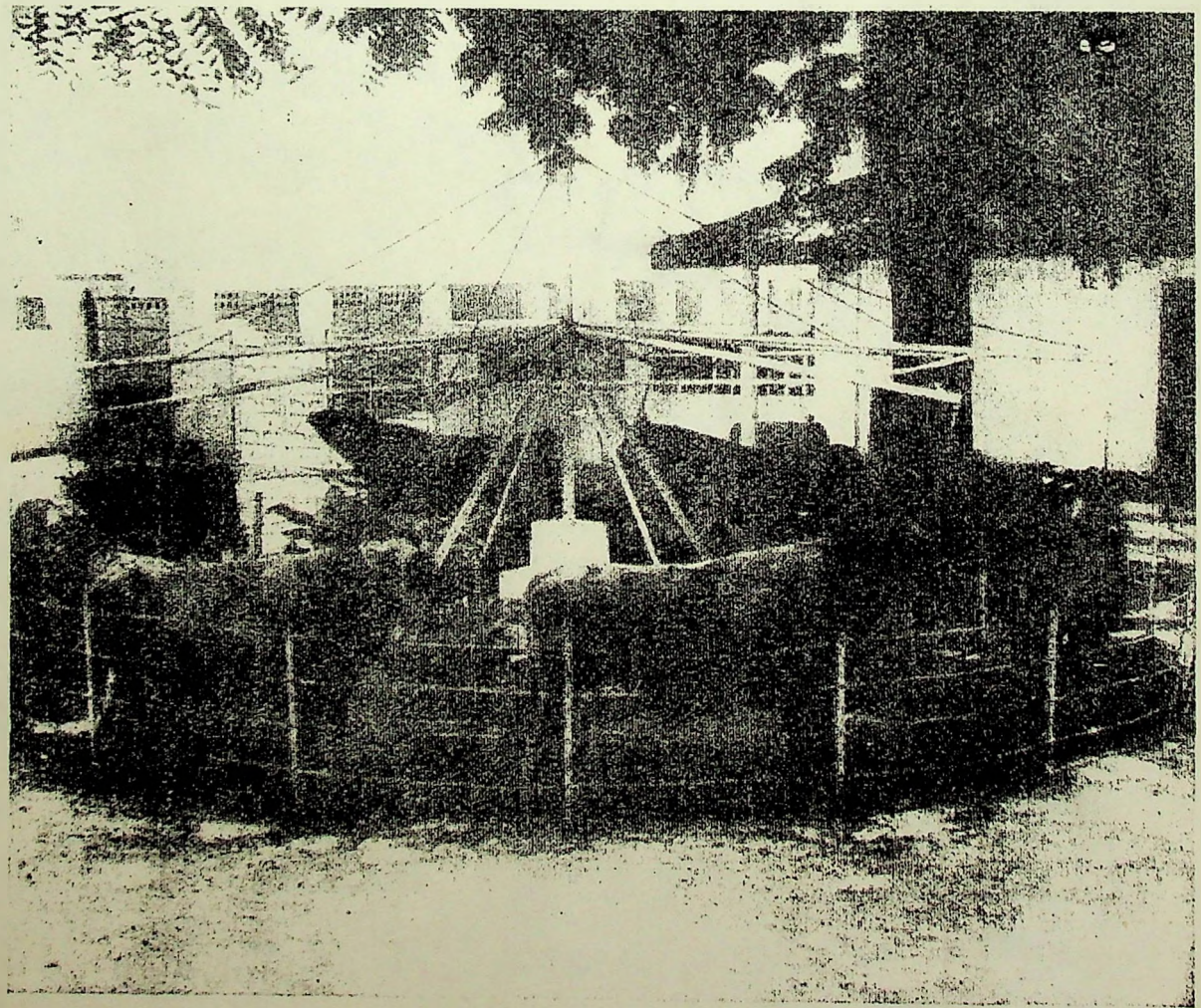
Under Operation Flood, Pure-bred Exotic Bulls are being maintained at several AI Centres for the production of liquid semen for cross-breeding of local cattle. At some of these centres frozen semen is produced for distribution to different agencies engaged in breeding programmes throughout the country

Page facing :

Cross-breds are now becoming a common feature in villages where cross-breeding facilities have been provided

The general characteristics of Indian Dairying in the past were low productivity of milch animals, high cost of milk production and low profit margins for milk producers. Efforts have been made after independence to modernise milk production, processing and marketing. A major programme for dairy development and improvement of milch animals has been the Intensive Cattle Development Scheme. A large number of small Key Village Schemes were started in every State for systematic breeding, feeding and management. City Milk Schemes and Rural Dairy Plants were also organised to provide an assured and lucrative market for milk producers.

Schemes for modernising milk production, processing and marketing were implemented mainly by Departments of State Governments, except for certain cases as in Gujarat where District Cooperative Milk Producers' Unions implemented them. The best known of these



cases is the project given to the Kaira District Cooperative Milk Producers' Union at Anand, popularly known as "Amul".

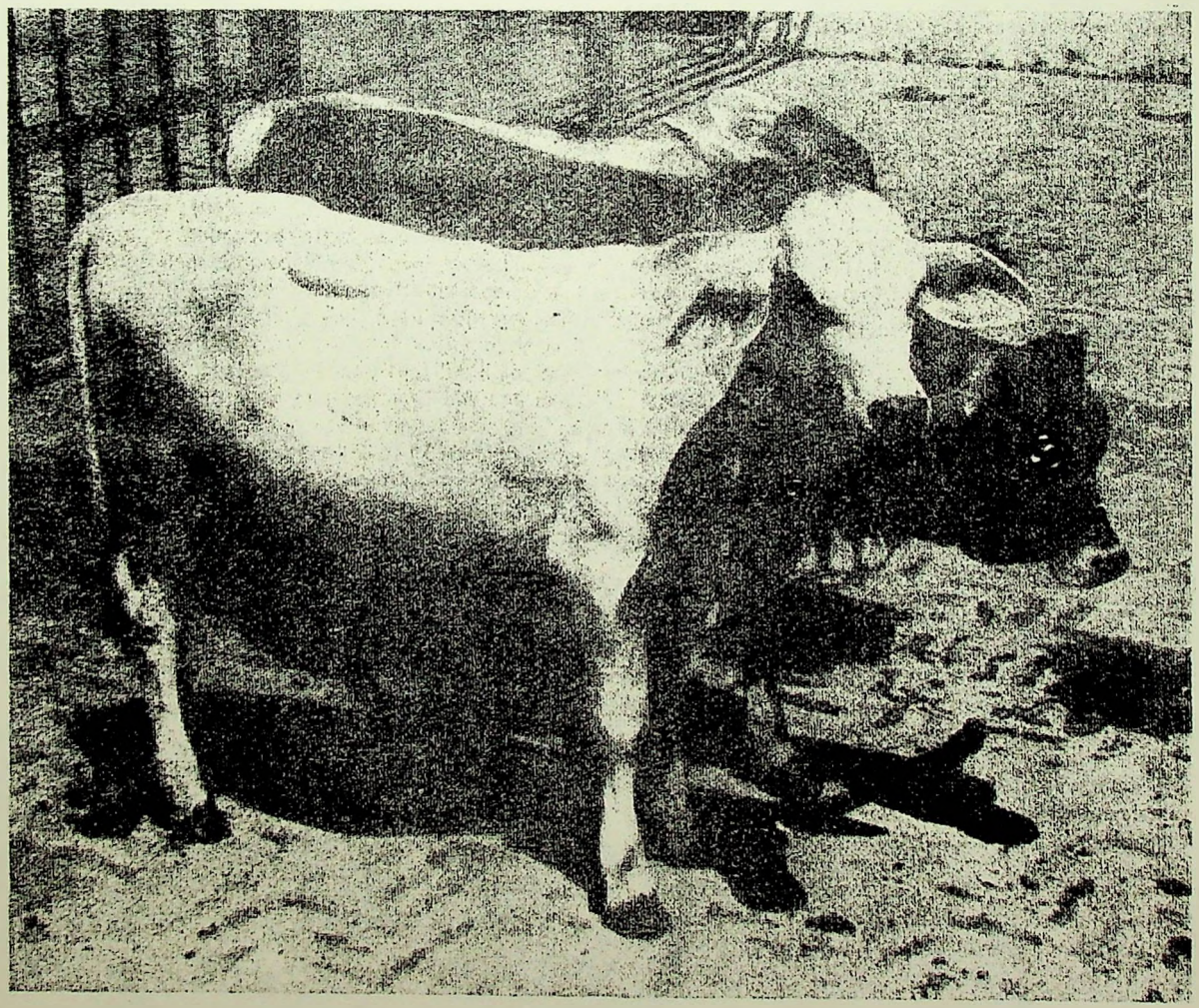
In many cases, the resources available were absorbed mainly by infructious expenditure and only a small amount was left for milch animal improvement and dairy development. Milk producers did not have access to an effective market for milk and to an effective supply of technical inputs for enhancing milk production.

However, considerable success was achieved by the Anand Union. The Union provided the technical inputs needed by milk producers on a viable basis and organised milk procurement, processing and marketing for the benefit of producers and consumers right from the beginning. These achievements led to the widespread conviction that the Anand Pattern of milk cooperatives should be adopted elsewhere, to modernise dairying and to use it as an instrument of change in rural areas.

ANAND PATTERN OF MILK COOPERATIVES

The foundation of the Anand Pattern of milk cooperatives was laid with the organisation of the Anand Union in Gujarat in 1946. The Union started functioning with a handful of members from two village milk producers' cooperative societies pasteurising 250 litres of milk a day for the Bombay Milk Scheme in June 1948. Today, the Union collects on an average 450,000 litres of milk daily from over 240,000 households (members) through milk societies organised in practically every village in the district. The total annual turnover of the Union is now around Rs. 450 million and the value added to the economy of the district is estimated to be over Rs. 120 million per annum.

The Anand Pattern consists of a two-tier structure of cooperatives with milk societies at the village level and a



milk union at the district level. The whole organisation of the milk cooperatives—union as well as milk societies—is owned, operated and controlled by milk producers themselves.

Any milk producer can become a member of the society by paying a membership fee of Rs. 5 and the registration fee of Re. 1. Once milk producers decide to have a milk society in their village, a general meeting of the members is held to select their representatives democratically, in the presence of a supervisor and an officer of the Union, to form a managing Committee which looks after the Society. The managing committee employs a secretary, a milk collector, a fat tester, a clerk, an inseminator, an accountant and a helper. Every Society is constantly guided and supervised by the Union so that it remains efficient, strong and viable. Continuous and concurrent audit of all the societies on a quarterly basis ensures clean practices.

The Union is the apex organisation of all the registered societies. It is represented by a Board of Directors elected mostly from the representatives of Societies. The Board frames the general policies of the Union and employs a General Manager. The General Manager employs competent managers, technicians and Supporting Staff. The Union is responsible for creating effective processing and marketing facilities for all the milk which its members want to sell, and for providing technical inputs including extension service for milch animal improvement and milk production enhancement throughout the district.

Milk is collected at the milk society in every village twice a day. Each sample is tested and analysed, and the milk producers are paid every 12 hours on the basis of the fat and the solids-not-fat content of the milk supplied by them. A table of payment is sent by the Union to all the Societies and producers receive the price for their milk strictly on the basis of the quality and quantity of milk, irrespective of their distances from the Union. The Union makes arrangement to transport the milk from every Society to the Union's diary plant where it is pasteurised and then sold as liquid milk or converted into milk products. Besides milk collection and twice-a-day payment to milk producers, milk cooperatives based on the Anand Pattern provide the technical inputs and services needed by the producers—often at their doorstep. The delivery system is the same as the one evolved for milk procurement. Technical inputs include compounded cattle-feed, fodder crop seeds and rootslips, artificial insemination (AI) services and veterinary services. Veterinary doctors are available round the clock for the emergency treatment of sick animals. Milk cooperatives also organise campaigns, educative tours for farmers and their wives, mobile exhibitions, film shows, fodder demonstrations etc. and publish a monthly newsletter. Milk producers are thus educated on what is latest in the field of dairying and what they should do from month to month for herd management and for higher milk production.

The Anand Pattern has proved to be the cheapest and the most effective system for providing technical inputs and extension services. The total cost of these programmes, when included in the milk price structure, comes to only around 3 paise per kg of milk. However, the provision of such services has significant impact on milch animal improvement and milk production in the area which results in a tremendous rise in milk collection over time as will be noted from Table 1.

Apart from milch animal improvement programmes and the provision of incentives for diary development, the Union as well as the Societies use substantial part of their savings for rural development. They help in creating modern facilities for cattle development, the construction of village roads and milk collection centres, the development of village schools, libraries, clinics, youth centres, adult education programmes etc. and the provision of water supply, electricity connections, telephone facilities and even television sets. Milk producers are paid dividends on their shares and bonus in relation to the contribution they make towards the business of the cooperatives. The facilities and the day-to-day money which milk producers get from their milk cooperatives are constantly used for the purchase of technical inputs for milch animals, purchase of improved milch animals, improved seeds, fertilisers, pesticides and improved implements, and even for the education of their children which further helps them to boost their total income, investments and purchasing power.

The organization of Anand Pattern milk cooperatives is most important from the point of view of the weaker sections in villages such as the landless, marginal farmers and small farmers. In Kaira district, the landless and marginal farmers earn about 60 to 70 per cent, and small farmers 30 to 40 per cent, of their total income from dairying. When villagers work together in milk societies, age-old barriers of caste, class, sex, untouchability, superstitions and factions tend to break down. They also tend to show increasing interest in wrothy social causes like literacy drives and family planning.

REPLICATION OF ANAND PATTERN

By the sixties, milk producers and the Gujarat Government were convinced that the Anand Pattern of milk cooperatives was the most effective structure for dairy development and improvement of milch animals. The Government of Gujarat and Amul started to help milk producers in different districts of the State to adopt the Anand Pattern. A few other States also wanted to start their own "Anands".

In October, 1964, the then Prime Minister of India Shri Lal Bahadur Shastri inaugurated the new compounded cattle-feed plant of Anand Union. He was impressed

TABLE 1

YEARWISE PROGRESS IN PROVISION OF TECHNICAL INPUTS FOR MILK PRODUCTION ENHANCEMENT AND MILK COLLECTION BY ANAND UNION IN DISTRICT KAIRA, GUJARAT (1955-56 THROUGH 1974-75)

Year	Cattle feed sales (Metric Tonnes)	Cultivation of lucerne fodder		Performance of aritficial insemination programme (AI)			Performance of verterinary services			
		Qty of seed distributed (kg)	Area under the crop (Acres)	No. of AI sub-centres	No. of AI performed	Infertility cases treated	Cases treated by first aid workers in villages	Cases treated by veterinary doctors of mobile vety. dispensaries	No. of special visits (emergency calls)	Milk Collection (Million kg).
1955-56				7	3854	130				11.12
1956-57				14	5533	293		7816	20	14.00
1957-58				14	6434	104		6500	65	21.20
1958-59				14	6287	97		7111	153	27.60
1959-60				14	7700	173		7160	174	23.00
1960-61				26	9077	211		16874	421	24.40
1961-62				44	12839	101	10829	18811	907	35.38
1962-63				75	19232	392	24047	24669	1794	50.39
1963-64				102	26148	683	37480	33520	3192	62.30
1964-65	3945	6119	992	138	31582	243	42195	29886	4344	60.64
1965-66	17226	10987	2500	261	41841	85	44000	31777	6102	65.90
1966-67	28587	86600	8000	312	87445	2534	62682	46385	7798	71.61
1967-68	29895	167122	12000	332	194306	2424	77105	45829	9403	80.60
1968-69	41145	72998	10000	362	137808	3868	92915	60543	13238	113.16
1969-70	57558	173696	17500	475	151985	3618	135244	62842	17293	123.88
1970-71	39721	174531	17500	523	157547	10024	141227	70078	22862	118.22
1971-72	41974	175563	20000	550	156823	5426	125000	74256	26907	133.22
1972-73	51313	246232	25000	581	157316	7140	120321	89931	30587	147.81
1973-74	50730	281253	28500	571	150419	8195	134238	79886	28804	111.95
1974-75	59868	195475	19550	668	192626	17168	930145	96659	29175	130.09

by the Union's work—especially its achievements in the socio-economic field. He recommended to different State Governments that such 'Anands' should be built throughout the country. As a result, the National Dairy Development Board (NDDB) was set up in 1965 to provide services to the dairy industry and to help milk producers through their State Governments to organise milk production and marketing on the Anand Pattern. Initially NDDB found it difficult to persuade the State Governments to help milk producers to organise their own milk cooperatives on the Anand Pattern and such cooperatives continued to be confined to Gujarat. This led the NDDB to formulate Operation Flood, designed to produce a flood of milk by organising milk cooperatives on the Anand Pattern in the hinterland milksheds of Bombay, Delhi, Calcutta and Madras and to enable the four major cities' modern dairies to capture a command ing share of their urban milk markets. Operation Flood involved an investment in India's dairying of some Rs. 1000 million which was allmost readily available in kind from the Food and Agriculture Organization of the United Nation's World Food Programme through the Government of India. Consequently, the Government of India set up the Indian Dairy Corporation with NDDB as its source of technical advice and services to implement Operation Flood which had an initial duration of five years (1970-75) and was later extended by two years (till 1977).

There has been another important event in the seventies for diary development and milch animal improvement in India; World Bank financing of Dairy Development Projects in Rajasthan, Madhya Pradesh and Karnataka, at the instance of the Government of India. In these projects, which are also to be developed on the Anand

Pattern, NDDB has been given the task of providing suitable technical advice and services.

Operation Flood and World bank-assisted dairy projects have thus enabled the NDDB to carry out the replication of Anand Pattern milk producers' cooperatives in specific milksheds in different States. Altogether, NDDB has been assigned the replication of the Anand Pattern in 12 States at 28 different places as shown in Table 2.

TABLE 2
REPLICATION OF ANND PATTERN MILK PRODUCERS' COOPERATIVES IN DIFFERENT STATES IN INDIA

State	Places
1. West Bengal	1. Murshidabad
	2. Matigara
2. Bihar	3. Patna
3. Uttar Pradesh	4. Meerut
	5. Varanasi
4. Punjab	6. Bhatinda
	7. Ludhiana
5. Haryana	8. Rohtak
6. Rajasthan	9. Alwar
	10. Bikaner
	11. Jaipur
	12. Ajmer
	13. Bharatpur
	14. Sawai-Madhopur
	15. Tonk
7. Gujarat	16. Kaira
	17. Mehsana
	18. Banaskantha
	19. Sabarkantha
8. Maharashtra	20. Jalgaon
9. Madhya Pradesh	21. Bhopal
	22. Indore
10. Karnataka	23. Bangalore
	24. Mysore
	25. Hassan
	26. Tumkur
11. Andhra Pradesh	27. Sangamjagarlamudi
12. Tamilnadu	28. Madurai/Erode

RESULTS

Anand Pattern milk cooperatives are perfectly safeguarded from the beginning. Due to the individual testing of milk supplied by each producer, and payments to milk producers two times a day, all the records at the Society have to be completed every day. This leaves no scope for misappropriation of money by the Society staff. To ensure a fair deal to each milk producer, the system worked out is such that the tester does not know which milk sample is whose. Milk producers are encouraged to adopt fair practices and proper breeding, feeding and management practice for their milch animals. These factors have been responsible for the success of 'Anands' wherever the work has been taken up. The progress of the replication of the Anand Pattern during 1970-71 to 1976-77 in general is shown in Table 3.

TABLE 3
PROGRESS OF REPLICATION OF ANAND PATTERN MILK COOPERATIVES

Particulars	1970-71	1975-76	1976-77
Number of milksheds covered	4	28	28
Number of village milk societies organised	1238	4359	5825
Number of milk producers covered (membership)*	245480	502158	565248
Milk procurement (lakhs litres)	1763	3050	4058
Number of farmers including farmers' wives from different States who visited Anand (Gujarat) while creating their own Anands'		12556	14172
Major processing capacities created in different milksheds (thousand litres)		4375	4575

*Of these, 55 to 60 per cent are small and marginal farmers and landless labourers.

It will be noted from Table 3 that the progress of work over time has been quite encouraging. There has been a manifold increase in the coverage of milksheds, villages and milk producers. Milk procurement has increased considerably. There has been corresponding benefits to the villagers. Technical inputs to all the milk producers covered under the programme, to help them improve their milch animals and enhance milk production have been ensured. The progress of the technical inputs programme is given in Table 4.

TABLE 4
PROGRESS OF TECHNICAL INPUT PROGRAMME WITHIN THE MILKSHEDS COVERED UNDER REPLICATION OF 'ANANDS' AS AT THE END OF 1975-76 AND 1976-77

Particulars	1975-76	1976-77
Cattle-feed Plants (existing or under construction)	16	26
Number of Stud Bulls	180	268

Village AI Centres	1140	1533
AI Workers Trained	1283	2498
Inseminations Carried Out:Cows	30448	98244
Buffaloes	225770	466613
Mobile Veterinary Units	145	267
Emergency Veterinary Units	40	73
Villages having AH Cover	2613	4884
Number of Animals Treated	195280	973240
Number of Demonstration Dairy Farms	120	150
Area covered under Fodder Production (Acres)	13593	14720

It can be seen from Table 4 that almost all the essential technical inputs needed by milk producers are being given to them in the villages. Demonstration Dairy Farms have pure-bred, exotic or cross-bred milch animals. Optimum cropping patterns and fodder production are demonstrated on such farms.

The replication of the Anand Pattern has already benefited milk producers' dairies in the four major cities in whose hinterland the work has been initiated. The impact of the replication of the Anand Pattern on the throughputs of diary plants in the four major cities can be seen in Table 5. The table shows that the throughput of the dairy plants in these cities has been doubled over the period from 1970-71 to 1976-77.

TABLE 5

IMPACT ON THE THROUGHPUT OF DAIRY PLANTS IN THE FOUR MAJOR CITIES BEING SUPPLIED WITH MILK FROM THE MILKSHEDS WHERE WORK ON THE CREATION OF 'ANANDS' HAS BEEN INITIATED

Total throughput of Liquid Milk by the Dairy Plants
(thousand litres : daily average)

Year	Bombay	Calcutta	Delhi	Madras	Total
1970-71	382	270	80	47	779
1971-72	491	276	140	57	964
1972-73	545	170	274	84	1073
1973-74	420	292	182	99	993
1974-75	533	187	323	110	1153
1975-76	716	198	368	148	1430
1976-77	731	203	473	187	1594

According to the United Nations Inter-Agency Mission Report on Operation Flood (June 1976), the replication of the Anand Pattern in the different milksheds has already resulted in considerable improvement of milch animals and also in the indigenous milk procurement of city dairies in Bombay, Delhi, Calcutta and Madras. The Mission also observed that the system was capable of having a significant impact on the economic and social well-being of the rural poor and low-income groups in the cities. Economically, increased milk production, cash income and employment can not only raise the economic viability of rural families but also improve the lot of low-income groups in the cities as Anand Pattern milk cooperatives are providing clean milk at prices much lower than the prices they pay to traditional milk vendors who generally sell adulterated milk. Socially, the activities of milk cooperatives are breaking down the barriers of class and caste by stimulating interest in improved social services. Institutionally, the success of Anand Pattern milk cooperatives which are owned, operated and controlled by the villagers themselves is giving them confidence in their own abilities and increasing the participation of both men and women in village affairs and rural development.

CONCLUDING REMARKS

The Anand Pattern of milk cooperatives seems to be the ideal way for the rapid development of dairying and animal husbandry. Already, more than one million rural milk producers' families are benefiting from their membership of such cooperatives in different milksheds in our country. Operation Flood, the largest diary development project ever launched anywhere in the world, has proved that the Anand Pattern can be successfully replicated to enable farmers to contribute substantially towards the development of milch animals, the dairy industry and the overall farming business in the country. It is hoped that the State Government will take note of this and provide the impetus for replicating the Anand Pattern in the remaining milksheds of urban demand centres, in any extension of Operation Flood in the future.

BULL MOTHER FARMS AND FARM RECORDING SYSTEM

Milk production enhancement is a complex process involving technologies and inputs which are highly specific and diverse. Improved feeding, management and disease control can augument the production of milk in the existing population of cows and buffaloes but would take long time to produce results because of low genetic potentials of these animals. The solution therefore is to improve the genetic make up of the existing cows for increased milk production in short period by introducing production genes from exotic breeds of dairy cattle i.e. crossbreeding. This necessitates the import of a large number of exotic bulls from abroad for crossbreeding the indigenous low yielding cows. However, this would mean investing a large sum in the form of foreign exchange.

In view of this, the Indian Dairy Corporation imported pregnant heifers, mainly of Jersey and Holstein Friesian breeds, and established nucleus herds in different ecologies of Operation Flood area of the 10 participating States (namely: Punjab, Haryana, Uttar Pradesh, Rajasthan, West Bengal, Bihar, Andhra Pradesh, Tamil Nadu, Maharashtra and Gujarat). These nucleus herds are known as Bull Mother Farms. The objectives of these bull mother farms are :

- Specifically to produce superior bulls required for crossbreeding.

- To demonstrate advanced techniques involved in keeping high yielding cows.

- To demonstrate production of improved and high yielding varieties of green fodders.

The Indian Dairy Corporation started its first bull mother farm in the beginning of 1971 at Gujarat Agricultural University, Anand Campus, Anand with the import of 96 pregnant Jersey Heifers and 4 Jersey bulls. Subsequently in March, 1973 thirteen more farms were established. Thus 14 bull mother farms were established in the above 10 Operation Flood States. The location of these farms alongwith the initial allotment is given in the Appendix.

In order to fulfill the objectives of these farms, the IDC through National Dairy Development Board, Anand developed a recording system called Farm Recording System to be implemented in these 14 bull mother farms. The objectives of setting up this system are three-fold.

1. To provide a simple, accurate recording system which takes minimum time to complete.

2. To draw attention to the key factors affecting the performance of the unit and thus helping control and further planning.

..2/-.page.

3. To have large data relating to such units spread through out India which will be helpful in decision making and future planning of breeding programs and policies.

This recording system has been printed in the form of a manual- the "Farm Recording Manual" which is devided in three parts : (i) Annual Accounts; (ii) Recording of Physical Factors and (iii)Fodder Records. Each part consists of basis records to be maintained at the farm and the summary records to be sent to the Computer Centre of NDDB of compilation and processing. At the NDDB computer centre master files are created for each of the bull mother farms and the data of all the herd in these farms is kept on magnetic tapes and used whenever required. With the help of the summary records which are sent by the Bull Mother Farms the information contained in the master files are updated from time to time. Useful informations on key result areas are generated from these and fed back to the Farm Managers. Some of the key result areas identified at present are :

(1) Monthly performance of the herd.
(2) Annual performance of the herd in each bull mother farm and its comparison with others.
(3) The annual cow summary.
(4) Annual mating calender.
(5) Cow economics and
(6) Annual crop plan based on nutritional requirements and supply.

In order to review the system, seminars/workshops are arranged by the NDDB/IDC from time to time. The Project Managers and the Agronomists of the above bull mother farms participate in these and discuss the system and results obtained, suggest suitable modifications based on their experience and locate new key result areas to be covered. Thus the system provides aids and feed backs, to these farms for making efficient and timely decisions and help the managers in day to day management situation.

..3/-.page.

APPENDIX : Different IDC's Bull Mother Farms, Their Locations, Initial Allotment and Existing Herd Strength of Jersey Animals.

States	Location	Initial Allotment		
		Males	Females	Total
Punjab	Exotic Cattle Farm, Bhattian*	4	30	34
Haryana	Model Exotic Animal Farm, Bhiwani	3	25	28
U.P.	Jersey Cattle Breeding Unit, Rae Bareli.	2	20	22
	IDC Project, Literacy House, Lucknow	2	8	10
Rajasthan	Exotic Nucleus Farm, Bassi	3	25	28
West Bengal	WFP-618, Haringhatta	3	30	33
Andhra-Pradesh	IDC Project, Indian Detonators Ltd., Hyderabad **	7	16	23
	Jersey Farm, APDDC, Nakarikallu	2	15	17
Tamil Nadu	Nucleus Jersey Farm, TNDDC Ooty UPASI Cattle Develop-ment Scheme, Coonoor**	7	16	23
Gujarat	Sabarmati Ashram Gaushala Project, Bidaj.		55	55
	IDC Project, GAU, Anand Campus, Anand.	4	96	100
Bihar	Rajendra Agri.University, Pusa +	3	30	33
Maharash-tra	BAIF Urulikanchan Poona (Only funds provided).			
	Total	42	381	423

* Consists of Jersey and Holstein Friesian breeds.
** Consists of only Holstein Friesian breed.
\+ No information about the existing herd strength.

fo&ah/nrt/bpt/1000/
dated : 7-3-1978

NATIONAL DAIRY DEVELOPMENT BOARD
ANAND - 388 001.

Economics of Milk Production

D.S. Thakur

About 75 per cent of the cattle owners in India belong to the category of small and marginal farmers and the landless. As sale of milk is one of their major sources of income, it is of utmost importance that the economics of milk production in our country should be analysed in the proper perspective. A remunerative price for milk will improve their economic status. It is, therefore, generally agreed that the cost of milk production should be one of the main factors to determine the price of milk -- especially the price to be given to the milk producers. It is desirable that the economics of milk production should be worked out separately for cows and buffaloes from the point of view of finding the economic benefits accruing from these different breeds, the choice of these animals, fixation of price for cow's and buffalo's milk, reducing cost of milk production, making dairying more remunerative and such other economic considerations.

This write-up is aimed at giving an idea regarding the broad frame work, and the methods of working out the economics of milk production. It should be noted that the economics of milk production varies from place to place, breed to breed and farm to farm. The items of expenditure include variable costs such as cost of fodder, feed, water supply, labour, rent, interest, overhead charges, depreciation, medicines, etc. The various items that make up income are milk, milk products, sale of animals and the dung. The costs and returns are calculated for one lactation cycle covering one lactation and one dry period.

However, the cost of milk production particularly under the mixed farming system as prevalent in India and other developing countries is rather difficult to assess. Many calculations and components customarily included in the cost of milk production are often rather meaningless and not of much relevance for policy decisions as we know that generally in the villages milch animals are mainly kept for the purpose of producing draught animals and manure and milk under such a situation is a side product. An indigenous cow or buffalo under village conditions is normally maintained on chance grazing, natural herbage obtained free of cost from near the roads, river and canal beds, grass and weeds removed from the fields and some fodder grown without major inputs on the boundaries and bunds of the fields or in the marginal lands.

It becomes necessary to work out separately the felt cost (or out of pocket expenses) and the imputed costs. The cost of milk production and returns and also the net returns from milk production worked out on a per dairy animal and per litre basis for cows and buffaloes for a tribal area in Ahmednagar district in Maharashtra are shown in Table 1 and Table 2, to give an idea of the different components as well as the overall economics of milk production under field conditions.

..2..

It is also noted that the improved milch animals - purebred exotic cows, crossbred cows, improved indigenous cows and upgraded buffaloes are highly efficient milk producing animals. They can produce 4 or 5 times more milk as compared to non-descript local cows. Due to their higher efficiency farmers can get higher milk production, income and profits at comparatively lower costs of production per litre of milk. The cost of production per litre of milk in the case of cross bred and local cows and buffaloes is shown in Table 3 to show the comparative efficiency of different types of milch animals.

TABLE 1: ITEMWISE BREAK UP OF THE TOTAL COST OF MILK PRODUCTION

Particulars	Cow			Buffalo		
	Per animal Rs.	Per litre Rs.	Per centage Rs.	Per animal Rs.	Per litre Rs.	Per-centage Rs.
Felt Cost						
Feeding cost	244.66	0.640	62.38	453.00	0.540	63.77
Miscellaneous cost	2.66	0.007	0.68	4.16	0.005	0.59
Interest on felt cost	11.01	0.029	2.80	20.11	0.025	2.83
Total	258.33	0.676	65.86	477.27	0.570	67.19
Imputed Cost						
Family labour cost	69.75	0.180	17.76	109.30	0.130	15.39
Depreciation on the value of byre	14.31	0.037	3.64	22.55	0.027	3.17
Interest on the value of byre	3.20	0.008	0.81	3.60	0.004	0.51
Herd replacement cost	34.69	0.091	8.83	63.11	0.075	8.88
Interest on the value of the animal	11.27	0.029	2.87	33.73	0.040	4.75
Depreciation and interest on the value of utensils	1.13	0.003	0.30	00.84	0.001	0.11
Total	134.35	0.348	34.21	233.13	0.277	32.81
Total cost	392.68	1.024	100.00	710.40	0.847	100.00

Source: TK T Acharya et al ; Economics of Milk Production in Trival Area of Ahmednagar District (Maharashtra State), Agricultural Situation in India, May 1973.

..3..

TABLE 2: COSTS, RETURNS AND LABOUR EMPLOYMENT PER FARM IN COW AND BUFFALO MILK PRODUCTION

Particulars	Cow	Buffalo
Felt cost (Rs.)	258.33	477.27
Imputed cost (Rs.)	134.35	233.13
Total cost (Rs.)	392.68	710.40
Total production of milk (litres)	418.32	839.98
Value of manure produced (Rs.)	17.41	29.04
Gross Income (Rs.)	435.73	888.22
Net cost of milk production (Rs,)	375.27	681.36
Net income over felt cost (Rs.)	177.40	410.95
Net income over total cost (Rs.)	43.05	177.82
Family labour for milk production (Man-days)	32.47	45.59

Source: TK T Acharya et al ; Op. cit.

TABLE 3: AVERAGE COST OF PRODUCTION PER LITRE OF COW'S AND BUFFALO'S MILK

Year	Cow's Milk		Buffalo's milk
	Crossbred Rs.	Local Rs.	Rs.
1971-72	0.82	1.33	1.04
1972-73	0.95	1.56	1.06
1973-74	1.01	1.52	1.10

Source: SS Gill et al : A Feasibility Study of Intensified Cropping with Fodder and Milk Production as an Important Component of the Total Farm Enterprises in I A D P District Ludhiana (Punjab), Punjab Agricultural University, Ludhiana, July 1970 - March 1974.

Table 3 shows that in view of the high cost of cattle feed and other allied items, the cost of milk production has been increasing over the years. However, the data given in the table gives a clear idea of the efficiency of the different milch animals.

Apart from the breed of milch animals, management of different milch animals play a very important role in the overall milk production and the economic returns obtained from dairying. This is clearly shown in the United Nations Inter-Agency Mission report on 'Operation Flood', June 1976. The findings of the Mission in this regard are summarised in Table 4.

..4..

TABLE 4: MILK PRODUCTION AND INCOME FROM DIFFERENT CATEGORIES OF MILCH ANIMALS UNDER DIFFERENT LEVELS OF MANAGEMENT IN INDIA

Particulars	Management	Milk production litres	Gross income Rs.	Gross expenditure Rs.	Net income Rs.
Indigenous cow	Conventional[1]	200	175	..	175
	Improved[2]	475	713	300	413
Buffalo	Conventional	450	900	..	900
	Improved	700	1500	350	1150
	Intensive[3]	2500	4600	2800	1800
Crossbred cow	Improved	1800	2700	1200	1500
	Intensive	3000	4500	2500	2000
Purebred exotic cow	Intensive	3500	6125	3500	2625

1. The animal is maintained only on chance grazing, herbage and other material not usable as human food.
2. The animal is also fed cattle feed and green fodder from one-tenth acre of land.
3. In this case, cost of overall management including animal health care is incurred in addition to feeding of optimum quantity of cattle feed and green fodder.

It will be noted from Table 4 that there can be three forms of management viz conventional, improved and intensive according to the potential of the milch animals. At the low level of production, milk may be produced free of felt cost as is generally done in the villages in the case of local cows in traditional setting. However, when more milk is required particularly for sale, it is advisable to keep improved milch animals which respond very favourably to good management practices giving higher production at lower cost thereby giving higher net income to producers.

In an organised dairy farm where relatively heavy investments are made in the specialised dairy farming system, a more elaborate and complete system is to be followed for working out the cost and economics of milk production. The actual method of working out the cost of milk production under such a system is given in Appendix 1.

..5..

BENEFITS OF MILK COOPERATIVES TO SMALL FARMERS, MARGINAL FARMERS AND THE LANDLESS IN GUJARAT.

D.S. Thakur
National Dairy Development Board, Anand

Dairying has a vast potential for raising the income of the small farmers, marginal farmers and landless labourers in rural areas through the establishment of milk cooperatives which are owned, operated and controlled by the milk producers themselves. Such milk cooperatives have been first conceived and initiated as early as in the year 1946-47 in Gujarat State on the now well known Anand Pattern of milk cooperatives having milk producers' cooperative societies in different villages and a district cooperative milk producers' union which owns a dairy, at the district level. These milk cooperatives are now widely spread in twelve of the nineteen districts of Gujarat and it is further planned to establish a dairy on the Anand Pattern in every district to cover all the villages under the fold of milk cooperatives in this State.

The present article is based on a recent study* of the milk cooperatives of Gujarat conducted at the instance of the Indian Council of Social Science Research. It shows the different services and facilities provided by the milk cooperatives to the farmers and examines the actual benefits accruing to the milk producers especially to the small and marginal farmers and the landless families from the milk cooperatives.

Development of the Milk Cooperatives

The first milk cooperative organised in Gujarat is said to be the Choryasi Taluka Cooperative Milk Marketing Society which was registered on December 21, 1939 in Surat District. It collected the surplus milk of the farmers in Choryasi Taluka and sold the same in raw form in Surat City. The real entry of Cooperatives in the milk industry of Gujarat however was made with the organization of the examplary Kaira District Cooperative Milk Producers' Union Ltd. Popularly known as Amul Dairy at Anand in 1946. Since then district after district has been following this pattern by organising more and more milk cooperatives.

---

* S.M.Patel, D.S.Thakur, M.K. Pandey: Impact of the Milk Cooperatives in Gujarat, Institute of Cooperative Management Ahmedabad, 1975.

The milk unions have made a remarkable progress right from the beginning and especially during the last few years. The working capital of the milk unions during the last seven years has increased by more than seven times. The share capital and reserve and other funds have increased by more than three times. Also, there has been a considerable progress so far as the organisation of milk societies in the villages, total membership, procurement of milk, sale of milk and milk products and total savings of the milk unions and societies are concerned. The number of milk societies as well as membership have almost doubled. The value of milk purchased by the milk unions has registered an increase of more than three times. The value of milk and milk products sold and the net savings of the milk unions show an increase of more than four times.

Provision of Technical Inputs and Services

The Anand Pattern of milk cooperatives practised throughout Gujarat consists of the two-tier structure of the village milk producers' cooperative societies at the village level and a district milk producers cooperative union at the district level. The milk societies in the villages collect surplus milk from the milk producers twice a day and also make payments for the same every 12 hours or as decided by the producers. The milk collected at each society is transported to the dairy by the private contractors engaged by the milk union. At the dairy, it is pasteurised and then sold as liquid milk as much as possible. The remaining quantity of milk is converted into milk products.

Besides milk collection and twice-a-day payment to the milk producers on the basis of quantity and quality (fat and solids not fat) of milk, the milk cooperatives also have an intensive system to provide all the essential technical inputs and services needed by the milk producers in the villages through the same machinery which is engaged for milk procurement. When a new milk society is started in any village, the milk union provides financial assistance mostly in the form of milk testing equipment and other necessities. To start with, a union

supervisor helps the new milk society for a few days to organise its day to day business. Thereafter, the union guides, supervises, rectifies and controls the activities of each milk society constantly so that they run efficiently and remain strong and viable. Besides, there is a continuous and concurrent audit of all the cooperatives on quarterly basis to ensure a clean milk business.

The milk union through each of the milk societies provides a number of technical inputs to the villagers for milk production enhancement. The most important of these are: artificial insemination services through use of semen from high pedigreed or proven sires, veterinary first aid treatment, weekly veterinary visits and round the clock emergency visits as a part of animal health cover service; routine extension work; supply of quality seeds and root slips for production of green fodder and supply of balanced cattle feed. All these services are provided on no profit no loss basis to the farmers in every village covered by the milk cooperatives.

Using a part of their annual savings, the milk cooperatives - unions as well as societies in collaboration - have built up an extensive system to provide various rural development services. They assist in cattle development, cooperative propaganda and education; establishment of schools, libraries, health centres, youth clubs, construction of roads and provision of water supplies and electric connections in the villages. The producers are paid dividend on their share. A part of the net savings is also used to pay a bonus to the producers in relation to the contribution they make towards the business of the society, bonus to the staff of the cooperatives and to build reserve funds to ensure the financial stability of the cooperatives. The reserve funds can be used partly for building up assets such as milk collection centres, telephone facilities, store room etc.; to help the cooperatives to function efficiently. The general pattern of use of the annual net savings of milk cooperatives for various welfare purposes is shown below:

Direct Economic Benefits

In order to analyse the impact of milk cooperatives on the economic and social conditions of villagers, the status of milk producers in the villages covered by the milk cooperatives (experiment) have been compared with the status of milk producers in the control villages selected for the study within the same districts. It is found that most of the milk producers in both type of villages keep generally one or two milch animals - preferably buffaloes. The buffaloes account for 86 and 69 per cent of total milk production in experiment and control villages respectively. The remaining quantity of milk is contributed by cows in general and even by goats, sheep and camels particularly in dry areas of the State. The goat, sheep and camel milk is used for domestic consumption. However, the proportion of wet animals possessed by different categories of milk producers including weaker sections as well as the milk production per animal are quite high and statistically significant in experiment as compared to control villages. Such differences are understandably due to the facilities provided by the milk cooperatives in the villages covered by them. It is found that the milk producers in the villages having milk cooperatives are producing on an average one litre of milk more per animal per day than their counterparts in the control villages.

Again, marketed surplus and consumption of milk which are primarily functions of total production of milk per family differ significantly in the experiment and control villages. It is observed that more than 70 per cent of milk production is being sold in the experiment as compared to only about 55 per cent of total milk production in control villages. The marketed surplus of milk as a proportion of total milk production is highest in case of small and marginal farmers and landless milk producers who sell as much as more than 72 to 80 per cent of their milk production to raise as much income from milk production as possible. The percentage of marketed surplus as a proportion of total milk production goes on decreasing considerably with the increase in the size of land holdings. The per capital consumption of milk and

milk products comes to 234 gm and 224 gm per day for the experiment and control villages respectively which are above the minimum requirement of 210 gm of milk per day per person. This shows the common belief that the creation of marketing facilities for milk derive the milk producers away from the normal consumption of milk is not true. The milk cooperatives have helped to raise milk production significantly thereby raising both marketed surplus and consumption of milk per family.

The milk cooperatives buy as much quantity of milk from the milk producers as they want to sell depending upon their marketable surplus and cash requirements. This has enabled the villagers to earn sufficient income from dairying year after year. The overall income from dairying in the experiment villages is almost double as compared to the same in the control villages. The day to day dairy income obtained from sale of milk to the cooperatives is constantly used for the purchase of technical inputs for milch animals, purchase of milch animals and partly for procuring essential agricultural inputs like improved seeds, fertilizers and pesticides etc. which further help the farm families to boost up their income.

Amongst the different categories of milk producers in experiment as well as control villages, the importance of dairying as a source of income is strictly in the order of landless followed by marginal, small, medium and large farmers respectively so far as the proportion of their income coming from dairying is concerned. Landless and marginal farmers earn as much as 65 to 70 per cent and small farmers about 25 to 30 per cent of their total income from dairying. The proportion of total income from dairying in case of large and medium farmers ranges between 8 to 20 per cent only. Thus, the organization of milk cooperatives is most important from the point of view of ameliorating the economic conditions of the weaker sections in the villages. It is also found that on the whole, total as well as crop and dairy incomes are higher in the villages covered by the milk cooperatives as compared to control villages. The small and marginal farmers and landless people in the experiment villages where milk production has become an important source of income are comparatively less dependent on off farm income than their counterparts in the control villages.

Indirect Benefits

Apart from providing opportunities for gainful employment and raising income of the milk producers in rural areas directly as discussed above, every milk union employs a few hundred people as soon as it starts functioning. The employment in the union goes on increasing year after year along with the increase in its business. Besides, every milk society employs 3 to 10 persons in each village depending upon the volume of business handled. What is more important is that the largest group of employees of the milk cooperatives consists of the unskilled labour especially recruited from the rural areas.

The democratic way of functioning of the milk cooperatives has an immense impact on the life of villagers. Every milk cooperative union as well as society, has an elected managing committee to look into the day to day functioning of the cooperative. Every milk producer who becomes the member of the milk society can cast his/her vote for election of members for the managing committee for the society. Similarly, the board of directors at the union level is elected by the representatives from the milk societies. In this way the villagers constantly learn the fundamentals of democracy by living it.

The milk unions regularly publish news letters on dairying and cooperation for the benefit of their members and also hold film shows and practical demonstrations on the proper use of technical inputs and scientific methods of milk production enhancement by the cattle owners. The procedural elements of the milk cooperatives like reaching of the motor trucks two times a day at the given time in every village, formation of the same que of all the milk producers to deliver their milk at the society strictly on the basis of first come first stand basis, testing of milk sample of each milk producer and making to them payments two times every day to ensure a fair deal to each milk producer, completing the relevant records at the society every day etc. also have a far reaching impact on the social life of villagers. The only common

felt need aroused on their part to organize themselves to market their milk at remunerative price has also served as an instrument in eliminating the age old barriers of cast, untouchability, communalism, feuds and factions in the villages.

The milk cooperatives have also gone a long way in raising the status of women in the villages. The cooperatives are found to play a significant role in involving women in the running of milk societies in their respective villages. As the feeding and management of milch animals is mostly in the hands of women and as they deliver the milk to the milk society, the income from milk is generally regarded to be the income earned by the women of the house. The analysis of data shows that income from two buffaloes can enable a landless widow to look after herself and her family. The milk cooperatives organise the rural womens' trips to their milk unions and dairy plants, educate them about the health, well being and maintenance of milch animals, emphasize the need for and explain the technique and programme of artificial insemination, give them suitable rewards on the progress of milk raised by their cows and buffaloes and even encourage them to get nominated to the managing committees of the milk cooperatives. All this makes women face men and people coming from outside with more self confidence.

The milk cooperatives are also found to create certain other intangible impacts on the villagers such as the sense of discipline, receptiveness to innovations, better knowledge of human nutrition through the knowledge of cattle feed in general and special feeds required at the time of pregnancy and lactation etc. and better idea of family planning through the knowledge of reproduction process gained by them from the activities of artificial insemination in dairy animals.

Concluding Remarks

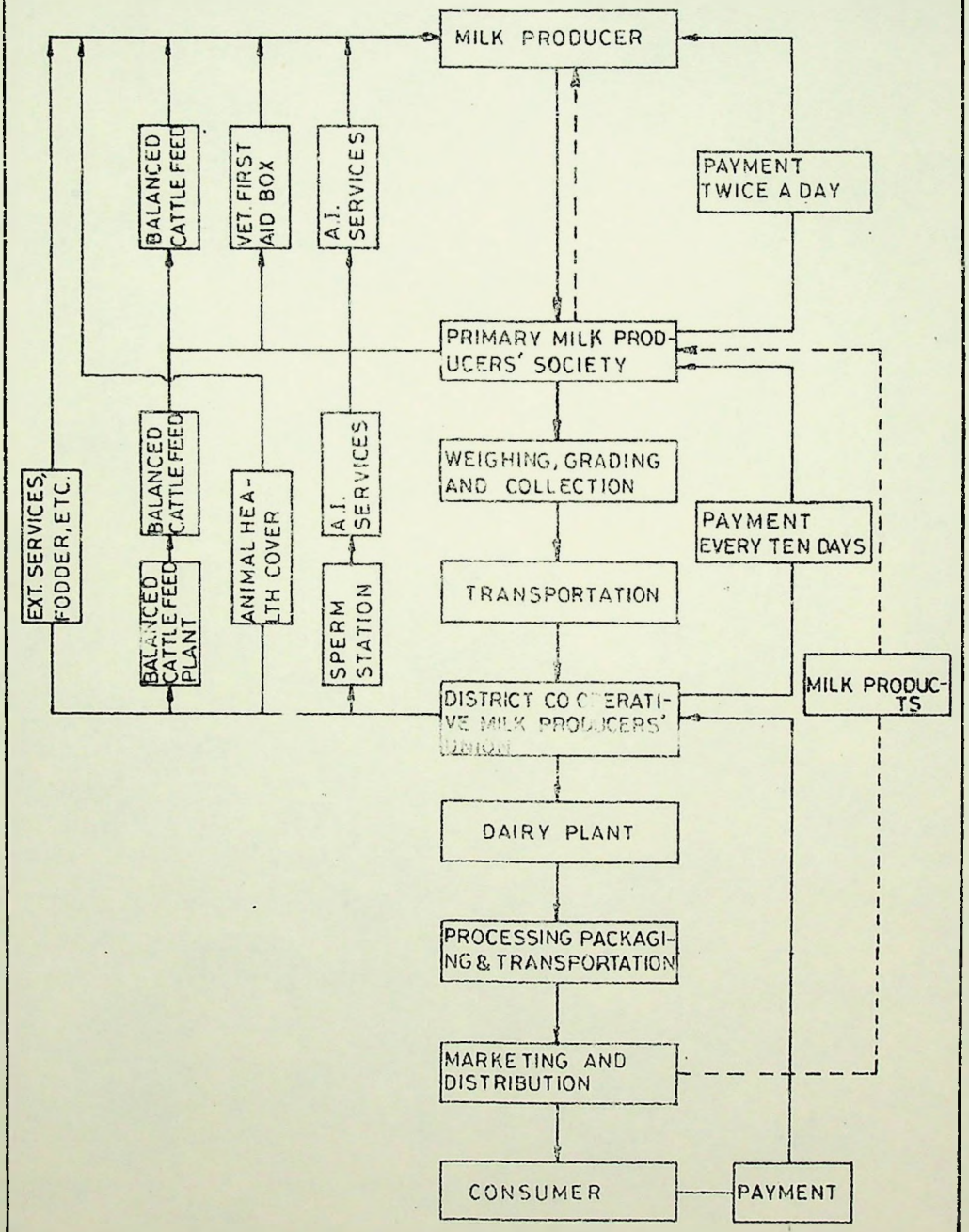
On the whole, it is observed that the Anand Pattern milk cooperatives of Gujarat have not only helped to raise milk production and the economic conditions of especially the rural poor significantly by providing them effective facilities, employment and daily cash income but this pattern of milk cooperatives also has in it the seeds of an entire social revolution. Besides serving as effective instrument for milk production enhancement; these cooperatives are helping to break down the barriers of cast, class and sex and to stimulate interest in all worthy social services including literacy drives and family planning.

fo&ah:dst:mr:500:11:77.

National Dairy Development Board

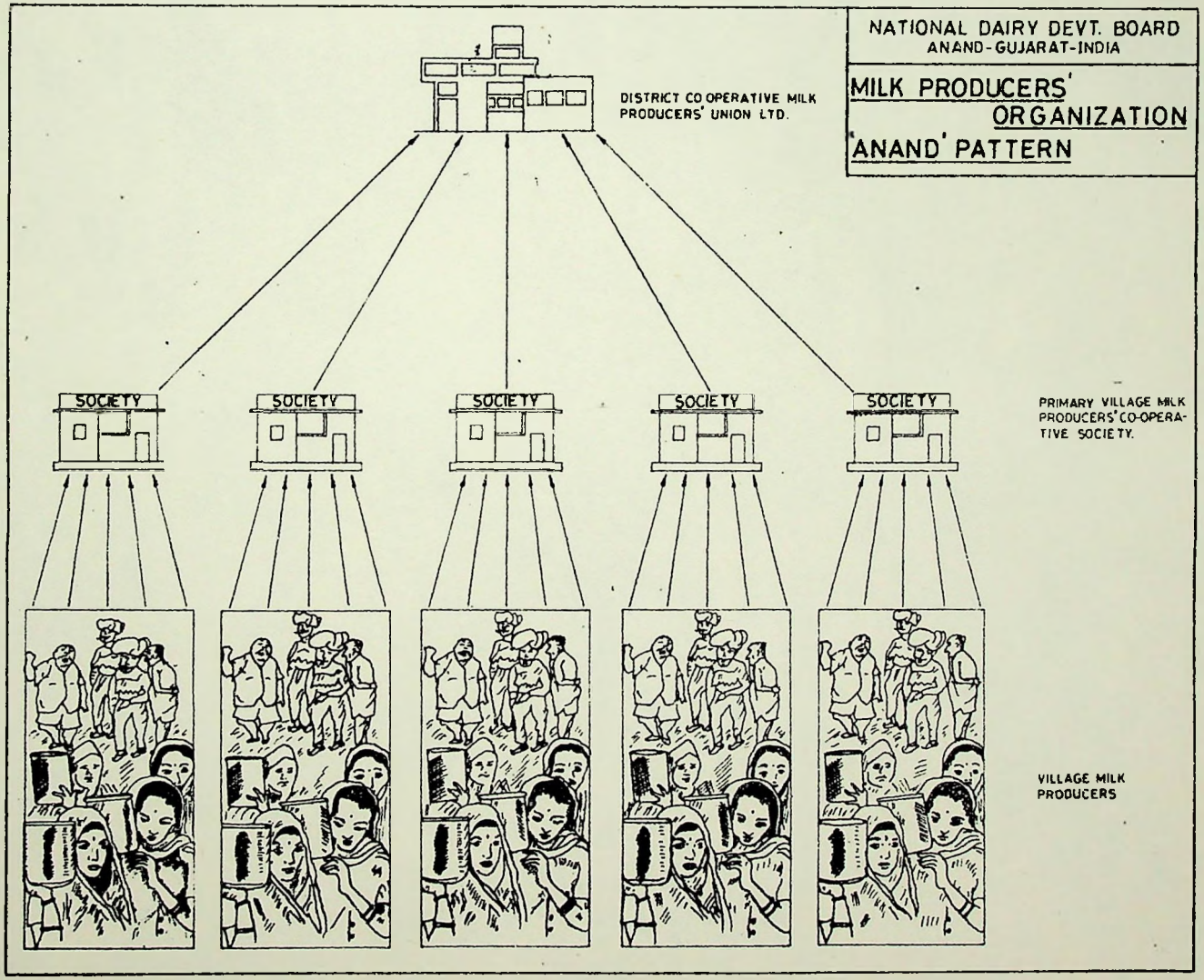
Anand

CO-OPERATIVE MILK PRODUCERS' ORGANIZATION ON ANAND PATTERN



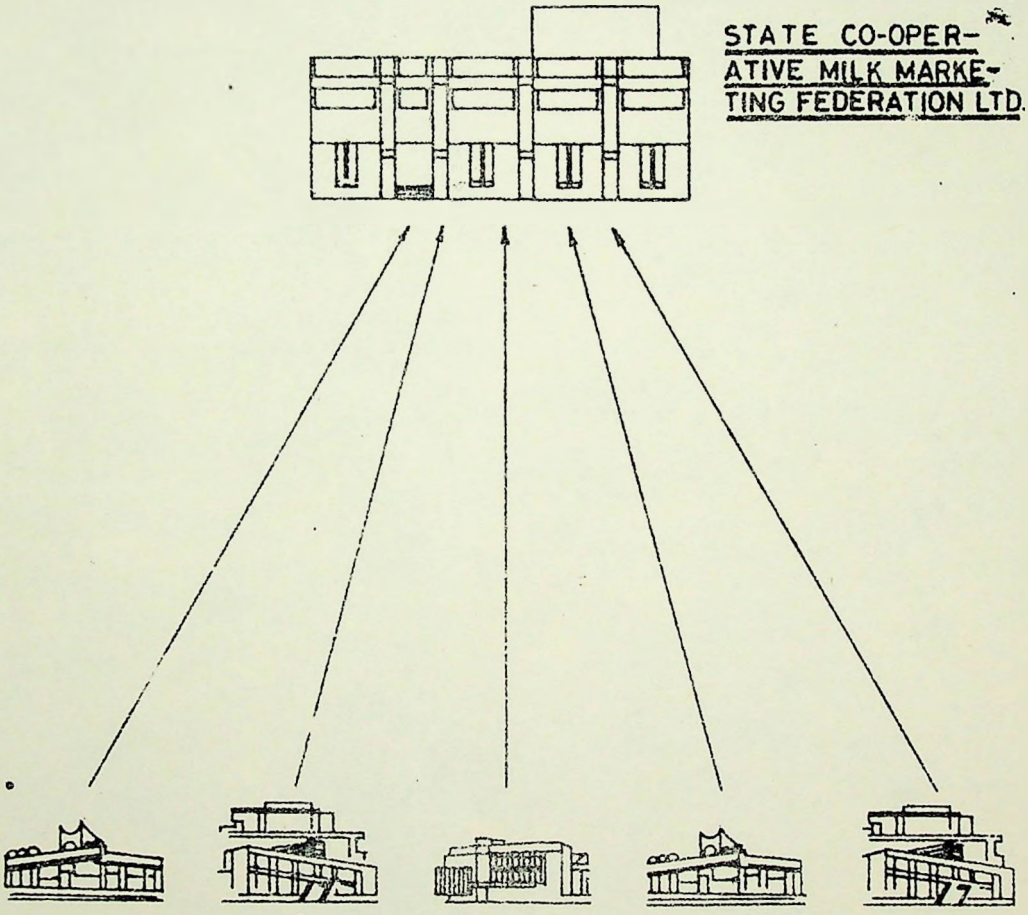
NATIONAL DAIRY DEVT. BOARD
ANAND-GUJARAT-INDIA

MILK PRODUCERS' ORGANIZATION 'ANAND' PATTERN



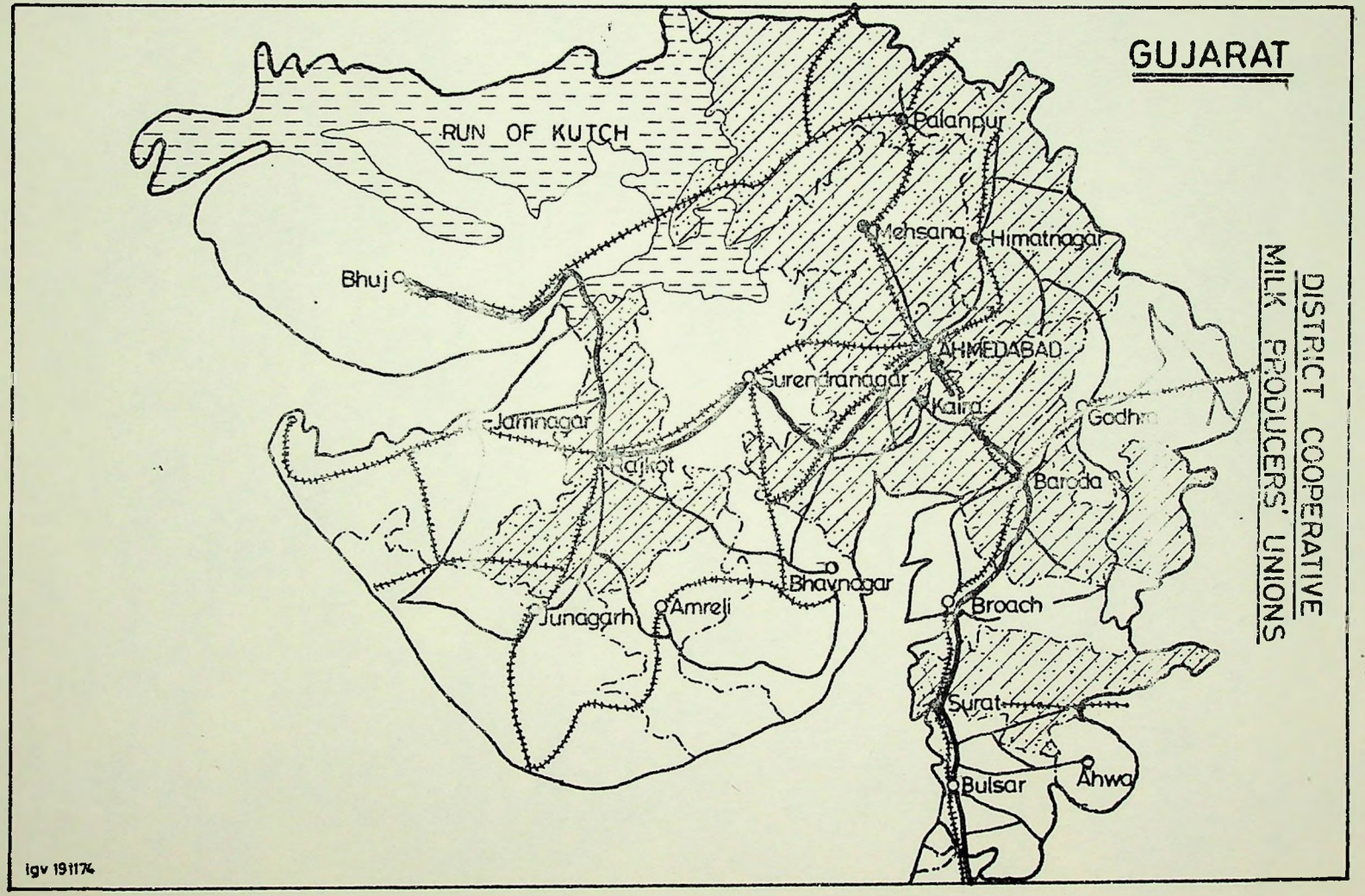
N.D.D.B
ANAND

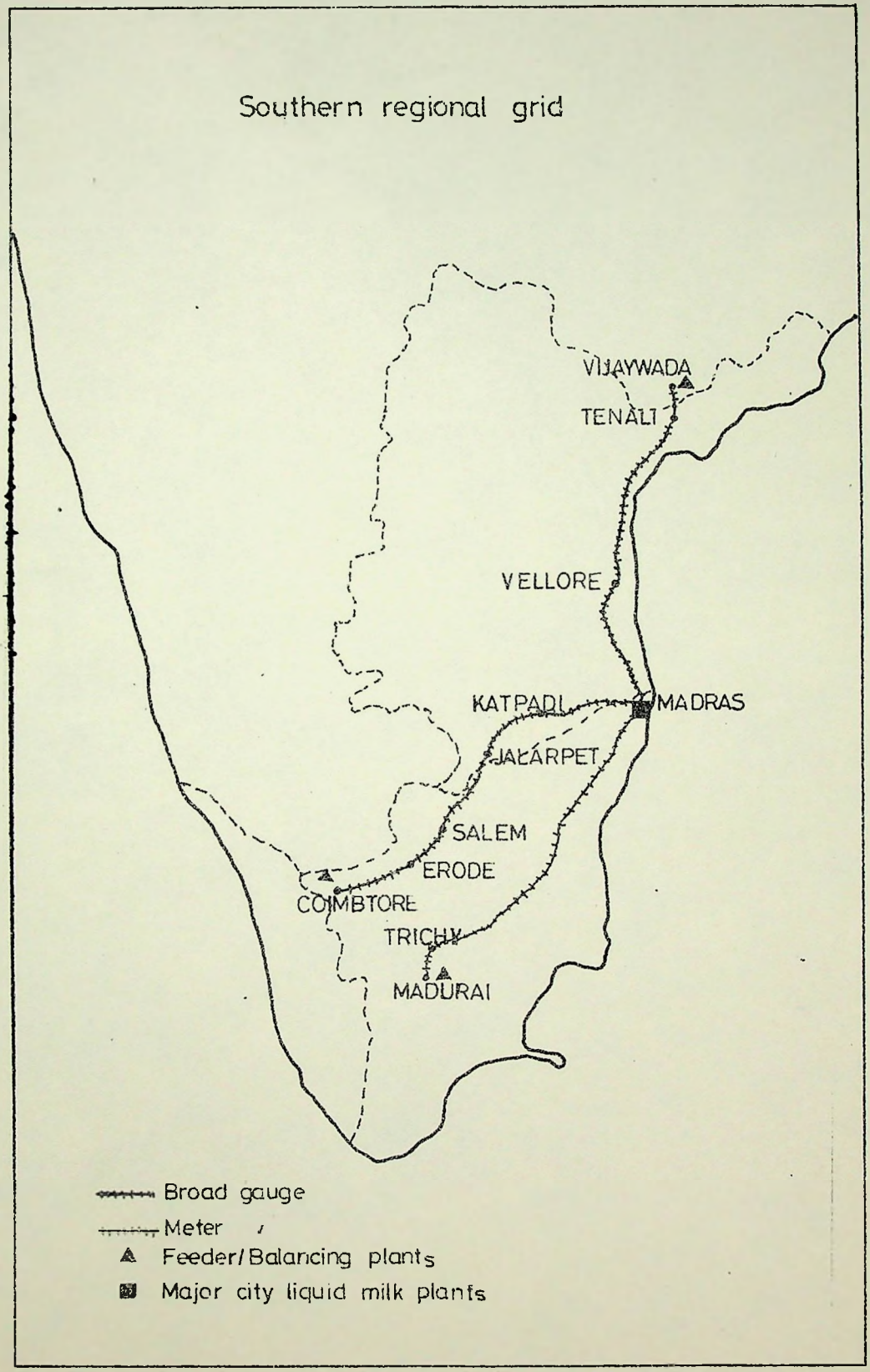
DISTRICT CO-OPERATIVE MILK PRODUCERS' UNIONS & FEDERATION



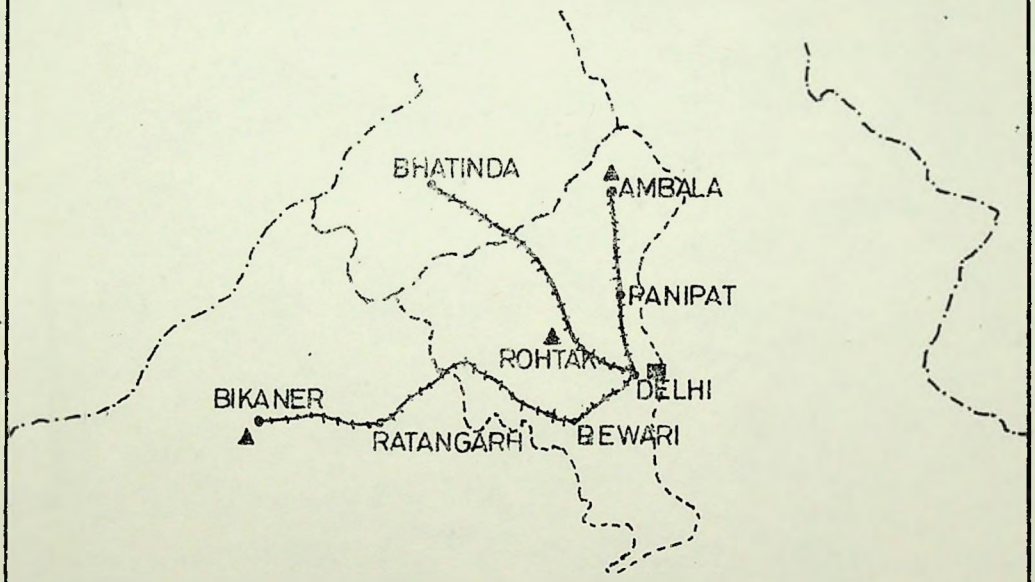
STATE CO-OPERATIVE MILK MARKETING FEDERATION LTD.

DISTRICT CO-OPERATIVE MILK PRODUCERS' UNIONS


GUJARAT
DISTRICT COOPERATIVE
MILK PRODUCERS' UNIONS
RUN OF KUTCH
Palanpur
Mehsana
Himatnagar
Bhuj
AHMEDABAD
Surendranagar
Kaira
Godhra
Jamnagar
Rajkot
Baroda
Bhavnagar
Broach
Junagarh
Amreli
Surat
Bulsar
Ahwa
igv 191174


Southern regional grid
VIJAYWADA
TENALI
VELLORE
KATPADI
MADRAS
JALARPET
SALEM
ERODE
COIMBTORE
TRICHY
MADURAI
Broad gauge
Meter
Feeder/Balancing plants
Major city liquid milk plants

northern regional grid



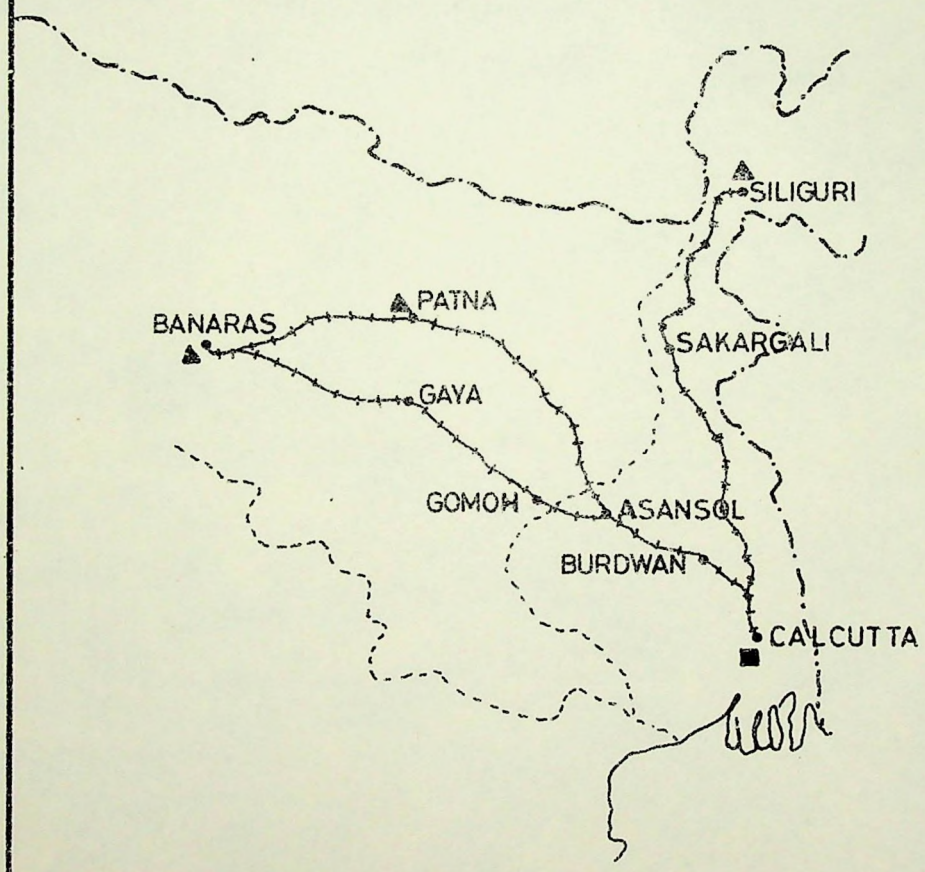
Broad gauge

Meter

▲ Feeder/Balancing plants

■ Major city liquid milk plants

eastern regional grid



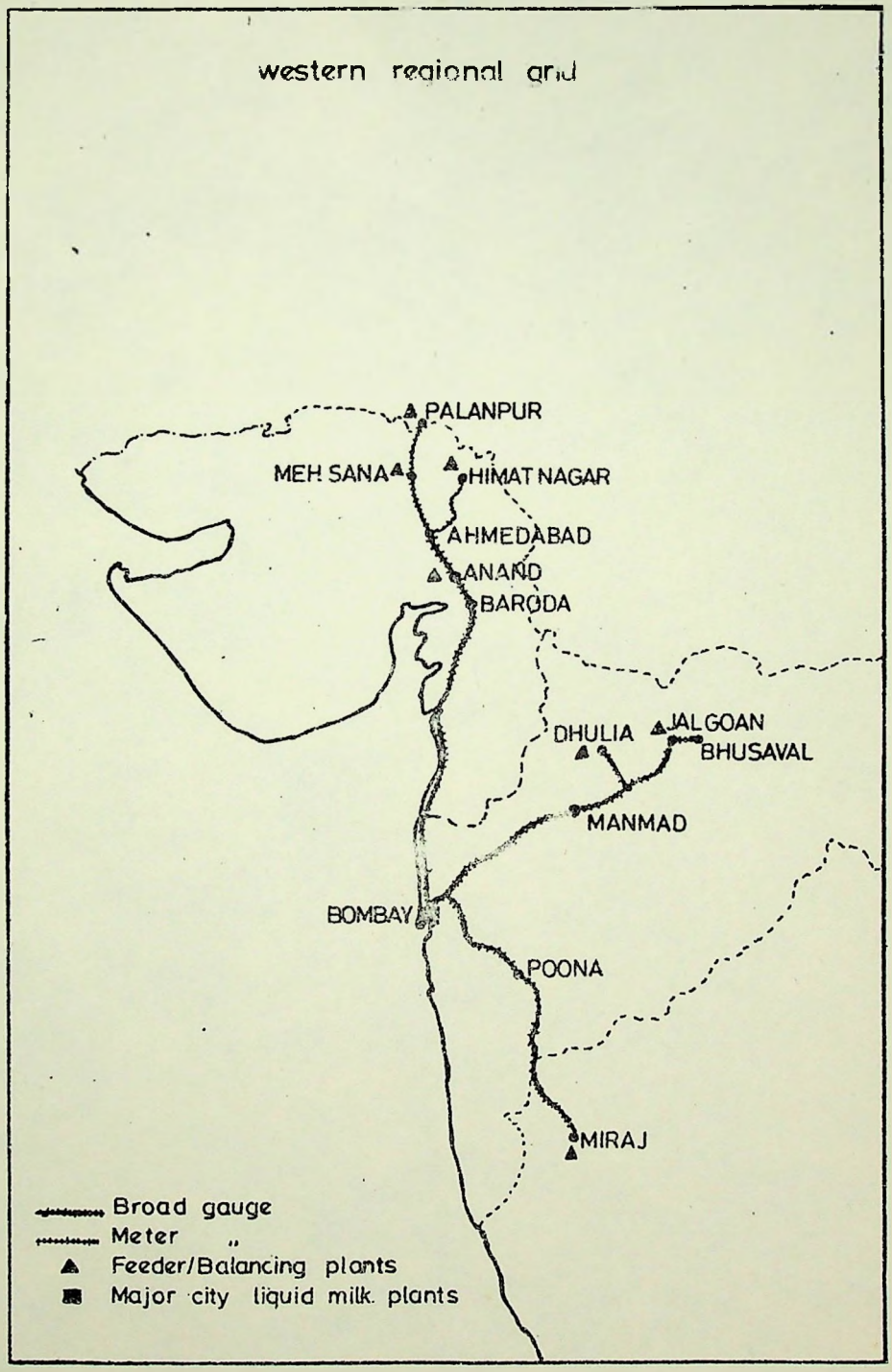
Broad gauge railway

Meter " "

▲ Feeder / Balancing plants

■ Major city liquid milk plants

igv090976


western regional grid
PALANPUR
MEHSANA
HIMATNAGAR
AHMEDABAD
ANAND
BARODA
DHULIA
JALGOAN
BHUSAVAL
MANMAD
BOMBAY
POONA
MIRAJ
Broad gauge
Meter ,,
Feeder/Balancing plants
Major city liquid milk plants

AMUL AT A GLANCE-AS ON 31-3-1978

Sr. No.	Particulars	1974-75	1975-76	1976-77	1977-78
1.	Milk Producers' Coop-Societies.	844	829	831	831
2.	Members	245000	250000	255000	275000
3.	Milk Collected from Societies(in kgs)	130952349	129041218	127017040	141197710
4.	Average rate for Kg.fat(inRs)	27.01	24.36	24.19	26.46
5.	Milk collection centres (owned by societies)	372	412	445	460
6.	Artificial Insemination Centres	668	665	678	711
7.	Artificial Inseminations.	192626	207674	222000	248263
8.	Pregnancy Diagnosis cases.	123257	130403	115579	133496
9.	Mobile Veterinary Dispensaries	21	23	23	21
10.	Cases treated by mobile dispensaries	95659	118258	121310	159129
11.	Veterinary First Aid cases	130145	163145	135223	164618
12.	Special Veterinary visits	29175	34231	39946	45709
13.	Milk yield competition participants	1001	1262	829	737
14.	No.of calves under subsidised Calf-rearing scheme	178	157	140	130
15.	Sale of Amuldan (in M.T)	59868	46269	63950	70851
16.	'AMUL visit by:				
	a) No. of societies	25	43	35	31
	b) No. of women	3849	7840	5955	5700

(pto) ..2/ page.

Sr. No.	Particulars	1974-75	1975-76	1976-77	1977-78
17.	Turnover (Rs.in crores)	44.64	42.73	44.20	56.53
18.	Net profit(Rs. in lakhs)	24.97	24.85	14.69	16.45
19.	Paid up share capital	44,18,000	52,92,700	68,59,000	68,67,400
20.	Reserve Fund	2,16,37,945	2,20,92,119	2,27,17,842	2,30,85,192
21.	Other funds	3,07,04,744	3,40,96,225	3,89,30,939	4,17,47,860
22.	Staff Salary	1,20,27,104	1,36,57,061	1,39,86,665	1,58,77,614
23.	Assets	8,10,94,273	9,15,70,303	9,82,81,521	10,38,71,583

fo&ah/ngt/pns/500

VASNA (B) MILK PRODUCERS' COOPERATIVE SOCIETY LTD.

V A S N A

1.	Name of the Village	: Vasna, Post: Vasna, Tal.Borsad District Kaira.
2.	Date of establishment of the society	: 1-5-1956
3.	Date of Registration of the society	: 29-11-1956
4.	No.of Households	: 600
5.	Human Population.	: 3200
6.	Total cultivable Land	: 1300 Acres.
7.	Main Crops	: Paddy, Bajri, Wheat, Tobacco, Cotton Pulses and Sugar cane.
8.	Total milch animals	: Buffalo : 550, Cows-27 Crossbred cows : 32.
9.	Chairman of the Society	: Mr. Ashwinbhai A. Patel.
10.	Secretary of the Society	: Mr. Ishwarbhai M. Patel.
11.	Panchayat	: Vasna Panchayat.
12.	Name of the Sarpanch	: Mr. Dahyabhai Mahijibhai Patel.
13.	Number of members	: 559
14.	Present milk collection	: About 1800 litres per day.

CONTRIBUTION BY THE SOCIETY TOWARDS COMMUNITY DEVELOPMENT.

1.	Construction of approach road	Rs. 22,000/-
2.	For water pipeline in a village & repairing of road.	Rs. 26,100/-
3.	Subsidy given towards Lucern Seed special visit fee,Manzer construction & cattle development	Rs. 27,723/-
4.	Donation for flood relief fund and to other institutions.	Rs. 7,542/-
5.	For the celebration of co-operative week.	Rs. 6,414/-
6.	For lady farmers induction programme.	Rs. 5,242/-
7.	Construction of water trough for cattle	Rs. 2,673/-
8.	For cooperative propaganda work.	Rs. 4,256/-
9.	For Library	Rs. 3,036/-
10.	For yough club	Rs. 368/-
11.	For primary school	Rs. 1,175/-
12.	For social welfare centre (Children school)	Rs. 2,850/-
13.	Benches for public use at Bus-stand.	Rs. 600/-
14.	For T.B. Hospital, Anand.	Rs. 1,200/-
15.	For Co-operative training to staff members and Managing Committee and members of Women's club.	Rs. 770/-
	Total (Rs)	: 1,11,949/-

..2/-.page

PROGRESS MIRROR

Year	No.of members	Share capital Rs.	Reserve fund Rs.	Milk purchase in Ltrs.	Milk purchase Rs	Net profit
1.	2.	3.	4.	5.	6.	7.
1970-71	480	2485	84082	480016	504185	30576
1971-72	491	2540	77337	430404	448602	26670
1972-73	502	2595	83015	450243	491979	46042
1973-74	527	2715	90647	389975	540135	59380
1974-75	540	2810	99365	459544	784853	62305
1975-76	559	2900	108319	374080	554063	62928

Year	Bonus paid Rs.	Bonus %	Cattle feed sale	Sale of lucerne seed (kgs).	Audit class
	8.	9.	10.	11.	12.
1970-71	22102	4.5	3096	325	A
1971-72	25164	5.7	2250	333	A
1972-73	19745	4.2	2265	532	A
1973-74	26831	5.2	3145	530	A
1974-75	38618	5.1	3629	500	A
1975-76	52401	9.6	3611	300	A

PROGRESS REPORT OF ARTIFICIAL INSEMINATION AND FIRST AID WORK

Year	Artificial Insemination performed.	Case Examined for pregnancy	Number of cases found pregnant	Result of A.I. services	F.A.Cases treated in a village
1970-71	1089	459	300	65%	427
1971-72	1017	467	323	69%	429
1972-73	760	379	259	68%	339
1973-74	761	355	212	60%	358
1974-75	740	317	191	60%	370
1975-76	1126	538	327	66.7%	403

..3/-.page

SOME GENERAL INFORMATION ABOUT THE VILLAGE

1.	Agriculture	Tractor	: 15
		Electric motors	: 19
		Oil Engine	: 7
		Branch Canal	: 5
2.	Cooperative Society	Milk cooperative	: 1
		Service society	: 1
3.	Animals	No.of buffaloes	: 550
		No.of cows	: 27
		No.of crossbred cows	: 22
		No.of bullock	: 144
4.	Education Institution	Primary schools	: 21
		Library	: 1
5.	Health Institution	Hospitals	: 2
6.	Religious Institu--tions.	Temples	: 6
7.	Banks	Bank of India branch	: 1
8.	Social Club	Youth Club	: 1
		Ladies Club	: 2
9.	Entertainment/ Communication	T.V. Sets	: 4
		Motor cars	: 7
		Trucks	: 3
		Motor cycle	: 8
10.	Business Industry	Tobacco processing and store room	: 1
		Fertilizers Dept.	: 1
		Pulses mill	: 1
		Cotton gining and proce--ssing factory	: 1

oooooooo

FO&AH/Ngt/Bpt/200
6th April 1977

Bandhni Milk Producers Cooperative Society Ltd.,
Bandhni.

About Milk Society.

1.	Name of the Society	:	Bandhni Milk Producers'Co.op. Society Ltd., Bandhni.
2.	Date of establishment of the society	:	8.3.1952.
3.	Date of Registration of the society.	:	30.6.1952
4.	Society Registration No.	:	P.D. 2264
5.	Chairman of the society	:	Mr.Indubhai Chunibhai Patel.
6.	Secretary of the society	:	Mr. Atmaram Desaibhai Vaghela

Contribution towards the community development work by the society.

1.	Veterinary dispensary	-	30,000.00
2.	Public health centre	-	10,000.00
3.	Education Institutions and Library	-	4,654.50
4.	Approach Road Repairing	-	4,986.70
5.	Panchayat Dispensary	-	7,551.93
6.	Flood relief	-	751.00
			57,944.13

General Details about Village Bandhni.

Population	:	5,823
Male	:	3,078
Female	:	2,745
Land (in acre)	:	1,833
Land holders(Khatedars)	:	975
Main crops	:	Paddy, Bajra (Millet), Wheat Tobacco, Cotton, and Sugar-cane.
Animals	:	1961
Buffaloes	:	1416
Bullocks	:	415
Cows	:	130
Pump engines in the village	:	19
Wells	:	20
Water works	:	1
Huller	:	6
Cooperative societies	:	3
Tractors	:	14
Secondary school VIII to XIth standard.	:	1
Pupils	:	200
Boys	:	110
Girls	:	90
Primary school Ist.to VIIth standard.	:	1
Pupils	:	622
Boys	:	384
Girls	:	238
K.G.School	:	1
Children	:	53
Ladies Club	:	1
Dispensary	:	1
Sports club	:	1
Youth association Maternity	:	1
Name of the Panchayat	:	Bandhani
Name of the Surpanch	:	Mr. Vithalbhai Somabhai Patel.

PROGRESS MIRROR

Year	No.of members	Share Capital (Rs.)	Reserve fund (Rs.)	Milk purchase in lts.	Milk purchase (Rs.)	Net profit (Rs.)	Divi-dand %	Bonus %	Bonus (Rs.)	Audit class
1969-70	947	5,650	58,326	5,32,277	5,92,639.	20,799	9	4.5	11,824.	A
1970-71	981	5,765	65,058	5,14,537	56,789.	30,543	9	4	13,521.	C
1971-72	999	5,855	65,130	5,21,249	5,84,665	24,805	9	6	12,691.	C
1972-73	1016	5,940	69,628	6,16,833	7,19,904	32,808	9	2	13,919.	B
1973-74	1033	6,025	74,989	6,15,170	6,25,677	36,092	9	2.5	15,472.	B

MGT/MVV/50/20.11.74

2.

1. Initial (First Set equipment) – 1200-1500
   Stationery

2. Salary of Staff — 2000-3000/yr × 2 yrs

Tpr for milk Chemicals for testing } given by Union

International Programme On Dairy Project Design And Organisation

India 1975

FIELD WORK STUDY ON TECHNICAL INPUTS OF SABARKANTHA DISTRICT MILK PRODUCERS' UNION LTD. HIMATNAGAR GUJARAT STATE

STUDY GROUP :

Dr.Sheikh El Dein	-	Sudan
Dr.A.S.Mejooli	-	Tanzania
Dr.Kapil Raj Suri	-	India
Dr.H.K. Patel	-	India - Sabar dairy
Dr.D.S.Thakur	-	India - NDDB
Mr.E.Darman	-	Indonesia
Dr.Amiatlal H.Amalean	-	Sri Lanka.

1. Introduction

The study was conducted during the period from 26th March to 4th April, 1975 with the objective to find out the role and effectiveness the technical inputs have had and are going to have on improving milk production to meet the demand for milk and milk products requirements for nutritional purposes and to give the livestock owners a remunerative return on their milk animals; and also to create employment for a few members of the village community through the handling and processing of the milk.

Sabarkantha District is situated on the North Eastern side of Gujarat State, has an area of 7390 Kms. and forms 3.8 % of Gujarat State. Average rainfall ranges from 20" to 25" per annum with some irregularities. It is said to have extreme cold winters and extreme hot summers.

The District is mainly agricultural with 70% of its population engaged in this activity. Land utilization is given in Exhibit I. The buffalo population is 296839 and that of cattle is 424481.

Exhibit I:

Number of villages	Total area Kms.	Arable Land %	Irrigated Land %	Well Irri. %
1400	7390	68	11	95

2. Farmers Organization

The farmers in the district developed a side industry of milk and ghee production at the homestead and to make this more profitable enterprise, the Sabarkantha District Cooperative Milk Producers' Union Limited was established in 1964.

The Union started collecting milk from 19 primary ccoperative milk societies on 20-10-1965 and supplied it to the Municipal Dairy in Ahmedabad. This dairy took only a limited amount of milk and could not accept more during the flush season and this meant a rotational stoppage of milk societies during the flush season. Lack of financial

..2

resources limited expansion of the Union's activities for the first five years.

In 1970 under OPERATION FLOOD PROGRAMME of the Indian Dairy Corporation an amount of 160 lakh rupees was sanctioned through Gujarat State Government to establish a dairy Project with a milk plant in Sabarkantha District with a handling capacity of 1.5 lakh milk litres per day. The Union acquired 40 acres of land near Boria village 5 kilomers from Himatnagar and the foundation stone for the SABAR DAIRY PROJECT was laid down on 11-6-1971 by Dr.V.Kurien, Chairman, Indian Dairy Corporation, Baroda.

Reception and pasteurisation of milk started on 12-5-1973; the condensing and spraying plants were commissioned in 1974.

Average daily throughput of milk in December '74 and January '75 was 100000 litres/day from 300 primary milk societies having 30000 affiliated farmer members.

Share capital, milk sales and amounts realized are shown in Exhisit II a, and the number of societies as on March 1974 (1974/75) in Exhisit II b.

..3

Exhibit II a

Year / Item	1964/65	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
No.of societies	18	19	21	28	39	59	84	145	225	290	310
Share capital (Rupees)	6250	6300	44000	44700	45800	152800	260300	515700	1352500	1352500	
Milk Purchases in litres		1102476	1585472	2902246	3351033	3862377	5500244	10740540	14612901	9952362 *	
Value of purchase price (Rupees)		768142	1349371	3152658	3701134	4223540	6273760	12287622	15182565	12088569 *	
Profit(Rupees	86	14801	14265	13480	20252	18224	936	9341	10158	4608	
Reserve Fund	29	29	3783	7729	14975	20039	24608	27830	27847	27875	
Dividents %	-	9	9	9	9	9	*-	-	-	-	-

Financial year ends in March therefore figures for 1974/75 are yet to be made-

* There has been additional milk from other districts.

Up to 1969/70 a 9 % dividend was given to the farmers through their societies after which it was decided that the Union keep the money as share capital and share certificates be given to appropriate societies which in turn gives shares to the producer according to the amount of milk sold.

Exhibit II b:

Taluka	Registered societies	Proposed societies	Total
Prantij	67	27	94
Himatnagar	30	18	48
Malpur	11	7	18
Bayad	44	22	66
Idar	34	31	65
Kedabramal	6	3	9
Modasa	2	7	9
Billoda	-	1	1
Total	194	116	310

2.2. Societies and Union set up

A village needs to have a minimum number of eleven members and produce at least 150 to 200 litres of milk per day before it is registered. It has to deposit 100 rupees to the Union to become a member and one rupee entrance fee.

Each society elects a managing Committee which latter elects its honorary Chairman who represente the society at the Union level. It employes a secretary, a milk collector and a milk tester etc.

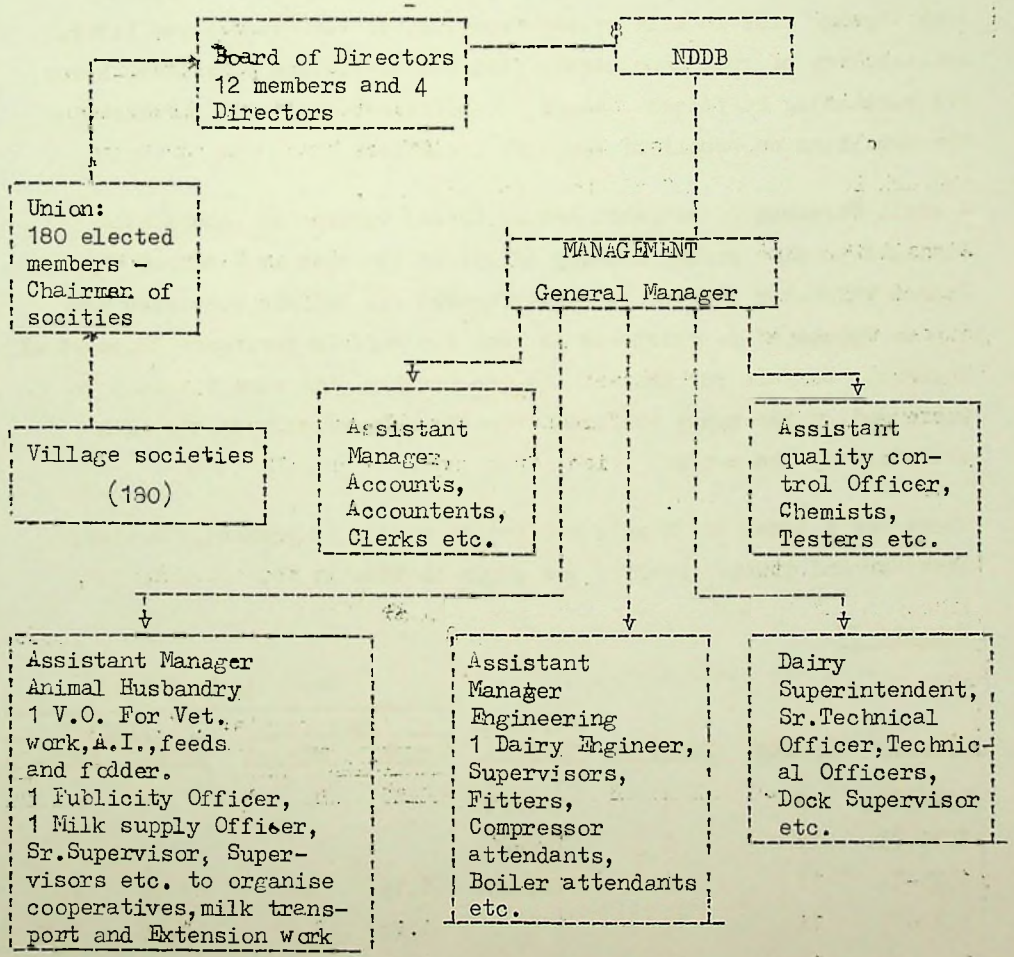
Representatives of the societies at the Union level: there are 180 members to date - elect 12 members to the Board of Directors for the Union and these 12 members body elects the Union Chairman. In addition to the 12 elected members there are another 4 Directors, one from the District Cooperative Bank, another technician from the other Milk Union, the Government District Cooperative Office and the Milk Marketing Federation. The latter four members do not vote on matters involving certain disputes etc.

The Union has access to the National Dairy Development Board for guidance and help on technical matters.

The Management of the Union consists of a General Manager with 5 Assistant Managers. The General Manager is answerable to the Board of Directors which meets once monthly. The General body of the Union members meets once per year but may have more then one meeting as circumstances necessitate.

The whole set up is shown in Exhibit III.

Exhibit III



..6

3. Sabar Dairy Factory

The staff strength at SABAR DAIRY is 360. The factory works for 24 hours in 3 shifts of 8 hours each with 1 hour recess between each shift.

It carries out pasteurisation of milk, milk powder production, butter and ghee production. Plant capacity is 1.5 lakh milk litres per day, 12 tonns milk powder per day, 10 tonns butter per day and makes up to 2 tons ghee per day according to the requirements of ghee by the societies.

A few farmers contacted in three villages Sonasan, Modhuka and Ghadkan visited gave their views that the societies have benefited them through rise in milk prices from 1.25 to 1.80 rupees per litre, availability of good concentrate feed for cattle and buffaloes, loans for purchasing buffaloes. About 700 buffaloes have been purchased through loans on behalf of the milk societies.

A small Farmers' Development Agency (SFDA) working in Sabarmantha District is also giving subsidy of 25% of the cost or a sum of 500/- Rupees whichever is less to small farmers for buffalo purchases and 35 % or Rupees 670/- whichever is less for buffalo purchases to marginal farmers. Buffalo purchases loans are usually paid back within 3 to 3½ years out of the money realised from the sale of milk to the milk societies by the owner.

There are a total of 28 milk collection routes at present. Routes, tractors and trucks involved are shown in Exhibit IV.

Exhibit IV.

Year	Trucks	Tractors	Villages Covered	Payments:Rs./1.6 km. Truck Rough	Truck Metaled	Tractor Rough	Tractor Metaled
1971-72	9	1	145-210				
1972-73	15	1	152-260				
1973-74	11	8	180-295	1.15	0.90	1.25	1.00
1974-75	14	14	310	1.40	1.15	1.56	1.25

* During 1971-73 milk was sent to Ahmadabad from the villages directly.

Each truck or tractor reprsents one route. The shortest distance covered is 1 km. and the farthest is 120 kms. Generally the tractors deliver the milk from the villages, to trucks at road junctions. In some places camels, bullock carts, bycycles, horses, donkeys and human beings are used to take milk from the villages to the trucks on major roads for conveyance to the milk plant.

Internal cartage payment is made to societies from the Union for a maximum radius of 10 kilometres and an average of 4 to 3 kilometres from SABAR DAIRY plant.

4. Technical Inputs

Animal management in the district can be put into two main categories. Those animals kept at the stall and feed brought to them - a form of zero grazing and those which are let loose to wander about and brought to the home in the evenings and let out in the mornings.

The Government and the Union are involved in introducing better methods of animal husbandry to the farmers. There however appear to be duplication of work on certain aspects of animal husbandry particularly in disease treatments and control and Artificial Insemination.

The study concentrated more on buffaloes and cattle because of the fact that these two animals supply milk for sale to the milk union. However the role played by the other animals like the goat, sheep, camels, donkeys as well as poultry should not be overlooked. These animals give milk and do work and also consume grasses which would otherwise befed to the buffaloes and cattle and also some of them are used for transporting feed for the buffaloes and cattle.

4.1 Feeding

The feeding of the animals is either through zero grazing in some villages, partly zero grazing and field grazing in other and in certain cases animals are let loose to wander where they wish and return in the evening.

Those animals givingan appreciable amount of milk are usually kept stalfed

and the dry animals generally are let loose to wander about.

Feeding is mostly through farm by-products like millet straw, wheat husk and leaves, groundnut straw, lucerne, sorghume, paddy straw, green weeds, and hybrid napier NB-21.

The Union staff have undertaken a programme of introducing concentrate feed Amul dan and Sagar dan to the farmers through the milk cooperative societies. Lucerne seeds have also been sold to the farmers through the societies aiming at producing forage for the animals.

Concentrate is given to the milh animals and bullocks on heavy work. The form of concentrate has been Amul dan, Sagar dan, cotton seed cake, and maize the latter two products are availed by the farmers themselves without requirements for their members and submit to the Union which arranges for concentrate procurement from the cattle feed plants at Amul and Dudhsagar. The Union pays for the concentrate in advance and recover the money from the societies milk sales and the latter through deductions from the farmers milk sales.

Amounts of cattle feeds and fodder seeds purchased through the Union are indicated in Exhibit V.

Exhibit V a

Cattle Feed

Year	Amount in tons	Purchases Rupees	Sales in Rupees
1972/73	563.85	4,42,980.00	4,73,035.50
1973/74	1,139.25	9,76,490.00	10,25,576.00
1974/75	1,102.50	9,92,214.38	10,21,735.00
Total	2,805.60	24,11,684.38	25,16,146.50

Exhibit V b

Fodder Production

Item	Year	Amount supplied in Tons	Puchase price in Rupees	Sale price in Rupees
Lucerne	1972/73	2½ (2500 kg.)	17778.00	20945.00
	1973/74	11 (11000 kg.)	1247400.00	127189.43
	1974/75	8 (8000 kg.)	94318.25	901043.25
Total		21½(21500 kg.)	1359496.25	1049177.68
Hybrid Napier (N.B.21)	1973/74*	80 bags	640	
	1974/75	337 bags	-	3096
Total		417	640	3096

* Hybrid Napier N.B.-21 was purchased by SABAR DAIRY for propogation at their grounds for demonstration and resales to farmers at a cost of 8 Rupees per bag estimated to hold some 2000 slips of the hybrid napier.

The farmers have been purchasing cotton seed cake at a price ranging from 85 Rupees to 55 Rupees according to seasons. The prices are however variable from one dealer to another. Maize has been reported to cost 1.75 Rupees per kg. again these prices are variable from place to place.

The feeding appears to have mostly been left to farmers discretion. However, those interviewed gave following figures per milch animals:

Lucerne 10 to 15 Kg.
Cotton seed cake or Amul/Sgar Dan 2½ to 3 Kg.
Farm by products and dry fodder 12 to 20 Kg.

A cattle feed plant of Rs. 6000000 is under construction and is due for commissioning in 1976. Its capacity is going to be 100 tons cattle feed production per day.

..10

4.2 Pasture Development

Apart from introducing lucerne and hybrid napier N.B.21, there does not appear any other programme for pasture development or preservation possibly due to use of land mostly for food crops.

4.3 Breeding

Buffalo and cattle breeding is largely done by the farmers themselves however there is a programme started by the State Government in 1963. to introduce natural breeding and artificical insemination through selected animals within the local breeds of buffalo and cattle. The programme was brought under the Key village scheme.

Limited information was available on targets, projections and achievements of the programme. The programme was later changed into the Intensive Cattle Development Project and a Bull Semen Collection Centre established at Himatnagar. This Centre is understood to be in a process of being handed over to the SABAR DAIRY PROJECT.

The Himatnagar Bull Centre handles only fresh semen and serves 35 villages. The Centre has 3 adult and 3 young buffalo bulls and 2 Kankrej bulls. Semen Collection is done 3 times in a week and is despatched to destinations through buses.

Inseminations carried out are given in Exhibits vi a and vi b.

..11

Exhibit VI a

Buffalo Inseminations

Year	Semen dose issued	Doses utilized	No.of Inseminations	Follow up(P.D) +ve	- ve
1963/64	180	39	39	27	12
1964/65	1280	434	434	117	257
1965/66	1550	383	383	115	268
1966/67	1560	365	365	120	245
1967/68	1510	620	620	260	460
1968/69	1520	669	669	278	391
1969/70	1490	623	623	321	302
1970/71	1530	693	693	345	348
1971/72	1560	1021	1021	433	901
ICDP					
1973/74			3166	1058	2108
Total	12180	4846	8013	3074	5292

Exhibit VI b

Cattle Inseminations

Year	Semen doses issued	Doses Utilised	No. of Inseminations	Follow up (P.D) +ve	-ve
1963/64	70	6	6	4	2
1964/65	660	92	92	50	42
1965/66	770	141	141	70	71
1966/67	780	191	191	97	94
1967/68	765	207	207	107	100
1968/69	765	275	275	177	98
1969/70	745	179	179	94	85
1970/71	765	201	201	101	100
1971/72	780	310	312	162	150
ICDP					
1973/74			743	495	248
Total	6100	1604	2347	1357	990

..12

As some of the animals are let loose to graze in the fields the possibility of the positive p.ds being from stray bulls can not be ruled out. However, the starvation of the buffalo bull calves and the practiced castration to produce work bullocks obviously reduces the number of entire bulls in both the buffalo and cattle populations.

Inseminations are carried out by the V.Os or the stockman who have other duties like treatments and extension work to do. It would appear Therefore that concentration on Artificial Insemination work as a full time job leaves much to be desired.

The Sabar Dairy Union has also a veterinary service dealing with Artificial Insemination and has one mobile unit for veterinary services including Artificial Insemination.

Artificial Insemination service started in september 1974 and to date has 7 months of operation. The work therefore is still at the planning stages. Semen is obtained from Ahmedabad Sabarmati Ashram Gaushala Project(SAGP) which charges 4 Rupees per utilized dose of the semen. Some 210 doses of semen of Jersey Breed are supplied to SABAR DAIRY weekly starting from February 1975. The semen is received daily through the state transport bus at Himatnagar by an employee of the Dairy who has been employed for that job, after considerable losses had been experienced. The semen is delivered to the dairy and then redistributed to the village societies through the trucks delivering milk to the plant from the societies. The trucks leave in the evening and deliver the semen in the mornings. Ice for preserving the semen is obtained through the contractor who hands it over to the Dairy's milk sales van at Himatnagar every evening.

The mobile unit serves 60 villages which are visted inaweek with scheduled timings and dates for each village.

Two villages have been given Jersey cows as a part of the Demonstration Dairy Farm Project and the farmers appear to be keen on having more of these new animals.

..13

Exhibit VII a

Cattle and Buffalo population in Sabarkantha District

		< 3 yrs.	> 3yrs.	Total
Buffaloes	Male		3271	296839
	Female		172529	
	Male + Female	121039		
Cattle	Male		217710	424481
	Female		113977	
	Male + Female	92794		

There are about 1.7 lakh breedable female buffaloes and 1.1 lakh breedable female cattle.

Exhibit VII b

Inseminations carried out by Sabar Dairy Personal

		Buffalo				Cattle			
	Village	Semen issued daily	Insemin-ations	Follow up(P.D.) +ve	- ve	Semen issued daily	Insemin-ation	Follow up +ve	-ve
1.	Ghadakan	3	151	18	32	1	9	-	3
2.	Bodha Moyar	2	52	1	8	1	1	-	-
3.	Drupaji	2	46	6	11	2	16	3	3
4.	Hathrol	2	41	2	10	2	8	1	-
5.	Bavsar	2	27	2	19	2	11	1	1
6.	Nikoda	3	73	15	23	2	26	4	6
7.	Pallachar	2	23	-	-	2	9	1	4
8.	Dalpur	2	25	4	-	1	8	-	2
9.	Medhasan	1	18	1	1	2	67	8	11
10.	Modhuka	2	75	1	2	2	20	-	1
11.	Gulab Muwadi	2	3			1	3		
12.	Kalipura	2	9			2	2		
13.	Rudramala	2	7			2	9		
14.	Illol	2	4			2	1		
15.	Gundia	2	10			2	4		
16.	Jitpur	2	20			2	4		
17.	Sabar Dairy	3	65			1	15		
	Total	36	649	50	106	31	213	18	31

In case of villages 1 to 10 Artificial Insemination started in September 1974 but semen supply was irregular until December 1974. Villages 11 to 16 had Artificial Insemination started from January 1975 and on estimating the doses supplied for the period up to March 21st 1975, there were about 3705 buffalo and 2994 Jersey semen doses respectively utilized to inseminate 649 buffaloes and 213 Kankrej cows giving 5.7 doses for buffalo and 14 doses for Kankrej cows. Follow up is made three months after insemination and therefore some animals inseminated have to be examined in three months time.

Exhibit VII c

Monthly Inseminations

Month	Buffaloes	Kankrej Cows
September 1974	148	22
October 1974	115	28
November 1974	75	15
December 1974	116	57
January 1975	95	33
February 1975	80	31
March 1975	59	32
Total	686	218

The total number of buffaloes examined for pregnancy were 157 of which 54 were pregnant giving an overall conception of 34.4%, there were 52 cows examined, 19 found pregnant giving an overall conception of 36.5%.

Records for the number of first inseminations and second inseminations etc. were not available. It is also worthy to note that the number of inseminations made does not necessarily represent the number of actual animals inseminated.

Artificial Insemination cases are reported and taken to the inseminator at the societies premises and the inseminator carries out the insemination. It is again worth noting that a Government Inseminator

and Union Inseminator may be serving the same villages for Artificial Insemination, therefore, two such villages, thus leading to work duplication. Furthermore, the inseminators are doing other work like society secretarial duties, milk collection etc. and this may reduc[e] their important and effective role in carrying out an efficient Artificial Insemination service. The time to visit the village people to propagate the service and even help in heat detection within the same village becomes limited and therefore cannot be held answerable to failing to attend to some Artificial Insemination calls particularly bearing in mind the fact that insemination has to be done at the right time otherwise results are bound to be very poor and progress very limited. Authorities handling the work however justify the use of inseminators for other work as the inseminations are done close to the society office and therefore the inseminator need not move away to follow the animals.

There is need to have a projected programme to have both buffalo and cattle populations in the villages and those to be put under Artificial Insemination estimating the number to come under Artificial Insemination on a yearly basis and therefore to estimate the requisite number of semen doses to be used and avoid unnecessary wastage.

4.4 Veterinary Services

Services in form of treatment and some aspects of disease control are done by both the Government and the Union veterinarians to the villages.

The District Animal Husbandry Department has 11 veterinary Dispensaries, 3 Branch veterinary dispensaries and 24 First Aid Veterinary Centres. For 1974/75 it is reported that there have been 70497 animal treatments; 9 disease outbreaks and 150000 vaccinations, against contagious diseases.

The veterinarians and stockmen do treatments of the sick animals generally having the animals taken to the first aid centre, otherwise farmers make payments to treatments rendered at their homesteads.

..16

Sabar Dairy Project has one mobile veterinary unit carrying treatments, advisory work on feeding and breeding. The Unit was introduced on October 25th 1974 and a second mobile unit is shortly expected. Under Action Item No.7 of the Operation Flood, the Union has received 6.5 lakh Rupees (70% loan and 30% subsidy) to run mobile veterinary units in the district.

Farmers bring their animals for treatment at the village society place where handling facilities are availed. Treatments are made free and Artificial Insemination is also free. Farmers needing their animals attended at the homestead have to pay some 5 rupees per treatment. This is done for encouraging them to bring their animals to a common treatment place to save the time of the veterinary staff which would have to go to each individual farmer.

Cases treated on monthly basis are shown in Exhibit VIII.

Exhibit VIII

Month	Cases treated
October 1974	80
November 1974	672
December 1974	925
January 1975	650
February 1975	578
March 1975	536
Total	3441

4.5 Disease Control

It is reported that there is a programme for vaccinations against Rinderpest in the district. There does not apperar to be a programmed control of other diseases like Haemorrhagic septicaemia, Anthrax or Blackquarter. Vaccinations are usually made after outbreaks have occured. Foot and Mouth is reported to occur but some farmer do not feel

..17

that it is worth having regular vaccinations against the disease. Of the three villages visited, Ghadkan prefered mass vaccination as the members of the village felf that the buffaloes dropped the milk yield after infection. Therefore, they felt a need to prevent the dsease. In another village - Sonasan, the farmers felt that working oxen or bullocks should be vaccinated against FMD and not the buffaloes.

Tick borne diseases like Thileriasis, Piroplasmosis etc. are very rare and therefore do not cause much concern to the veterinarians or the farmers.

Surra is reported to exist and the farmers have to pay for the medicaments.

On the whole, after the control of Rinderpest there are no major disease control programmes. Sporadic outbreaks are brought under control through vaccinations.

5. Concluding Comments

As the Sabar Dairy Project has started just three years back most of the technical inputs are in the early stages and therefore the technical information available at present is consequently limited. The dairy seems to have made a good start. However, there is more to be done in planning and implementation of the technical inputs in future in accordance with the observations made in this study.

Aknowledgements

The group wishes to express very much gratitude to the NDDB and the Sabar Dairy Staff for their efforts and arrangements made to make this field study possible and that they accept our sincere apologies for any inconvenience caused in the daily operational works during the study tour.

dst:vmg. 8.4.'75:100

THE BHARATIYA AGRO-INDUSTRIES FOUNDATION
SIGNIFICANCE OF FINANCIAL MANAGEMENT

After the vast devastation during the second world war, it was necessary to rehabilitate the economies of war torn countries expeditiously. Certain basic needs like food, shelter and clothing had to be restored to earlier levels and there was a pent up demand to be satisfied as an aftermath of years of restrictions and denial during the war. This called for an herculean effort against the backdrop of menacing inflationary pressures so as to meet large scale needs of the people at lowest possible costs. The plans to achieve this implied use of new techniques, new raw materials, new products and economy of scales to operate competitively in a market which was internationalised as never before. It was imperative to mobilise financial resources on a massive scale and on long term basis for swift execution of reconstruction and development plans. This is how agency specialised in finance namely International Bank for Reconstruction and Development (World Bank) came into being. Soon after the second world war most of the colonies in Asia and Africa became free nations. A dire need of large scale resources for basic development was felt by those nations and that is why development agencies like Asian Development Bank and African Development Bank were established. With the same objective in view, in India, development agencies such as Industrial Finance Corporation, Industrial Credit and Investment Corporation, Industrial Development Bank of India, Agricultural Refinance and Development Corporation and Financial Corporations at the states level have been established.

--2

A large part of financial resources required by our development banks is usually provided out of variety of Public funds and from borrowings from international development agencies such as world bank, IDA etc. It is therefore appropriate to measure benefits of operations of the recepients of institutional assistance in terms of social benefits eg. foreign exchange savings, linkage effects, multiplier effect, employment generation etc. These measurement studies are somewhat in elementary stage; however they serve to create consiousness of the social dimensions of the investment decisions. Therefore, the development banks for their new role felt the need to make an independent and comprehensive assessment of Projects which sought their long term assistance.

The traditional banker's approach to the concept of providing finance would be to assess the credit worthiness, personal stake and reputation of the promoter supplemented by adequate coverage of assets for loans advanced. The development banks on the other hand have to deal with new entrepreneurs, new technology or a new product without a clear idea. Therefore they are required to make a systematic assessment of the projects so as to identify parameters of the success of the Project. Such a systematic scrutiny of the Project would include-

1. The basic concept of the project
2. Market for the product
3. Production factors
4. Aspects of project implementation-PERT/CPM
5. Economic Viability aspects-i.e.project cost estimates, cost of production and profitability estimates.

6. Financing plans i.e. Capital structure, Cash flow etc.
7. Management.

The success of the project depends upon a sound concept, timely implementation, efficient management of the operations and identification of critical aspects of the project to ensure that they are squarely under control throughout the period of operations.

Because of present day increasing utilisation of institutional finance and the socio-economic objective, the financial institutions are primarily interested in periodical study of earning power, liquidity and ability to pay debts within the agreed period and also retention of employment. Hence it is essential to have fullfledged financial and management information systems for providing necessary information when called for by the financial institutions for their study. Usually an exercise of financial analysis is done to know-

1. Whether borrowings and liabilities are excessively high
2. Whether there is adequate margin for loans
3. Whether there is a shortfall in income
4. Whether operational costs are relevant to turnover
5. Whether an organisation is able to meet its current obligations from its immediate liquid assets.

These are techniques of analysis of different financial statement/ratios and interpretation thereof. In this paper I shall briefly discuss two financicial statements namely Balance-Sheet and Profit & loss Account.

A Balance-Sheet is a statement of assets and liabilities, including own funds made out as on a particular date indicated. A study of two balance sheets made out on any two dates and the ratios of corelated items will indicate the relative changes in the position of assets and liabilities and helps to measure economic progress between the two dates.

The soundness of financial structure is indicated where there is a surplus in Capital fund (own funds and long term borrowings taken together) after investing in fixed and semifixed assets and providing margin for working capital borrowing. The larger the surplus the greater is the degree of soundness. A surplus Capital fund is essential to absorb the shocks of sporadic receipts and payments and to meet the needs of emergent situation and unforeseen developments. This is identified through an analysis of current ratio i.e. relationship between current assets and current liabilities.

A system of continous check on the movements of the above components through analysis of predetermined set is evolved. Any gap in circulation will bring the strain on liquidity.

A profit and loss account indicates the operating efficiency as a whole and of individual departments. The introduction of budgetary control and thereafter comparison and analysis of budgetary figures/ratios with the actuals at short intervals, provides the management with timely information for taking remedial measures at the earliest when adverse trends are detected.

Cost control and cost reduction are effective tools for improving profitability and performance. However cost consciousness is the very basis of any cost control or cost reduction measures. It is not the same as consciousness to cost only. Ordinarily, cost consciousness is supposed to mean the question of affordability. It should be understood from a broader spectrum. Cost decisions should not be a matter of affordibility, but be considered as an investment proposition, with the multiple objective of growth, profits or surplus. It is a functional relationship between the cost proposed and the benefits expected to be generated. An all round cost consiousness is required to ensure productivity and better utilisation of scarce resources-physical, financial and human. It is as important when the going is good as during critical periods.

While cost and financial data will continue to occupy a predominent role for "scorekeeping" and management control at the operating and management levels, new system will be required to be developed to tailor these reports to the critical variables and key success factors respectively at these levels. In the operation of developmental project undertaken by

BAIF management reports have to incorporate operational and environmental data relating to internal and external environments. Our reporting systems have to be much more qualitative in nature and would be aimed at gaining understanding and insights about the likely future internal and external environments. The ability to identify the mission and the objectives of the organisation over a relatively long period by systematic and formal analysis of likely future, internal and external environments, competition and assessment of organisational strength and weaknesses and past performance would be important requirements for continuing growth and viability. This is the theme of this paper.

am.

THE BHARATIYA AGRO-INDUSTRIES FOUNDATION
MANAGEMENT CONTROL SYSTEMS

1. General Outline and Philosophy

1.1 With the rapidly expanding activities, a systematic approach to planning and control is vital for the Foundation to ensure that resources obtained are used effectively and efficiently in the accomplishment of the Foundations' objectives.

1.2 This process of Planning and Control can broadly be divided into the following three phases:

i) Strategic Planning: For deciding long term objectives and goals of the Foundation. This is decided by the highest policy making body, taking into consideration various social, political, technological and economic forces at work and the objectives for which the Foundation is established.

ii) Action Planning: For formulating and specifying the levels of achievement for each year of the Strategic Planning period. The Management of the Foundation, after reviewing internal strengths and weaknesses availability of resources and the need and urgency of various programmes on hand, lays down the targets to be achieved each year in order that the objectives expressed in Strategic Plan are attained.

iii) Operational Planning: For developing performance targets for the coming year broken down into targets for months or quarters. These targets provide the benchmark for Management Control.

Thus the Management Control Process in the Foundation, is carried out within the framework established by Strategic Planning and Management Control, in turn, sets the guidelines for Operational Control.

....2

1.3 The Management Control System designed for the Foundation is a total system embracing all aspects of the Foundation's multi-disciplinary operations. This is to ensure that all parts of the operations are in balance with one another.

1.4 Although the financial structure is the central focus of the Management Control System, non-monetary measures such as time, total inseminations, number of persons/ cattle, efficiency index, conception rate, area covered yield, growth rate etc. also form important part of the system.

1.5 Officers in charge of Extension Centres, Cattle Farms, Bull Stud, Nitrogen Plant, Agriculture, Research Centres Training, Agro-services, Semen Bank and those in charge of services such as Administration, Materials Management Engineering Services and Finance are the focal points in management control. They are the persons whose judgements are incorporated in approved plans and whose performance is measured. Communication of objectives, policies, guidelines, decisions and results to these key personnel is an important part of the system.

2. Strategic Planning

2.1 Strategic planning, spelling out long-term objectives of the Foundation, would be reflected through "Five-year Forecast". This document, would be prepared annually, and would encompass physical, financial and organisational framework within which operations of the Foundation would be carried out during the year ensuing five years.

....3

2.2 The format and contents of the Five Year Forecast would closely follow those of the Operating Budget. In addition, the Five Year Forecast would include Projected Balance Sheet, Sources and Application of Funds statement, Projections for Working Capital, Estimated Manpower Requirements and New Opportunities for each of the main activities of the Foundation in coming five years.

2.3 A beginning towards formal planning in this regard is yet to be made.

3. Budgetary Control

3.1 Budgeting is a cornerstone of the Management Control process. Within the framework of Strategic Planning, annual Operating Budgets are prepared which consist of a set of projected financial statements for the coming year with appropriate supporting schedules. These budgets are constructed by Responsibility Centres.

3.2 The Foundation follows the system of Performance Budgeting.

3.3 The main objectives of Operating Budgets are:

i) Planning and co-ordinating the multi-disciplinary activities of the Foundation.

ii) Evaluating adequacy of the Expense Budgets and

iii) Assigning to each operating officer in charge of a "Centre", the responsibility for his share of performance of the Foundation. This in fact, forms the basis of Performance Budgeting.

3.4 The Finance Division issues in January each year, instructions and timetable for the preparation, submission and approval of the Operating budgets for the coming year.

....4

(Budgets are for the financial year i.e.April to March). Generally, a uniform format is used for preparation of Operating Budgets by all the Responsibility Centres. Budgets are prepared by expense classification and by activity.

The Operating Budgets, duly scrutinised and consolidated by the Finance Division, are then considered and approved by the Management at least two weeks before commencement of the financial year. Once approved by the Management, the Operation Budgets become plans of action.

3.5 At the end of each month, the results of actual operations are collected for each Responsibility centre in the same format as the Performance Budget. These results are compared with the budgeted results and the reasons for variances analysed. This Analysis is important, not merely in evaluating officers who are responsible for results, but in alerting management to desirability of revising the budgets or taking corrective action when the results are not meeting the expected goals.

The Performance Budget Reports are forwarded to the Officers concerned within two weeks after the end of month, accompanied by a brief note on any problem area that needs urgent attention.

3.6 The finance Division staff spares enough time for discussion with Operating Officers on Performance Budgets. It is also their responsibility for increasing the effectiveness of follow-up action on variances by the respective Divisional Heads.

4. Working Capital Management

4.1 Five Year Forecasts and annual Operating Budgets indicate working capital requirements for the budget period. Besides estimated income and expense, the projected levels of cash requirements, stock levels, outstanding debtors' and

....5

creditors' balancesand temporary investments, the Operating Budgets also indicate planned capital expenditure. All this information is tabulated in a Funds Flow Statement. This is a simple statement showing generation and disbursement of cash during the budget period; as a part of the control system however, it is vital for working capital management in general and cash management in particular.

4.2 Like Operating Budgets, Funds Flow statement is prepared each month showing the estimated and the actual cash receipts and disbursements. While preparing this statement, opprotunity is taken to make cash projections for a further period of one month a year hence, so that at any time, twelve months' projections are available.

This statement together with a commentary from the Finance Division, is circulated to the Management.

5. Standard Costing

5.1 A system of standard costing would be introduced for some of the activities of the Foundation like Vaccine Manufacturing and Semen Collection, which lend themselves to the implemen-tation of a costing system. Standards would be set for each of the major items of raw materials and services, and direct labour /overheads. For manufacturing operations, service departments' costs would be apportioned and allocated to operating departments and the total operating departments' costs would be identified with the standard output. This would enable cost determination and price fixation.

5.2 For cost control purposes however, the technique of marginal costing would be employed. (This technique would also be helpful for differential pricing.) Direct costs would be controlled through standard costing and fixed overheads through budgetary control. This dual approach would not only be effective for cnntrol purposes but would provide adequate flexibility to the management in preparing/revising their operational plans.

....6

5.3 Variances, the difference between the actual and the standard costs, duly analysed to reflect the causes thereof would be reported for each of the operations and for each of the products periodically.

5.4 Standards generally would be fixed once a year at the time when Operating Budgets are being prepared. They would be revised during the course of a year if any compelling circumstance justifies such a revision.

6. Capital Expenditure Evaluation

6.1 The Five Year forecast would indicate the levels of capital Expenditure planned for future years. Broad details of the Capital Expenditure planned would be incorporated in the Forecast statements whereas the Operating Budgets would show greater details of such expenditure.

6.2 The inclusion of Capital Expenditure plans in the Budget does not necessarily mean that they have been approved by the Management. Each item of Capital Expenditure, however, well justified, must be approved and authorised by the Management before a commitment is made to this behalf or any amount is spent.

Each Officer desiring approval of Capital Expenditure submits the relevant details in a prscribed form well in advance. These details are scrutinised carefully and where the expenditure is either for production or commercial operations, the propos l is evaluated in terms of "Pay-Back Period" or "Rate of Return" using Discounted Cash Flow Technique. For other proposals, evaluation is based on considerations such as legal obligation, social benefits, employee welfare and non-monetary benefits. For non-commercial expenditure, cost:benefit ratios are determined.

....7

6.5 Once the proposal is approved by the Management, the decision is conveyed to all the departments concerned, It is then the originating department's(or concerned officer's) responsibility to ensure that the capital expenditure programme is closely followed as planned. The Finance Division periodically submits a Progress Report on major capital expenditure programmes. For big projects, it is proposed to develop and use PERT charts.

7. Financial Accounting

7.1 While independent financial records are maintained for each of the operations of the Foundation, these are centralised in Finance Division at Poona office. The centralisation facilitates independent financial control, uniform accounting procedures, employment of qualified staff and operating an appropriate Management Information System.

7.2 Financial accounts are maintained on sound accounting principles not only to meet the requirements under law but also to provide all the information that the management may need. Built-in checks are provided so that clerical errors are minimized and frauds easily detected.

8. Internal Auditing

8.1 The primary objective of the Internal Auditing fuction, as a part of the Management Control System, is independent appraisal of accounting, financial and other operations and measuring and evaluating the effectiveness of other control techniques. The overall objective is to assist all members of management in the effective discharge of their responsibilities, by furnishing them with objective analysis, appraisals, recommendations and pertinent comments concerning the activities reviewed.

....8

8.2 To achieve these objectives, the proposed areas to be reviewed and analysed by the Internal Auditor are (i) Organisation structure (ii) Procedures (iii) Accounting and other records (iv) Reports and (v) Standards of performance.

8.3 Broadly, the audit procedure to be followed would be:

i) familiarisation with operations,
ii) review of procedures,
iii) verification,
iv) evaluation and
v) reporting.

The scope of audit programme would be determined in close liaison with Statutory Auditors so that they are complementary to these followed for the statutory audit.

—. B. Shah

(Pt. B. SHAH)

****

The Bharatiya Agro-Industries Foundation.

Biological Seminar No.2 June, 1976.

Review of Research on Unconventional Fodder Fodder (Ku-babul) Leucaena Leucocephala.

S.S. Desinukh,
Research Officer.

Introduction:

There has been growing interest in the tropical and sub-tropical regions in the use of legume leucaena as a forage plant since last few decades. This is because of some out-standing features of this plant as its ability to with-stand occassional droughts, repeated defoliation, high production of forage and exceptionally high crude protein content. It provides green feed during dry season when other plants wither and dry. The first reference to Leucaena in the Agricultural literature was in 1900, when it was planted for providing shade and maintaining soil fertility in coffee plantations. Danniel S. Bolong an Agriculturist pioneered Leucaena in Philipines. He processed it into dry leaf meal for livestock.

Botanical description:

Common name: The Phillipines know it as Ipil, in Hawai and Taiwan it is called Kao Haole, in India it is known as Ku-babul.

Botanical nake:

Leucaena Leucocephala: was applied to this plant in 1961, replacing the name Leucaena glauca which had been known since 1842.

Habit: Leucaena is a perennial shrub or a small tree.

Leaves: Bipinnate, 15 to 25 cms. long.

Leaflets: 10-15 pairs, linear, oblong, acute, inequilatteral, 7 to 15 mm. long and 3 to 4 mm. wide.

Stipules: Triangular, glabrus.

Flowers: white, 100-180 flowers clustered in a globular head, 2.5 to 3 cm. in diameter, solitary, axillary long and pedicelled.

...2/..

Seed Pods: Thin flat, acuminate, 10 to 15 cm. long, 1.4 to 2 cm. wide. Usually 15 to 50 per cluster, 15 to 25 seeds per pod.

Seed: Elliptic, compressed, shiny brown, 3 to 4 mm. wide, 6 to 8 mm. long and about 1 to 2 mm. thick.

Root system:

Very strongly developed tap root with laterals growing at a sharp angle to the tap root. Root penetrates rapidly about 1 to 1.5 meters in one year and breaks up the impervious soil. Deep root system enables this plant to absorb the nutrients from lower layer of the soil and transfer to the top soil through defoliated leaves and branches. Plant possesses good nitrogen fixing capacity and helps for soil improvement.

Origin & History:

Leucaena is native of Mexico and the central America. According to Dijkman 1950, Leucaena leucocephala originated in Mexico. From there it has spread and become naturalized in other part around Mexico. It has however, not been utilized to any extent as a fodder plant in this region. People of some of the Islands of Pacific used Leucaena leaves and seeds as food, where as in Indonesia it was used for provision of shade and soil fertility maintenance.

It occures sporadically in Queensland, Brisbane in Australia, where it was introduced from New Guinea, Fiji and other parts of Pacific.

Queensland Pasture Liason Committee released two cultivars of Leucaena in 1962- CV Peru (CPI 18614) and CV. El Salvador (CPI 18623). These are introduced by C.S.I.R.O. Plant Introduction Section. Peru is outstanding in vegetative vigour and forage yield. El salvador has lower yielding ability than Peru.

Climate & Soil:

Leucaena is tolerant to wide range of climatic and soil conditions. This crop grows in areas having rain fall ranging from 20 to 100 inches or more per annum in areas receiving less eratic, scanty and uneven rainfall, this crop needs definite water supply initially in the first year for its proper establishment.

Leucaena is not very specific in its soil requirements, it can flowrish on soils with alkaline pH and can grow on rocky soils with little top soil.

...3/..

Review of Research:

Research has been carried in Australia, Indonesia, Phillipines, India and few other tropical countries.

Takashi and Ripperton, obtained highly significant response to N on a soil of pH 4.5 to 6.5, deficient in Ca, P and K. Ca and P applied together increased yield by 27.4%.

Anslow, in Mauritins conducted a fertilizer trial on gravelly clay loam, in which N.P.K. were applied at sowing and following cutting. Significant yield responses were obtained. Unfertilized Leucaena produced 34580 Kgs. green per hectare while fertilization increased yield by 6422 Kgs. per hectare.

Kintch and Reperton in Hawai, in a trial with leucaena on a black sticky clay loam applied 2242 Kgs. lime per hectare, prior to sowing and at sowing 3% N, 21% P_2O_5 and 14% K, with 0.42% B. They considered that addition of N was essential as a starter untill plant root became well established.

Takashi and Riperton, 1949, reported a mereannual yield of 8 to 9 tonnes dry matter per acre containing 2442 to 3145 lbs. protein in Hawai with 50 to 60 inches rainfall.

N. Fixation:

Brazil 1958, showed that L, Leucocephala is highly strain specific. It failed to nodulate when inoculated with any other legume.

Norris 1965 isolated Rhizobium strains from leucaena and found that they are fast growing acid producing type. He suggested lime application to soils for leucaena grown in Australia.

Germination:

Akamine pointed out that untreated seed germinated to the extent of 10 to 15 percent where as mechanical scarification resulted over 90% germination while 70% germination was obtained with hot water treatment.

Feeding value:

Leucaena has been used quite extensively as a feed for both dairy and beef cattle in Hawai. There are no reports from Hawain trials on any ill effect of leucaena on cattle.

...4/..

In a recent trial in Australia, symptoms of mimosine toxicity were observed in a cattle which had grazed leucaena for 7 to 8 months. It has been pointed out that one of the amino-acid mimosine inhibits cell division, and causes depressed growth hair loss and reproductive failures in simple stomached animals. However, it is reported that there is little or no effect on ruminants.

Hegarty et al reported that detoxification of mimosine takes place by rumen micro organisms.

Henke, Mork and Burt, 1940, in Hawai reported live weight gains of upto 1.15 lbs. per day in steers grazing on pure stand or leucaena.

Clodualdo B. Perez, University of Philipines, College of Agriculture says that 6 Kgs. of fresh leucaena leaves per day can supply the protein needs of cattle. They have suggested that leucaena be supplemented with 2 Kgs. of rice bran, 3.5 Kg.s of dry roughage and 9-12 Kgs. of fresh grass per head per day.

Chemical analysis:

Kinch and Riperton, found that the whole leucaena forage had an average crude fibre content of 29.8% whereas leafy fraction had an average crude fibre content of only 14.3%.

The analysis of luecaena (dry matter percentage) is given in the following table :

Fodder type	Nx 6.25	Fat	Fibre	Ash	N Tree ext. ract.
Hay	25.55		2.16	11.35	9.89	51.05
Forage meal	14.28		2.09	33.54	5.78	44.31
Roughage	18.84		2.27	37.74	6.54	34.51
Green	17.85		2.17	32.76	5.96	41.26
Dry leaf	28.79		5.19	12.76	10.89	41.17

Source: Herbage abstract, June 1971. Vol. 41.

Amino acid of considerable importance in Luecaena is mimosine B (I-(3 hydroxy - 4 - Pyridone) - aminopropinic acid was isolated in leucaena seed.

...5/..

1. Leucaena - leucocephala (Ku-babul):

In view of the immense potential of this unconventional fodder crop, the B.A.I.Foundation undertook to conduct studies to determine the :

i) Suitability for cultivation
ii) expected yield
iii) optimum package of practices
iv) nutritional evaluation.

Initial trials are conducted at Uruli-Kanchan Campus.

Soil and climate at the BAIF (Central Research Farm):

Land available represents a typical dry farming tract in its soil and climatic conditions. Soil consists of murum which is a partially disintegrated rock with little or no top soil. Soils are calcarious, saline and alkaline, rainfall is very low, scanty, erratic and uneven and very limited water available for irrigation.

Germination studies revealed the following:

It is observed that delayed germination is due to very thick, tough and waxy layered seed coat which prevents water from entering the seed.

Hot water treatment:

In order to remove germination delay hot water treatment was given to seed. Seed was immersed in hot water at 60° C, 80° C and 100° c. for 2 minutes, 3 minutes, 4 minutes and 5 minutes.

It is observed that at 100° C. for 4 and 5 minutes, the seed germination was 70 to 80% but the seed deteriorated rapidly, and also lost the viability. Seed immersed for 2 minutes at 60° C was too short for imbibition, whereas hot water treatment at 80°C. for 2 to 3 minutes gave 90 to 98% germination with full viability. Untreated seed gave 25 to 40% germination. Only 25 to 30% germination is recorded in three years old seed. There is a gradual loss of viability due to storage.

Field experiment:

An experiment is conducted to study the effect of cutting at 15, 25, 40 and 75 cms. heights with 40, 60, 80 and 100 days interval on the green forage quality and quantity of leucaena.

...6/..

Material and Method:

Seedlings were raised in plastic bags of size 9" x 7", seed treated with hot water were sown in a bag.

Per acre 20 cartloads of F.Y.M. was added to the soil. One ploughing and harrowing was given. 16 Kgs. P. per acre was applied before transplanting. After 50 days from sowing the seedlings were transplanted in the plot at 50 x 50 cms. distance between plants and rows. Transplanting was done in the month of December 1974, and the plants kept undisturbed for 6 months. Observations are recorded for 9 months from August 1975, to April 1976, for four main treatments (heights 15, 25, 40 and 75 cms) and four sub-treatments (40, 60, 80 and 100 days interval).

Main plot size - 40 x 3.0 meters

sub-plots size - 10 x 3.0 meters

Results

Yield of Green fodder in Kgs. Crude protein and dry matter in percentage.

Days	40 days			60 days			80 days			100 days		
Ht.in cms.	Green	D.M.	C.P.	Green	D.M.	C.P.	Green	D.M.	C.P.	Green	D.M.	C.P.
15	135.5	29.95	25.92	93.00	26.73	24.66	97.00	30.52	22.62	64.00	31.51	20.90
25	164.0	26.03	26.96	125.0	26.77	24.95	114.0	29.92	23.02	75.00	31.12	21.15
40	182.0	25.75	26.30	138.0	28.90	25.41	113.0	29.50	23.11	102.0	30.72	22.02
75	218.0	27.49	27.69	144.0	26.35	26.88	118.0	28.17	23.72	96.00	29.81	23.11

The data is statistically analysed and both the treatments are observed highly significant.

...7/..

Green fodder yield is higher when cuts are taken at 40 and 75 cms. heights with 40 and 60 days interval, whereas yield decreases at 15 and 25 cms. heights with the same days interval. It is observed that dry matter and non-edible part of the fodder increases and protein decreases at 80 and 100 days interval for all the heights. Observations will be recorded for one year before analysing the data.

Conclusion:

From the work, on L. Leucocephala reviewed in this paper it can be concluded that this plant can make a substantial contribution to the protein requirements of cattle. It is essential that further work should be done regarding the packages of practices and methods of establishment. It is also necessary to study the effect of this legume on production in cattle especially in relation to reproduction and milk production.

Breeding work is in progress at Queensland to develop promising types with high density of branching and high foliage yield with less mimosine contents.

These unconventional forage plants with high forage yield and high nutritional values are suitable under rainfed agriculture with limited water resources. It is possible to run the dairy industries under these areas with low cost of milk production. This will replace costly protein concentrates. The investment is less, family labours are well utilized and thus leucaena based cattle feeding operation can be a profitalize guide line for the poor farmers in India.

Future studies:

For complete information on cultivation of these two crops and their nutritional evaluation the following programme is proposed to be undertaken.

1. Cultivation trials will be carried out at the following places to get the data on the suitability of these crops under different agro-climatic conditions: Nagar, Nasik, Jalgaon, Aurangabad, Surat.

2. Based on the data available from initial cultivation trials, feeding trials will be conducted on crop harvested at optimal height and intervals. Five acres each of Hedge Lucerne and Kubabul will be maintained to keep a constant supply for nutritional studies.

...8/..

Facilities needed:

Three acres of Ku-babul and two acres of Hedge lucerne crop has already been sown and irrigation to these plots at regular intervals should be assured to maintain yields.

Field experiment:

Name of the crop: Desmenthus Virgatus (Hedge Lucerne)

Cultivation trials have been started to study the effect of cutting at 10, 20, 30 and 40 Cms. height with 40, 60, 80 and 100 days interval on the green forage quality and quantity of hedge lucerne.

Soil and climate: Initial trials, have been taken up at the Uruli Campus and Soil and climatic conditions are the same as described for Ku-babul (Leucaena Luecocephala).

Material and method:

20 cart-loads of F.Y.M. per acre was applied to the soil. One ploughing and one harrowing was given. 16 Kgs. P. per acre was applied at the time of sowing.

Seed was treated with hot water at 80° C. for 2 minutes, and sown by hand at 33 cms. distance between lines, satisfactory emergence was observed within 10 days, usual cares i.e. weeding, irrigation were followed.

Sowing was done in December, 1974, Plants attained a height of 4.5 ft. within 6 months.

Observations are recorded for 9 months from August 1975 to April, 1976 for four main treatments (heights 10, 20, 30 and 40 cms.) and four sub-treatments (days interval 40, 60, 80 and 100 days). Plants were cut back to the respective heights at respective days interval.

Main plot size - 40 x 3 s. meters

Sub-plot size - 10 x 3 s. meters.

...9/..

Result.

Yield of green fodder in Kgs. Crude protein and dry matter in percentage.

Height in cms.	40 days			60 days			80 days			100 days		
	Green	D.M.	C.P.	Green	D.M.	C.P.	Green	D.M.	C.P.	Green	D.M.	C.P.
10	77.00	23.41	25.31	67.00	27.68	20.80	57.00	29.53	20.80	72.00	29.70	20.97
20	96.50	23.61	25.54	86.00	27.66	21.15	76.00	29.85	21.99	73.00	28.33	21.12
30	78.00	23.37	25.58	63.00	27.37	21.72	64.00	29.09	22.90	46.00	28.10	21.84
40	87.00	23.28	25.85	97.00	26.95	21.89	71.00	28.66	23.15	56.00	27.62	21.90

Data is statistically analysed and both the treatments are observed significant.

It has been observed that green fodder yield is high when cut is taken at 20 cms. height at 40 and 60 days interval. Increase in cutting interval increases the non-edible and non-palatable part of the fodder (further work is in progress).

Future studies:

For complete information on cultivation of these two crops and their nutritional evaluation the following programme is proposed to be undertaken.

1. Cultivation trials will be carried out at the following places to get data on the suitability of these crops under different agro-climatic conditions - Nagar, Nasik, Jalgaon, Aurangabad, Surat.

2. Based on the data available from initial cultivation trials feeding trials will be conducted on crops harvested at optimal height and interval. Five acres each of Hedge lucerne and Ku-babul will be maintained to keep a constant supply for nutritional studies.

...10/..

Facilities needed:

Six acres of Ku-babul and three acres of Hedge Lucerne crops has already been sown, irrigation to these plots at regular intervals should be assured to maintain yields.

-o-

References selected:

1. G.D. Hill : Leucaena leucocephala for pasture in the tropics. Herbage Abstract. June 1971, 41.

2. S.G. Gray, Tropical Pasture Specico, Review Tropical Grasslands. Vol. 2, May, 1968.

3. Directors, I.G.F.R.I., Annual Report, 1971. Indian Grasslands and Fodder Research Institute, Jhansi.

4. Univ. of Philipines: World Farming, October, 1972.

5. James L. Brewbaker: Hawaiian giant' Kao Haole. College of Tropical Agriculture, Misc. Pub. 125.

-o-

bhd/26777.

Nut - 2.

The Bharativa Agro-Industries Foundation,

Uruli-Kanchan, District Poona.

Biological Seminar No.2 June, 1976

Evaluation of by-products and unconventional feeds for their utilisation in making out economic and balanced cattle feeds.

Dr. D.V. Rangnekar M.V.Sc. Ph.D.

1. The need for work on by-products and unconventional feeds:

With the accent on livestock development, particularly the dairy animals in view of realisation that they can become a good source of income and employment to the farmers, administrators and scientists have become cognisant of the need to supplement existing sources of feeds and fodders. While deficiency in supply of conventional feed and fodder resources in India is known since many years, it is only recently that some serious attention is paid to it. In 1974, the Ministry of Agriculture, Government of India appointed a committee comprising of members from Government as well as non-Governmental organisations to assess the availability as well as requirement of feeds and fodder and suggest measures to bridge the gap. The facts brought out by the committee and recommendations are made are worth considering since they not only have a direct bearing on the field of work, but some of their recommendations are very much in line with our approach. In their report, projected population of improved livestock and poultry and their requirement of concentrate and dry fodder for 1973-74 and 1978-79 are given, which are reproduced in Table-1 for information. Estimates on availability of livestock feeds and fodders have also been indicated which are reproduced in Table-2. These data indicate that if we are to depend on conventional feeds and fodders, there would be a considerable gap between the requirement and availability by 1978-79.

...2/..

1.2 The major recommendations made by the committee for improving the situation are: (i) curtailment of export of some of the raw material like oil cakes, rice bran etc. which form bulk of ingradients used for making concentrate, (ii) they have emphasized the need for intensifying fodder development work, propagating fodder production, improvement of grass lands and pastures so as to augment the fodder resources. The need to improve managerial practices, introduce high producing varieties and the varieties that would be most suited to the specific agro-climatic conditions, has been emphasized, (iii) considerable emphasize has been given on exploring use of agricultural by-products, industrial waste and unconventional feeds so as to supplement existing feed/fodder resources. A number of pages have been devoted on the information available on various by-products from nutritional angle as well as some figures have been given about the quantities available and it is indicated that these could bridge the existing gap.

1.3. Besides the aspect of deficiency, periodical droughts in certain areas of the country, aggravated the situation regarding livestock feeding. Droughts which are defined as conditions resulting from prolonged absence of rains, have been found to occur regularly all over the country. Meteriological studies indicated that in large areas of the country, drought conditions prevail once in 4 to 5 years while in dry areas of Gujarat, A.P. and Rajasthan, drought is more frequent i.e. once in two years or so. Certain areas have been defined as drought-prone areas in the country and a number of development schemes or programmes have been initiated to develop these areas and restore proper ecological balance.

1.4. Animal husbandry programme has been recommended as one of the major programme of development and development of grass lands and fodder resources are naturally one of the pre-requisites. Even in the above referred report, lot of emphasize laid on development of grass land for drought prone areas. Besides improving management practices of grass lands, introduction of drought resistent legumes and fodder trees has been recommended.

1.5. Another major recommendation has been of making available cheap feeds prepared out of agro-industrial by-products. It has been indicated that feed made out of sugar cane bagasse and molasses could be used on large scale as scarcity feed and that these materials should be made available.

...3/..

2. Evaluation of a feed product:

Realising the need to establish use of by-products and non-conventional feeds with a view to economise feeding of dairy cattle, studies are being carried out in the nutrition laboratory on some of the by-products available in large quantities in the Western Maharashtra. An attempt would be made here to describe the approach that is generally taken towards establishment of by-products as cattle feed, and also to understand nature of most of the by-products with which we have to deal.

2.2. The basic steps in the establishment of the use of a particular feed or by-products can be summarised as follows:

2.2.1. Availability & cost of the product:

Selection of by-products for its studies has to be generally based on quantities in which it is available presently or likely to be available in near future, and its cost. It is needless to state that carrying out studies on a product which is available in very limited quantities or is very costly compared to conventional feeds, would not be advisable. It should, however, be borne in mind that the price of the product per-se can be misleading since, firstly it might change with the availability and demand, situation; secondly it has to be considered according to replacement value of the product.

2.2.2. Evaluation through laboratory and animal feeding studies:

For nutritive evaluation, the steps generally followed are (i) proximate analysis, (ii) invitro digestibility studies (iii) animal feeding experiment. In most of the cases, these are aimed at finding the protein and energy value of the material. However, with some special products like mineral source, the criterian of evaluation will be different. These steps for evaluation will be delt in detail by other colleagues.

2.2.3. Improvement of nutritive value:

It is also an equally important step in the establishment of use of certain products as cattle feed. Studies on certain by-products have shown that certain factors, like alkaloids are likely to limit the use of the product in feeding of livestock and poultry resulting in either retardation of growth or production of some toxic effects. Attempts are being made to find out possibilities of removal of these factors through certain treatment.

...4/..

Economics of such treatment has also to be considered. With certain products, particularly coarse roughages which are fibre rich, chemical treatment has been found to be useful in improving their nutritive value. The improvement however, varies with the nature of fibre and chemical process and cost of treatment has to be considered before finally recommending the processing.

2.2.4. Studies on processing and storage:

Final and important aspect is to study how the product can be commercially exploited which would mean studying its suitability from processing angle, particularly when it forms a part of concentrate mixture or complete feed. This would also determine the level upto which the product can be incorporated in the compounded feed and which may not necessarily commensurate with its nutrient replacement value. In some cases, the product may have to be processed before its utilization. Observation on storage of material have also to be considered since storage of the product forms an important aspect of commercial use of the feed material.

The steps of evaluation described above are for products whose safety for animals is established.

3. Studies carried out on sugar cane bagasse and molasses:

3.1. Work done on sugar cane bagasse and molasses which was the major study carried out during last few years by the nutrition laboratory would be reviewed in this note.

3.2. Interest on the use of sugar cane bagasse and molasses was generated as a result of drought in 1972-73, when even coarse roughages had become scarce. This was one of the by-products available cheap and in large quantities in Western Maharashtra and other sugar producing areas of the country and could be considered as a good substitute for cereal straws.

3.3. Availability:

About 1/3rd of the sugar cane crushed comes out as sugar cane bagasse. While much of the bagasse is used as fuel in the factory itself, about 5% of the bagasse remains surplus and is destroyed.

...5/..

3.4. Chemical composition and invitro digestibility studies:

The results of chemical analysis of sugar cane bagasse both for proximate principles and cellular and cell wall constituents are shown in table-3. Comparative figures for common cereal straws are also given in the same table which would show that the bagasse is only slightly inferior to straws.

The in-vitro digestibility for dry matter of bagasse was found to be 29% which is only slightly inferior to straws.

3.5. Animal feeding experiments:

3.5.1. Initial studies were aimed at evolving an economic and balanced feed based on sugar cane bagasse-molasses to be used under scarcity conditions. There were doubts expressed about acceptability of the feed, ability of the animals to digest it, particularly the molasses. Seven different combinations with sugar cane bagasse and molasses as the major component were tried on Gir and non-descript cattle for evolving a suitable maintenance ration and two combinations were tried on growing Holstein crosses. Observations on body weight changes and blood compositions were taken on animals receiving these rations.

Dry matter digestibility for the feed was estimated for four groups by total fecal collection method and it ranged from 50-56% which is comparable to average rations.

Most of the groups were maintained under observations for 5-6 months and a total of 249 animals were involved. Details of the combinations tried are shown in Table-4. It was seen that the bagasse based feed has to be introduced slowly or else the intakes are very low initially and animals loose body weights. However, once the animals intake becomes normal, they maintain body weights. No digestive upsets or health problems were observed.

The combination finally recommended for large scale use during 1972-73 drought in Maharashtra - Gujarat and in 1974 in Gujarat, was Sugar cane bagasse - 5 to 6 Kgs, Molasses - 2 Kg, Urea - 75 gm., concentrate - 50 gm., Mineral mixture 30 gm., salt 10 gm.

The cost of maintaining an animal with this feed was Rs. 1.00 per day.

Results of some of these studies have been reported in the Tropical Products Institute Seminar held at London in 1974 (Patil et al, 1974).

...6/..

Feeding of the recommended rations have been successfully used for a large number of cattle both in Maharashtra and Gujarat State.

3.5.2. Growth Studies :

3.5.2.1. Encouraged by the results of studies on maintenance of cattle feeding, trials were undertaken to find out if an economic ration could be evolved using these products. In these studies, Gir x Holstein crosses were used and results with bagasse based rations were compared with animals kept on straw and concentrates.

3.5.2.2. In the first trial the ration used comprised of 50% bagasse, 32% concentrate, 15% molasses, 1% urea with salt and mineral mixture. The results of the study are summarised in Table-5. It can be seen that while there was a saving of 35 p. per animal per day in the cost of feeding with experimental ration, the control group gained significantly more weight than the bagasse group.

Dry matter digestibility was estimated for the feed in experiment-1 and it was found to be 55.8% and 53.5% for the control and Bagasse groups respectively.

The results of this study have been reported in the seminar conducted by the Tropical Products Institute at London in 1974 (Rangnekar et al, 1974).

3.5.2.3. In the second experiment a ration with higher amount of concentrate was offered. The ration comprised of 20.5% bagasse, 20.5% C.S. hulls, 41% concentrate mixture, 16% molasses, 1% urea and 1% salt-mineral mixture. The results of the study are summarised in Table-6. In this experiment no difference was observed in the gain in weight between bagasse and control groups. The total cost of feeding per day as well as cost per Kg. of weight gain was lower for the bagasse group compared to control group. The animals on bagasse gained at the rate of 520 gm. per day on an average during the experimental period.

3.5.3. Studies on Processing & Storage:

3.5.3.1 In view of the peculiar nature of the two major products involved in the feed, proper method of feed mixing had to be developed. Ordinary feed mixers were not found to be useful since bagasse is a very light material, molasses is viscous and quantity of urea to be added is very small. For large scale hand mixing preparation of a pre-mix with molasses diluted with water in the ratio of 1:0.25 parts was found to be necessary.

...7/..

Trials conducted with a feed compounding unit gave good results since they have a special molassing units. However, there also the feeding of bagasse in hoppers has to be done slowly and it is necessary to feed some heavy material like oil cakes or concentrate mixture.

3.5.3.2 Baling of the complete feed has also been successfully done with the sugar cane bagasse later. For proper baling quantity of molasses has to be increased to a minimum level of 18-20%. As a trial, the bales were transported to Kutch, during the drought by train and many of them were reported to have broken down during further transport by truck.

3.5.3.3 Feed prepared in the feed mill using dry bagasse and undiluted molasses could be stored over 4 months. Hand mixed feed where diluted molasses is used cannot be stored more than 3-4 days. In cases where fresh bagasse (which is moist) is used, it should be used within two days.

3.5.4 Studies carried out on sugar cane bagasse and molasses in India and other countries:

While considerable work has been done on use of sugar cane bagasse in western countries, most of the studies were on beef cattle on rations containing low proportion of bagasse. Beems (1961), Saleem (1961) and Kirk et al (1962) have reported satisfactory growth rate in beef cattle fed bagasse based rations. Randel and his co-workers from Puerto Rico (1966, 1969, 1970) have carried out studies with beef as well as dairy cattle with rations based on sugar cane bagasse and molasses. They have reported that satisfactory growth rate and milk production upto 17-20 Kg. can be sustained on rations containing 20-30% bagasse.

Some studies were carried out on use of bago-molasses mixture for maintenance at I.V.R.I. and Anand Agriculture Institute. The results observed were not very encouraging. Murty and Sharma (1970) have fed bago-molasses mixture to Haryana calves and reported a growth rate of 0.18 Kg.

4. Further work to be carried out on sugar cane bagasse and molasses:

The details of the technical programme for further work on these products is indicated in the separate note on by-products project. The studies will generally cover the following aspects:

4.1. Preparation of complete feed for lactating animals.

4.2. Studies on alkali treatment for improving nutritive value of bagasse to be assessed by in-vitro digestibility studies, growth and lactations.

4.3. Baling trials with complete feed.

4.4. Use of molasses for cattle feeding in the form of liquid feed supplement and bricks.

-o-

Animal Reproduction - 1.

" ARTIFICIAL BREEDING "

GOOD MANNERS IN A.I. IMPORTANT TO SUCCESS

By R.G. Saacke.

The ability of the "Young Milkmaid" to milk a cow efficiently has never been refuted. In fact, the favourable response of a cow to her gental, patient manner has been verified physiologically.

Most dairymen are now well aware of the fact that milk let-down is the cow's response to gentlestimulation of the udder, as well as other pleasing aspects of preparation for milking. Also familiar to the dairyman is the cow's response to fright and roughness. Under these conditions, milk let-down is inhibited.

Conditions favourable to milking result in the release of the oxytocin hormone by the cow's pituitary gland. In turn, oxytocin is carried through the bloodstream and, upon reaching the mammary gland, results in milklet-down by causing contraction of muscle like cells which force the milk from upper protions of the gland to the larger ducts in the base of the gland.

Fright or fear in the cow results in the release of the adrenalin hormone from the adrenal gland. In a number of ways this hormone counteracts the beneficial effects of oxytocin and prevents milk let-down and, therefore, good milk-out.

What does all this have to do with Artificial Breeding ?

Both natural mating as well as artificial insemination cause oxytocin release in the cow. In fact, it is not uncommon to see a cow let down milk while being bred. Many technicians and A.I. fieldmen recognize this as part of good technique because it is a sign that the cow is responding naturally.

Many years ago, Illinois researches Van Demark and Hays provided strong evidence that the release of oxytocin at the time of breeding was important to sperm transport in the cow.

Contrary to the earlier belief that sperm swim from the site of semen deposition to the site of fertilization, these scientists and others demonstrated that sperm are moved to the oviduct (site of fertilization) by muscle contraction of the cow's reproductive organs.

Furthermore, they found that oxytocin was responsible for these muscle contractions and that adranalin (the fear hormone) counteracted the oxytocin effect as it did in the case of milk let-down.

This tells us that movement of sperm in the cow during and after insemination is quite dependent upon how the cow is treated at the time of breeding. In this regard, the Illinois researchers found that gentle manipulation of the cervix and passage of the inseminating tube into the cervix (as accomplished in notmal artificial insemination) caused notable muscular contractions of the uterus.

...3..

They also showed that uterine contractions resulting from breeding were eliminated by producing fright in cows by fake injection with a hypodermic needle or by restraining them under adverse conditions. Undoubtedly, these disturbances caused sufficient release of the animals adrenalin to overcome the favourable response to oxycin and thereby potentially interfered with sperm transport.

At this point, there is insufficient data to evaluate just how important gentleness and good manners are to conception when breeding artificially. However, the same kind of gentle treatment we recognize as important to milk let-down should pay off when breeding artificially.

Certainly, artificial insemination is not a job for someone who does not like cows or who possesses a short fuse when things go wrong. It seems reasonable that fertility from artificial or natural service could be impaired by the adverse effects of fright on sperm transport in the cow.

It is quite possible, too, that we do not offer the cow enough stimulation during artificial service. As the artificial inseminator becomes more and more proficient in passing the tube through the cervix, he naturally breeds each cow more quickly. Some technicians inseminate an animal so quickly that if you blink you will miss the action.

While some may take pride in how fast they go through a string of cows, we must ask ourselves if there was sufficient stimulation to obtain an oxytocin release and good sperm transport.

...4..

Data recently presented by Montana Research suggest that additional stimulation after A.I. service is beneficial. They studied the effect of a 10 seconds clitoral massage after artificial insemination conception rate in beef cattle.

Their findings showed that cows receiving massage had a significant 6.3 per cent higher conception than those not massaged. Interestingly, virgin heifers did not respond to massage while nonvirgin heifers showed a slight, insignificant increase in conception when massaged.

Although the basis for improvement in conception due to clitoral massage is not clear, Montana researcher Dr. Ron Randel feels that the benefit is due to oxytocin induced muscle contractions and better sperm transport.

Although all answers are not in on this subject, success in breeding artificially may partially hinge on the same principles we use in obtaining good milk let-down.

-o-

The Author is a professor of Dairy Science, Virginia, Polytechnic Institute and State University.

a.

Salient features of training in semen freezing laboratory, A.I. and Pregnancy Diagnosis.

I. Collection of semen:

1. Getting acquainted with the different practices followed while collecting the semen.

1.1 Bull aprons - Hygienic purposes.

2. Preparation of bulls for getting good quality & quantity of semen:

i) Teasing and false mounts
ii) Restraing & preparation for 5 minutes
iii) Any other methods

3. Final temperature of vagina - 47° - 49°

4. Insulation bags - protection of semen tube from external temperature, sunlight, breakage etc.

5. Rubber mating - help in easy jump.

II. Processing of semen:

1. Evaluation:
a) Volume of ejaculate
b) Mass activity
c) Initial motility
d) Sperm concentration

2. Dilution: a) Initial dilution 50:50 and keep for cooling at room temperature.

3. Diluter: Tris (hydroxy-methyl) amino methane

Fructose

Citric acid

Glycerol - This makes triladyl.

Above imported diluent is to be mixed with double glass distilled water and egg yolk in proportion of 250 gms : 750 ml : 250 ml.

4. Printing: Name of organisation - BAIF

Bull No.

Batch No. (Day of freezing)

5. Filling and sealing (This is automatic) - By filling & sealing machine, 4000 straws/hour.

Contd....2

6. Arranging on freezing ramps - Straws are arranged horizontally with all steel ball on one side and glass ball on other; after getting air bubble in the centre of straws.

7. Equilibration period - 4 to 6 hours in refrigerator at 5° C.

8. Freezing - 4 cm. above liquid nitrogen level in vapour of liquid nitrogen in LR-320 container for 10 minutes.

Equipment provided at Sub-Centre.

1. Vivostats(Cryostats)

i) Lab - 50 - A 50 litres container for storage of liquid nitrogen

ii) XR - 16 - Liquid nitrogen container for storage of deep frozen semen under liquid nitrogen level.

iii) AL - 3 - small 3 litre container useful for storage of semen in liquid nitrogen and used for transportation of semen from main centre to farmers door.

iv) Forceps - for taking out straws

v) Other equipment - a) Insemination gun
b) Sheath
c) Scissors
d) Thermos Flask
e) Napkins
f) Bucket etc.

2. Maintenance & care of containers:

Remember you have the costliest equipment at your centre i.e. liquid nitrogen containers. This is an imported item at present and not manufactured in India. Maximum care has to be taken to prevent any damage to these containers.

a) Do not jolt or drop the container
b) Do not drag or tilt the container
c) Always lift the container with handles provided, when you want to move the container from one place to other.
d) Do not keep the container open for long time. As soon as straws are taken out close the container with plug cap.
e) The plug cap or canister should not be forced in.

3. Handling of Frozen semen:

You will be provided with frozen semen in mini-tub(German straws) or in medium straws(French straws) at your centre. Mini-tub will contain semen of bull, frozen at Uruli-Kanchan and while imported semen is in French straws.

Contd....3

a) Determine the cow in heat: - before you take out the straws, assure -

i) Turgidity of uterine horn, and presence of grafian follicle on ovary by rectal palpation.

ii) Thick, ropy transparent mucus discharge

iii) Standing heat.

b) Thawing of semen:

i) Take out the straw from vivosent with the help of long forceps

ii) Put it in warm water at 35°C for 15 second.

iii) Wipe it out with clean towel.

iv) Bring the air bubble at one end, preferably glass bell end.

v) Cut open through the air bubble at high angle to avoid leakage in sheath.

vi) With the cut end up insert straws in the sheath.

vii) Mount the sheath on the gun.

c) Insemination:

i) Introduce the gun in vagina after due precaution by catching the cervix with other hand through rectum.

ii) Pass the gun through cervix and deposit the semen in the body of uterus ½ cm. ahead of internal cervix.

d) Pregnancy Diagnosis:

If the cow is not conceived, she will repeat after 21 days(normal oestrus cycles range 18 to 24 days). Heat may also be missed because of poor observation or less expression of heat symptoms by cow (silent heat) or anoestrus(no expression of heat at all).

It is, therefore, essential to examine the cow rectally for pregnancy or any other abnormality.

Cow should be diagnosed for pregnancy after 60 days of insemination, if she has not been reported for heat/insemination at your centre. Do not diagnose the cows below 60 days because:

Contd.....4

i) There is likelihood of mistake being committed,

ii) There is chance of early foetal mortality, because of incomplete formation of sternum at that stage and collapse of heart may happen by rough handling at the time of rectal palpati.

1. Catch the cervix, determine whether it is closed,

2. Roll the uterus by hooking the inter-cornual ligament and feel:

i) Asymmetry of horns

ii) Fluctuation in one of the horn

iii) Double feeling

iv) Enlargement of corresponding ovary by the presence of corpus luteum.

3. After three months, but before 4½ months, one should feel:

i) Foetal bump

ii) Fremitus

iii) Cotyledons

4. Between 4½ months to 6½ months:

i) Uterus cannot be felt as it descends in abdomen, only cervix could be felt at the brim of pelvis.

ii) During this period, other symptems are visible like : increase in barrel size; flank movements on cold watersplash; udder size enlargement.

5. Last two months, one can feel parts of the foetus on rectal palpation and movements of foetus.

*** ***

n/206

Technical Development of Straws for Distribution of Liquid and Frozen Semen

N.O. Resbech, 1976

Indian Dairyman 28: 289

During the early years of AI in Denmark the technical equipment used was a modification of the Russian equipment. In 1940, Eduard Sorensen designed a completely new apparatus for storage of gelatinized semen in paraffin covered cellophane straws. This insemination method, which later known as the straw method, soon became very popular with the Danish Cattle Breeding Associations on account of its simplicity. In the late forties many organisations began to use the straws for storage of liquid semen at + 5° C.

When it became possible to store semen in liquified gases, especially nitrogen, the American Breeders Service (ABS) as a result of investigations by Elliot and his colleagues (1953) completely went over to the storage of semen in liquid nitrogen and in 1959 this organisation delivered deep-frozen semen to 1.2 million cows in the USA and some South American countries. The semen was frozen in flame-sealed 1 ml. glass ampoules. However, at an early stage it became obvious that it was cheaper and quicker to use straws rather than glass ampoules for the storage of frozen bovine semen. In 1953, Parez and his coworkers and in 1956, Friis Jakobsen deep-froze semen in cellophane straws and stored it using solid CO_2 as a refrigerant. Later on Adler stored the semen in open cellphane tubes on liquid nitrogen and found the viability of the semen to be the same as with sealed glass ampoules. In 1960 Adler and Resbech described modifications of liquid nitrogen refrigerations for the storage of large amounts of semen frozen in cellophane straws. However, cellophane straws proved to be unsuitable material for freezing semen and in the early fifties, Cassou improved the technique further by using polyvinyl chloride straws, sealed at either end with polyvinyl alcohol powder. This method proved to be of great importance. In the following years, Cassou developed a detailed and complete method for the use of medium andminipolyvinyl chloride straws. This equipment has been used world-wide for many years.

What now is the reason for using frozen semen instead of liquid semen? To answer this question one should consider the recent progress made concerning the evaluation of the genetic value of breeding bulls. Primarily AI in cattle was adopted as a breeding method in order to transmit genetic merits into any herd, big or small through the use of semen from outstanding bull material. The bulls came from private breeders and for many years the private breeders tried to monopolize, the sale of bulls for AI. In the last ten years this procedure has been changed much since the geneticists have designed new breeding programmes which are built up on better methods for evaluation of the breeding value of a bull. In order to perform these new breeding systems the use of deep-frozen semen has become 100% necessary.

...2/..

It is not only necessary to produce enough semen for routine insemination, but also to produce surplus semen, which could be discarded after a storage period.

The basic principles for the selection of bulls in new breeding programme are as follows :

Since all milk recording of dairy cows now is centralized and carried out by the computer technique, the central cow register can be used for finding the highest yielding cow per year. These cows are used as the coming bull mothers which means that they are inseminated with semen from the very best bulls of the year. Bull calves resulting from these inseminations are used for collection of semen when they are one year old and 600-800 cows per bull are inseminated with semen from each of these bulls. After this period, the bulls are no longer used for routine inseminations, but kept for semen collection untill 20,000 to 30,000 doses of semen have been stored from each bull. This number of doses has been reached when these young bulls are 2-3 years old and then they can either be slaughtered or kept as waiting bulls until we have got the results of their progeny. That may take between 4 and 5 years. When the progeny results are available, frozen semen from only 25% of the very best bulls is used for artificial insemination. The remaining 75% of the frozen semen doses is discarded.

It takes time to pass over to a breeding programme like this and particularly the old breeders have reacted against this method. In Denmark so far, only the Jersey breed has gone completely over to this method. There is no doubt however that this breeding programme will be introduced for all the breeds in the next few years. The breeding system cannot work unless frozen semen is used 100% and therefore it has become imperative to find a method for the use of frozen semen that is effective i.e. which gives high fertility results and at the same time is also safe, simple and economic. It is important that the individual doses of semen are marked distinctly with the name of the breed and the bull and date for collection so that it is impossible to make mistakes when the cows are inseminated. We have already had difficulties in finding a method which all AI centres would agree to use. Some AI centres started using the pellet method, others the fresh straws. Since these two groups of centres could not agree on using one standardized method we had to investigate which of the two methods was the most economic and accurate. Taking everything into consideration we came to the conclusion that the only different in costs between pellets and straws, was the price of the straws. On the other hand there were so many advantages in using the straws instead of pellets that although the pellets were cheaper we found it better to recommend straws. Besides, pellets have got the disadvantage of not

...3/..

being hygienic since these have to be stored in liquid nitrogen in direct contact with the fluid which might give risk for combination of the pellets. Another reason for not recommending pellets was the difficulty in marketing pellets. For this reason we were looking for another method and after having seen Dr. Simmet's automatic filling machine in Munich last year we decided to make a pilot investigation of this method. The AI centre in Alborg was selected for a split sample trial where we compared Dr. Simmet's method with that of the French straws. Three thousand cows were inseminated with semen, frozen according to each method. The results are stated in the Table.

From this table it appears that there is no difference concerning the fertility rates in the use of the two methods, but there were a number of advantages by using Dr. Simmet's method. The 6.5 centimeter long straws are made of cheap material. The straws can be made in any country and do not need to be imported. The straws are closed by means of glass balls in an automatic machine which can fill 6,000 straws per hour. This method does not need a special cooling room or cabinet for filling the straws.

For the dilution of raw semen a Tris-diluter, which contains glycerol and egg yolk, is used. The first dilution is made just after collection on water bath at 35° C. The semen is cooled slowly down to room temperature and the final dilution is made after determination of the dilution rate. Each semen dose will then contain about 20,000,000 sperms.

Table: Breeding efficiency/60-90 days non-return percentage.(for November-December,1972)

Bull	Cassou Straws		Landshut Method	
	1. ins.	N.R.%	1. ins.	N.R.%
Bos	414	63.5	415	67.2
Blits	458	64.8	412	66.3
Atlas	274	60.9	258	64.7
Sjoestrup	491	61.7	406	60.6
Horn	344	69.8	245	70.2
Bast	362	65.5	296	67.2
Pan	377	63.7	364	66.2
Jet	310	67.7	236	66.5
Boerge	379	62.0	350	66.6
Prim	183	61.7	200	63.0
	3592	64.2	3182	65.8

.../..

Conclusion :

The use of frozen semen is only necessary if modern breeding programmes, including long term storage of semen, is introduced in a dairy cattle area. The deep freeze method which should be used is a matter of choice. From a hygienic point of view and due to the difficulties in making a proper marking of the individual in semen doses, straws have been found to be better than pellets. The straw method is slightly more expensive due to the cost of straws. The most simple, cheap and effective straw method which has been developed recently seems to be the so-called Landshut method, conforming to which straws and insemination catheters can be made in any country adopting this method.

-o-

bhd/22777.

"FROZEN SEMEN BANK"

4.1 INTRODUCTION:

Artificial Insemination is now accepted method for mass genetic improvement of animals population. Advances of semen technology in recent years has helped in development of artificial insemination programme covering a wide range of livestock.

Early progeny testing of bulls is possible beyond doubt only through artificial insemination, but when a large population is considered for this programme, the major limitation is the use of liquid semen with short storage life. The technology of deep freezing of semen poineered by polge smith and parkes in 1949 has come to the rescue and has helped in overcoming these limitations and therefore, dramatic improvement has been achieved by Western Countries in breeding superior cattle for milk production.

Deep freezing technology has not only helped in improvement of milk production, but also has economised the animal husbandry through reduction in the cost of maintenance of bulls. In Western Countries it is usually a practice to collect good number of doses of semen say 20,000 from young bulls and dispose off the bull or collect less number of doses and keep waiting with farmers till the progeny test is available, so maintenance cost on bulls can be drastically reduced.

Usage of deep frozen semen permits availability of more number of bulls at a time for progeny testing in different climatic zones to test genotype x environment interaction. Deep frozen semen makes it possible to have semen of bulls at all the time available with the inseminator and random utilization can be possible while this is the greatest limitation in liquid semen.

International exchange of semen is possible only with deep frozen semen and superior germ plasm can be introduced in developing countries for improvement of milk production.

Farmers can have the choice of selection of bulls for using on their cows through usage of deep frozen semen only.

...2/..

The semen ejaculate of bull can be utilized more rationally and economically without wastage of spermatozoa through deep freezing technology.

Life span of spermatozoa is enhanced for number of years by deep freezing without loss in their fertilizing capacity, since the metabolism of spermatozoa is stand still and no agains effect is expected, provided handling and maintenance of deep frozen semen is meticulously done.

Advances in semen packaging technology are being done from time to time. Today glass ampules have been replaced by PVC 0.5 ml. or 0.25 ml. French straws or 0.3 ml. minitubes. The length as well as diameter of PVC tubes has under gone, modification from time to time, Cassou (1968) introduced ministraws by reducing the diameter from 3.00 mm. to 1.5 mm. While keeping the same length and brought automotion in packaging device by ultrasonic sealing, while simmet (1972) introduced automation in filling and sealing of semen straws by reducing the length of medium French straws (0.5 ml.) from 135 mm. to 65 mm. and sealing by steel and glass balls, instead of polyvinyle alcohol powder. Both the straw packaging technologies has increased the productivity of bull per ejaculate and increased the storage capacity per container. Slow freezing using alcohol Co2 ice bath has been totally replaced by instant vapour freezing over liquid nitrogen.

4.2 SCREENING OF BULLS:

After selecting the bulls on genetic basis but before they are introduced on regular freezing programme they are being examined both for physical soundness as well as soundness of the reproductive tract.

Bulls having cryptorchid, fibrosed, hypoplastic testicles as well as those having aplasia of epididymis or any other part of reproductive tract are strainght way taken out of the list.

...3/..

Physical deformaties like fractures or spondylosis or soft hooves causing trouble in mounting are also taken out.

Bulls are then examined for soundness of reproductive tract by rectal palpation, those having seminal vesiculitis, abcess or tumour on any internal part of reproductive tract are also culled.

The bulls having high pedigree record as well as having no physical or congenital malformations are selected and introduced for training programme. They are brought to mount on teaser bull and are trained to give collection in artificial vagina. From our experience we found that the young bulls introduced for training take at-least 2 to 3 weeks before they can give an ejaculate in A.V. At this stage also some bulls are culled on account of lack of libido or defects of penis (like tumor or preutial adhesoons etc.). The semen from young bulls is then tested for volume, colour, Mass activity, Initial morility and Sperm concentration.

Bulls donating semen of abnormal colour like red or brown afe discarded. The normal colour should be creamy, milky white or light yellow (lemon). Red or brownish colour indicates rupture of some capillaries on the glans penis or in seminal vesicles or ampullae. (haemospermia).

Bulls donating semen with initial motility below 70 percent and sperm concentration below 500 millions per ml. consistantly for 4 to 5 weeks are rejected. The screening of semen samples is also done for morpholocal abnormalities of spermatozoa. Bulls donating semen with having gross morphological abnormalities as judged from phase contrast microscopy are further screened by taking semen smears prepared with Nigrossin-eosin stain. If bulls have more than 15% total morphological abnormalities with more than 4% head abnormalities are rejected. If bulls show specific sterilizing defects like "Cork Screw" or "dag defect" in their spermatozoa, are also rejected from collection programme.

Those bulls which are free from all above defects and satisfy basic requirements of initial motility and sperm concentration are subjected to test freezing and the frozen semen is examined after 24 hrs. If the freezability of semen is not satisfactory consistantly for 4 to 5 freezings the bull is rejected from the programme.

..4/..

From our experience at this station we found that 25 percent bulls are rejected on the basis of congenital defects, morphological sperm abnormalities inconsistant semen picture, abnormal colour of semen low freezability of semen and lack of libido.

4.3 Quality Control Measures:

Quality control measures have to be enforced for production of semen. On one hand they are concerned with the protection of animal health, against communicable diseases, while on the other hand they aim to promote the genetic improvement of breeds. There is a danger that semen may serve as a vehicle for the spread of animal diseases, which can prove to be an economic catastrophe for a nations livestock industry and disrupt breeding and selection programmes irrepably. It is, therefore, necessary to provide for strict veterinary control at all stages of collection, treatment, storage, transport and use of semen.

The semen shall have to certified by the veterinary authorities and the sires from which the semen has been collected shall be free from Brucellosis, vibriosis and Trichomoniasis. The bulls should be negative for two suceessive serological examination in case of Brucellosis and vibriosis and microscopic examination of preputial washings for trichomoniads. Also sires shall have been held in areas free from foot and mouth disease and lumpy skin disease. Sires should also be free from leptospirosis and listeriosis which cause sporadic abortions in female. The bull should be negative for tuberculosis and Johnes disease. Sires from which the semen has been deep frozen shall be free from virus causing Epivag and Pleuro-pneumonia like organisms and Pseudomonas aurogenosa corynibacterium and salmonella.

...5/..

Also, the certificate must indicate that the sires are in good health and their growth is normal and under proper veterinary care. They shall be free from such heriditary and congenital defects like :-

1) Testicular hypoplasia.

2) Inherited sperm defects.

3) Congenital absence of epididymis, ductus. deferens or seminal vesicles.

4) Lethal factors or recessive genes.

In order to have less bacterial count in semen strict hygienic precautions have to be taken like bull aprons, cleaning and grooming of bulls meticulous sterilization of A.V. and glass ware. Each ejaculate and each bull should have seperate A.V.

4.4 Facilities to be developed:

Research facilities have to be developed to undertake detailed morphological studies on spermatozoa in order to have the stricter quality control of semen picture. The defects like acrosomal defects, which are not seen under microscope while evaluating semen. The sperms may have normal motility etc. but the bulls may be sterile. Some biochemical assays on hyaluronidase and GOT estimations have to be developed to assess the fertilizing capacity of semen that we are producing here.

4.5 Precision Equipment:

The precision equipment required for processing and freezing semen available with semen freezing laboratory are as follows :-

1. EEL Portable colorimeter with filters and test tubes.

2. pH meter.

3. Single Pan Balance.

4. Phase contrast microscopes with viewing screen.

5. Straw printing machine.

6. Straw filling and sealing machine.

...6/..

In addition to these equipment the laboratory is also equiped with refrigerators, slide warming table, water baths, hot air ovens, A.V. sterilizers, water boilers, Glass distillation apparatus, Autoclove and liquid nitrogen containers, Freezers and liquid nitrogen plant.

4.6 Potential of the Laboratory & Storage Facilities:

The laboratory is air conditioned with a cabin maintaining an ambient temperature of 22° to 24° C. It has all equipment required for processing semen by land shut technology.

The potential at present is 2400 doses per day at the rate of 125 doses per ejaculate per bull. Semen of 19 to 20 bulls are required to be processed every day for freezing. This includes 20 percent rejections of substandard ejaculates on account of low motility and low concentration of spermatozoa. For this we are collecting 22 to 23 bulls every day. The yearly production is expected to be 4,80,000 doses. If 10 percent post freezing rejections are considered we can store 4,30,000 doses per year. (Refer Tables I and II).

With the expected equipment to be received for processing and freezing semen we can safely go upto 4,800 doses per day, processing 36 to 40 bulls for freezing and collecting 48 bulls per day. The local component of equipment modification of building, additional collection yard with additional manpower is proposed.

With 4,800 doses per day and 9,60,000 doses per year. The present capacity is for 5 years. The storage capacity is for 45,00,000 of doses 7 containers of 6 lack doses each and 4 containers of total 3,50,000 doses capacity.

4.7 Plans to intensity bull usage :

Reports on semen freezing under Indian Conditions are available from Indo-Swiss Project Matupatti (1974), Munar, Kerala which is the only report on freezing of exotic semen under Indian tropical conditions so far.

...7/..

According to their reports 60 to 65 collections can be had from one bull in a year with 18 to 20 percent rejections. Their report further mentions 6,500 to 7,500 doses per bull per year as the production of frozen semen at the 130 doses per ejaculate. Our experience at this centre is 126 doses per bull per ejaculate with 30 millions of spermatozoa per dose, 6,250 doses per bull per year would be produced.(Table II).

At Indo-Swiss Project, Brown Swiss breed is used while we are using Holstein Friesian and Jersey breeds. Our figures are in most agreement with Indo-Swiss project figures. While Indo-Swiss Project uses 40 millions per dose accept 35 percent recovery rate for preservation while we keep 30 millions per dose and preserve semen only above 50% recovery rate. Our standards are very high as compared to Indo-Swiss Project. If we accept lower standards like Indo-Swiss Project (35%) or M.M.B. we may be in position to produce 7,500 doses per bull per year in present conditions while if we keep 25 millions and still accept 35% recovery rate like M.M.B. we may be able to produce 8,750 doses per bull per year.

We are now collecting twice a week adult bulls above 2½ years with good body condition and good sperm concentration. So maintaining our standards of freezing with 30 millions spermatozoa per dose we are able to produce, from adult bulls having good body condition and average sperm concentration of 1000 millions per ml. and average ejaculate volume of 4.80 ml. about 8,500 doses per year per bull.

Rasbech (1975) recommends collecting young bulls of 15 months age only once a week or once in 10 to 14 days. Only based on experience with individual bull it is possible to when 2 to 3 weekly collections can be introduced. Volume and density of the collected semen indicate when frequency of collections can be increased. The data on Chippenham bulls rearing unit of M.M.B. clearly indicates that the Holstein should grow at the rate of 2.40 lbs. per day and put on 875 lbs. at 52 weeks of age similarly Jersey should grow at the rate of 1.77 lbs. per day and should have 644 lbs. at 52 week of age then it is possible to collect the bull at 13 months and produce desired doses of semen. Similar are the reports from Denmark. Production of semen depends more on body weight than on age of bull (Rasbech, 1975).

There are conflicting reports on the amount of spermatozoa per dose. This may be because of different types of diluents in use at different reporting centres. For example New Zealand Dairy Board reported that Caprogen could be successfully used with 2 to 3 millions motile sperms per dose.

...8/..

Branton et al (1953) reported 4.2% drop in fertility when the motile spermatozoa number is reduced from 10 to 5 millions, Milk Marketing Board England on the contrary has reported no loss in fertility on reducing sperm number to 5 millions.

The technique of frozen semen has undergone drastic changes in recent years and with advanced technique, Foote (1969) has reported that 12 millions total sperm would be sufficient for optimum fertility. The factors which may affect the optimum number of sperms per dose are (1) Fertilizing capacity of bull.

(2) Semen quality.
(3) Processing procedure.
(4) Extenders used.
(5) Packaging system.
(6) Volume per dose.
(7) Season.
(8) Storage temperature.
(9) Local conditions.

Before we intensify the production of doses per bull by reducing the number of spermatozoa we will have to test the number of spermatozoa required for optimum fertility at our agro-ecological conditions as well as handling of frozen semen.

REFERENCES

1. Branton, C., Kellagraen, H.C., and Patrick, T.E. (1953) importance of number of spermatozoa in relation to semen quality and fertility of bulls. J. Dairy Sci. 36, 801.

2. Foote, R.H. (1969) Organic buffers for preserving bull semen J. Dairy Sci. 52; 921.

3. Mathew, A. (1974) Principles and Practice of deep freezing bull semen published by Indo-Swiss Project. Matupatti, Munnar, Kerala Printed by St. Joseph's Press, Trivendram, 14, Kerala.

4. M.M.B. Scotland, Report 1974-75.

5. Rasbech, N.O. (1975) Manual on deep freezing for Indo-Danish Training Course.

...9/..

TABLE I.

EJACULATE VOLUME AND SPERM CONCENTRATION OF EXOTIC BULLS AT THE B.A.I. FOUNDATION, URULI-KANCHAN.

	JERSEY		HOLSTEIN	
	Ejaculate volume	Concentration mill./ml.	Ejaculate volume	Concentration mill./ml.
Rainy	4.50 (296)	1,360 (276)	4.80 (132)	1,140 (124)
Winter	4.78 (270)	1,000 (260)	4.90 (197)	710 (187)
Summer	4.80 (800)	1,000 (768)	5.20 (535)	860 (511)
Average	4.69	1,120	4.97	903

...10/..

TABLE - II.

Performance of Jersey and Holstein Bulls during the year 1975-76 from 1st July 75 to 30th June 1976.

	Jersey			Total for the year	Holstein			Total for the year	Overall Jersey + Holstein
	Rainy	Winter	Summer		Rainy	Winter	Summer		
No. of freezing days	30	20	42	92	21	16	26	63	155
No. of bulls Collected	268	263	812	1343	186	194	488	868	2211
No. of ejaculates collected	280	268	806	1350	198	202	490	894	2244
No. of sub-standard ejaculates	44	68	148	260	35	67	97	199	459
% Sub-standard ejaculates	15.71	25.37	18.36	19.81	17.67	33.16	19.89	23.54	20.45
No. of ejaculates frozen	155	139	593	887	114	111	376	601	1488
No. of Doses Frozen	26,087	15,484	72,679	1,14,210	16,549	11,540	45,180	73,269	1,87,479
No. of doses per ejaculates	168	111	123	134	145	104	120	123	126
No. of ejaculates discarded (Post-Freezing)	15	14	48	77	18	17	36	71	148
% of ejaculates discarded (Post-Freezing)	9.67	10.07	8.09	8.68	15.78	15.31	9.57	12.81	9.94
No. of doses discarded (After Freezing)	2,800	1,245	5,777	8,922	2,725	1,158	4,746	8,629	18,451
% of doses discarded (after freezing)	10.73	8.04	7.95	8.59	16.46	10.03	10.50	11.77	8.84

(No. of Doses preserved within July 75 - June 1976 = 1,69,028).

bhd/23777.

-o-

CATTLE BREEDING CENTRES :-

Agencies sponsoring them and actions on the part of the officer incharge expected in each. The BAIF launched the programme of cattle development in the year,1970. The cattle breeding centres that were opened in that year and those opened later on differ materially in their approach and financing. It is therefore important that all officers of the cattle development division understand the implications in the case of each kind of cattle breeding centre that is in operation.

1. CENTRES SPONSORED BY SUGAR FACTORIES :-

In the promotional phase of cattle development programme of the Foundation, several Corporative Sugar Factories had agreed to sponsor and finance the cattle breeding centres. For this purpose the factory was expected to pay a service charge of Rs. 1500/- per centre per month to the BAIF. In addition the factory was expected to provide suitable residential accommodation to the officer, free of rent. The factory was also supposed to provide transport for use of the officer for performance of his duties. In addition a suitable place to locate the cattle breeding centre keeping container equipment and records etc. was also to be provided by the Sugar Factories. According to this pattern of working cost of semen was not initially taken into account as the semen was received free of charge from the Donor countries. After nearly 5 years between 1970-75 during which period severe inflationary pressures resulted in increase in costs all round, it became necessary to raise the fixed service charge from Rs. 1500/- per month to Rs. 2000/- per month. It also became necessary to make a charge for semen at Rs. 10/- per dose used. Other conditions remained unchanged. According to above pattern the following centres are functioning.

1. Pravaranagar, Kopargaon, Akluj, Bhavaninagar, Malegaon, Phaltan, Ashvi, Rethre Bk., Bidri, Bavda, Velapur, Borgaon, Gandevi, Surat, Mehsana, Navsari, Bardoli, Ugar-Khurd.

In the areas of these centres about 2000 breedable cows are available on which the cattle breeding centre is supposed to work. Office bearers, and members of the Board of Directors of the Sugar Factories have shown considerable interest in having centres and it is but natural that they would expect the officers of the BAIF to be responsive to their needs and to achieve the expected results.

...2/..

It is therefore necessary for the BAIF officers-incharge of these centres to understand that the reasonable expectations of management of the Sugar factories and there office bearers are paid due attention to and suitable action is taken in the implementation of their directives and desires. They have to understand that although they are employed by the Foundation the office bearers, Managing Director and Chairman and others, which includes the important cultivators in the Centre's area, to be their de facto supervisors and they have to fulfill the expectations made by them. So far no irresponsible expectations have been made by and on behalf of the sponsoring sugar factories, but in case such a situation arises it is desirable that the matter is tactfully handled and immediately reported to the Jt. Programme Co-ordinator or Programme Co-ordinator as the case may be and efforts should be made to avoid any rupture in relationship between the Foundation and the sugar factory. It should be borne in mind that the officers of the BAIF are entirely under the administrative control of the BAIF but it is equally important to understand that good relations between two participant organisations must be maintained at all times.

Between different sugar factories the system of working also is seen to differ so far as dealings between the sugar factories concerned and the beneficiaries of the programme in the area. These differences have very little bearing upon the functioning of the cattle breeding centre and they should be understood to be peculiar to that centre where the person is posted.

2. CATTLE BREEDING CENTRES LOCATED AT ORGANIZED FARMS :-

The Foundation conceded the request of some organized farms and Goshalas to extend the cattle breeding programme in their respective herds. Such centres are presently located at Ahmednagar Panjarapole Sanstha, Ahmednagar, Nasik Panchavati Panjarapole, Nasik, Adarsh Dughdalaya Bombay, Kandivli Goshala, Kandivli Bombay, Naik Dairy Farm, Nusad.

No charge of the nature of service charge and or any other charge as in the case of the Corporative Sugar Factory is levied on these institutions. These institutions have very substantial investment they have made on their own on buildings, cattle sheds and livestock. They conduct their farms entirely on their own resources and are in no way a burden or a drag on the Foundation. All these institutions and facilities and livestock are available for the implementation of the Foundation's programme, training of the staff and farmers, field trials and research projects.

...3/..

It is for this reason that no charge is made to these institutions for the service rendered in terms of cattle breeding service. For these institutions the Managing Trustee, other trustees and the Manager and other staff of these institutions have to be taken care of properly. As in the case of office bearers of the sugar factories so in the case of these institutions, officers of the BAIF stationed at these centres have to be responsive to them. These institutions have been very co-operative and helpful in the promotion of the Foundation's programme.

3. CENTRES SPONSORED BY SADGURU SEVA SANGH TRUST :-

Sheth Shri Arvindbhai Mafatlal is a trustee on the Board of Directors of the Foundation. He is also very deeply involved personally with the Foundation's activities and has identified himself with the Foundation in the implementation of the programme leading to removal/amelioration of poverty in the villages. With this end in view several Mafatlal concerns are financing cattle breeding centres established and sponsored by the Sadguru Seva Sangh Trust. These are located at Suthri, Dolatpar, Kothara, Nakhatrana, Bansda, Sara, Jhalod. These centres are linked with individual companies of the Mafatlal group, who pay the Foundation the service charge of Rs. 2500/- per centre per month plus Rs. 10/- per dose of semen used as actuals, provide transport at their cost as also provide suitable housing for the officers incharge of these centres.

Although the Mafatlal companies have come forward to finance these centres in the initial stages it is of utmost importance that full value of the amount spent is achieved through the service expected through the centres, responsiveness to office bearers of the Sadguru Seva Sangh Trust and the Mafatlal companies is therefore of paramount importance. It will be easily realised that in case the officers of the BAIF are not able to discharge their duties at the optimum and show the actual results, the financial support is liable to be withdrawn: it is therefore up to the BAIF officers incharge of these centres to bear this in mind and act efficiently and prudently.

4. CATTLE BREEDING CENTRES SPONSORED BY THE CORPORATIONS :-

In the expanded programme of the cattle development various Corporations are collaborating with the BAIF in the implementation of cattle breeding programme in their respective areas.

...4/..

The Corporations with which agreements in this connection have been executed by the BAIF are as under :-

1. D.D.C.M., Aurangabad. 2. D.C.V.L., Nagpur.

3. W.M.D.C., Pune. 4. D.C.K.L., Bombay.

5. P.C.K.E.G.V.N. Ltd, Karwi, Dist: Banda, (U.P.)

The charges in connection with the implementation of the Cattle breeding programme are payable in the first instance by the Corporation to the Foundation. These charges are ultimately on the basis of number of pregnant cows achieved as a consequence of the A.I. activity of BAIF. charge of Rs. 150/- is payable.

The procedure for the working between the Corporations and the Foundation is as under :-

Corporation makes a survey of the number of breedable cows in centres proposed to be opened. About 2000 breedable cows are required within a radius of 10 miles. The cow owners have to be informed that charge of Rs. 150/- would be payable by them to the Corporation in case of such farmers whose cows are certified to be pregnant. It is pre-supposed that the cows which are registered with the BAIF cattle breeding centre will be bred only through the BAIF centre and excuses of the cow having been bred naturally or through the other A.I. facility is not tenable. The farmers are also offered the facility of a bank loan for meeting the expenditure on rearing cross-bred female calves from birth to milk production; this loan is available to eligible farmers, not in lump sum but against specific services (such as A.I. service, vaccinations etc.) or supplies (such as cattle feed fodder etc.). Repayment of loan along with interest thereon is supposed to be made through the sale of milk when produced and marketed through the Corporation. Disposal of the local cows registered for breeding or the cross-bred female calf also to be registered for breeding are not supposed to be disposed of by the owner except after approval by the Corporation concerned. The experience hitherto has been that when cross-bred cows cows are reared and looked after properly they produce over 2500 litre of milk per lactation and bring a net profit of Rs. 1000/- per cross-bred cow per year. From this point of view this is the first attempt in this country not only to offer result based system of service but also to make it a bankable proposition.

...5/..

The intention is is that the typical farmer family consisting of 4 to 5 members should maintain three cross-bred cows two of which will be in milk by rotation and that the family gets a net income of Rs. 3000/- from milk production. For such income a proper investment is very important. Thus a farmer can derive the benefit from this approach to Rural Development and to create his own source even if he does not have any ready money for participating in the programme. All that is needed is their sincere will to observe the financial discipline and to repay the loan out of the income when the income is accrued. In doing so the farmer has to execute a tripartite agreement with the Corporation concerned and the bank offering the loan by which the Corporation is authorised to incur expenditure on behalf of the farmer in the cattle development programme and obtain recoupment of the amount from the bank concerned. The amount involved is debited to the loan account of the farmers. Eventually recovery from the sale of milk is authorised to be made by the Corporation and credited to the bank in liquidation of the farmer's loan. The procedure of flow of finance as far as the Foundations charge of Rs. 150/- per pregnant cow is concerned is as below :-

The first instalment of Rs. 10/- is payable as registration free per cow at the time of starting the cattle breeding centre. The second instalment of Rs. 40/- is payable when a particular cow is given the first insemination. No additional instalment is payable in the case of the cow which receives her second or subsequent insemination the 3rd instalment of Rs. 100/- is payable on the inseminated cow having been declared to be pregnant.

The charges of Rs. 150/- per pregnant is likely to be considered exorbitant, at first sight. The breakdown of Rs. 150/- is broadly as under :-

Cost of semen	Rs. 50/-
Interest and depreciation	Rs. 40/-
Operating expenses	Rs. 60/-
	Rs. 150/-

...6/..

This charge is bound to be considered exorbitant especially when compared with the free A.I. service offered by the State Department of the Animal Husbandry. It needs to be remembered that the BAIF service is a mobile service in which 5 to 6 trips from centre to the village would be involved. The semen used is either of progeny proven bulls or such bulls as by virtue of their outstanding history are earmarked for the Foundation's progeny testing programme. The Services also are offered through a well trained vet-graduate who in addition to giving the service to the farmers cows is capable of rendering additional assistance and guidance to the farmers in a more effective manner.

It will be necessary to remember that all the charges considered, the cost of running and cattle breeding centre of the BAIF would work out to about Rs. 4000/- per month. In the centres, particularly sponsored by the Corporations, it is important that atleast one conception of cow per day is achieved without which the centre will entail a loss to the Foundation.

In order to achieve optimal working in each of these centres programme promotion assumes very great significance. The BAIF officers must convince farmers of the reasonableness of the charge and be able to defend the same while explaining it to the farmers concerned and others. The fertility percentage in all centres in aggregate is observed to be between 55 and 58% . There is room for further improvement in this as the experience both of BAIF officers as well as of the farmers improves over a period of time. It is gratifying to note that the percentage of the conception achieved through other agencies is far less than this figure. To the extent the cow will repeat to service, the owner will be required to feed the cow during the interval she remains non-pregnant. The cow will have to be taken from wherever she is to A.I. Centre for insemination: this involves loss of work by the owner if he desires to get her inseminated. So called free service is available to all only nationally and if all charges are considered it would work out to an amount far in excess of Rs. 150/-. The selection of bulls whose semen offered to the free service is far below the quality of the bulls used in the Foundation's programme.

...7/..

All these aspects should be properly understood by the BAIF officers so that they will be able to persuade the farmers of the Foundation project. Even if it is at a cost, it will given them an assurance of a substantial income of Rs. 1000/- per cow per year.

It could also be explained in another way, A cross-bred cow born to a progeny proven bull will have far more dependability of performance. One cow will produce in her life time 10000 litres of milk or even more. If milk price is only Rs.1/- per litre. The owner has only to understand that the cow has produced 9850 litres of milk instead of 10000 litres. The price of milk is near Rs. 2/- per litre. In that case the cost of BAIF charge will be quite with only 75 litres of milk.

-2-

bhd/21777.

FEEDING OF DAIRY CATTLE

Feeding of Dairy cows is a major management function along with the approved breeding practices and production of quality milk. For full exploitation of the production potential of dairy animals, optimal feeding and management conditions are necessary and it is a proven fact that variation in these are responsible to a large extent for variation observed in productivity of animals. Proper feeding of dairy animals involves much more than just providing feed and most dairy man can improve their incomes by improving their feeding practices. The feed should not only meet the nutritional needs in terms of total digestible nutrients and digestible protein; the feed sources should be selected on a least cost basis, if the dairy man is to earn a reasonable profit.

In the foregoing pages, an attempt is made to describe recommended feeding methods for dairy calves, growing heifers and milch cows so as to get optimum performance from these animals. Alternative sources of feed have been indicated keeping in mind the requirements of different classes so that one can choose according to availability of the material based and the cost. The feeding recommendations have been worked out keeping in mind cross-breds as the reference animal and taking into consideration the nutrient requirements indicated by the N.R.C., 1972. Some of the presumptions considered while describing the feeding schedule are - average growth for the calves about 600 gms., body weight at conception for heifers about 300 Kg., adult body weight for cows about 400 Kg. The fodders have been classified according to their nutritive value and combinations indicated in the pages describing feeding of milch cattle. It is presumed that the fodder being given to the animals would be cut at the optimal stage giving a material with a certain minimum nutritive value i.e. Lucerne, Berseem at early flowering stage, Maize with grains in milk stage etc.

Contd.....2

Part - I: Care and feeding of the young calves for herd replacement

There are no short-cuts to improving the ability of the dairy herd and raising proper herd replacement. However, the most economical way is to start with calf of good breeding and grow the calves and heifers at a rate considered optimal to a breed and to an optimal size. One is tempeted to think that there should be a best way to raise heifers or replacement, with so much advancement in the science of nutrition and management, but fortunately there is no best way, but many successful ways or options from which to choose. Some of the major aspects to be considered in care and feeding of young calves are:

1. Have the calf born in a clean area.
2. Disinfect the naval and surrounding area immediately after birth.
3. Allow the calf to nurse colostrum from dam as soon as possible after birth (within first hour the best).
4. Colostrum is rich in antibodies which protect the calf from infectious diseases early in life; the calf must receive about 2-3 litres of it per day, during the first three days of life.
5. From 4th day ~~xx~~ onwards the calf should be offered whole milk at the rate of 10% of its body weight till it is five week old.
6. A good quality 20% of CP calf starter and lucerne hay must be offered to the calf in small quantities from 3 weeks onwards.
7. From 5th week onwards the calf may be totally shifted to the calf-starter - green roughage regime. The calf starter should contain about 18-22% CP, 70-75% TDN and not more than 8% fibre. The schedule of feeding till 6 months of age is outlined in Table - 1. However, from economic point of view, the calf starter may be replaced from 4th month onwards by a 15% CP concentrate mixture.

...3..

8. Should skim milk be available, it can be fed to the calf from 2nd week onwards at the rate of 10% body weight till 4th week and subsequently at 12% body weight till the 3 month of age; thereafter it may be shifted to the calf starter green hay regime as indicated in Table - 1.

9. Place the calf in individual stall(4' x 7') for the first 6 months of age.

Cost of Pen/Stall (Basics)

10. Dry calf pens and well ventilated calf barns protect the calffrom scours and pneumonia, the two diseases that affect the calf while it is young.

TA B L E - 1: Schedule of feeding for calves(0-6 months):

	Colostrum (lit.)	Whole milk (lit.)	Calf starter 1,2,3(Kg.)	Greens or green hay (kg.)
1st week	10% body wt. (3 days)	2.5 to 3.5 (4 to 7 days)	-	-
2nd week	-	3.0 to 3.5	-	-
3rd week	-	3.5 to 4.0	0.05	0.1
4th week	-	3.5 to 4.0	0.05	0.2
5th week	-	-	0.200	0.5
6th week	-	-	0.300	0.5
7th week	-	-	0.300	1.0
8th week	-	-	0.500	1.0
3rd month.	-	-	0.500	2.0
4th month	-	-	0.750	3.0
5th month	-	-	1.0	4.0
6th month	-	-	1.5	7.0

1. Contains Vit. A, 8,000 IU per Kg. feed Cost/kg Cost/kg
2. Contains Vit. D, 2,000 IU per kg. feed
3. Contains 50 mg. of Aureomycine per Kg. feed

Feeding of the heifers : 6 to 9 months

Feeding calves from 6 months onwards is relatively a simpler job as they become ruminents in both qualitative and quantitative sense. The feeding regimes for this category of livestock is indicated in Table - 3. Outlined in Table - 2 is the grouping of feeding of approximately similar nutritive value; such as classfication(Table-2) was attempted from the view point of convenience in ration formulation.

TABLE - 2: Groups of feeds of approximately similar nutritive body.

Botanical Names

Local Names

Total digestible Nutrients

Group	Names	DCP	TDN
A	Anjan grass	1	14
	Paragrass		
	Dhub		
	Rhodes		
	Napier		
	Sugar cane whole		
B	Maize(green), Sorghum green	1	17
C	Lucerne	3	14
	Berseem		
	Cowpea		
D	Paddy straw	0	40
	Wheat Bhusa		
	Sorghum straw		
	Pagasse		
E	Concentrate Mixture	12	75
		Parts	
	Oil cake	20-25	
	Bran	35-50	
	Grain	20-30	
	+ vit. & Min.	1-3	

TABLE - 3:

A) Feeding schedule for heifer of 6 - 9 months of age:
(100 - 150 Kg. body weight approximately)

A Kg.	B Kg.	C Kg.	D Kg.	E Kg.
3	3	-	1	2.5
7	-	-	1	2.5
-	-	10	1.5	1.25
-	6	-	1	2.5
-	5	5	1	1.75
-	-	-	2	3.0

B) Feeding schedule for heifer (9 - 12 months):
(150 - 200 Kg. body weight approximately)

-	12	-	1	2.5
6	6	-	1	2.5
-	-	-	3	3.5
-	-	17	-	1.0
-	6	6	2	2.0

C) Feeding schedule for heifer (12 months to conception):
(200 - 300 Kg. body weight)

-	15	-	3	3
17	-	-	3	3
-	-	15	5	2
-	-	-	5	4
6	6	-	5	2.5

D) Feeding schedule for heifer during the last 3rd of gestation:

-	20	-	5	4
10	10	-	5	4
-	-	15	5	3.5
-	-	-	5	5
-	10	10	5	3.5

Contd.....6

T A B L E - 4: Maintenance ration for a matured cow:

A Kg.	B Kg.	C Kg.	D Kg.	E Kg.	
-	8	-	5	1	
8	-	-	5	1	
-	-	12	5	-	
-	35	-	3	-	
35	-	-	3	-	

T A B L E - 5:

A) Requirements and feeding pattern of lactating cows:

Body weight - 400 Kg. Yield of milk : 5 Kg.

Requirements - DP - 0.5 Kg. TDN - 5.0 Kg.

A Kg.	B Kg.	C Kg.	D Kg.	E Kg.	Cost/day Rs.
Nil	Nil	18	7	Nil	
Nil	Nil	10	7	2	
Nil	12	6	4	2	
Nil	20	Nil	2	3	
25	Nil	Nil	2	3.5	
Nil	Nil	Nil	8	4.5	
Nil	50	-	-	-	
Nil	20	10	2	Nil	

Contd.....7

B) Requirements and feed pattern of lacta-ting cows:

Body weight - 400 kg. yield of milk - 8 kg.
Requirements - DCP 0.69 Kg. TDN - 6.50 kg.

A Kg.	B Kg.	C Kg.	D Kg.	E Kg.	Cost/day Rs.
Nil	Nil	2	4	2	
Nil	Nil	45	2	Nil	
Nil	25	Nil	2	4	
Nil	20	20	2	-	
25	Nil	Nil	1	5	
Nil	Nil	Nil	8	6	
Nil	10	10	5	3	

C) Requirements and feeding pattern of lactating cows:

Body weight - 400 Kg. Yield of milk - 10 kg.
Requirements - DCT 0.80 TDN - 7.00

A Kg.	B Kg.	C Kg.	D Kg.	E Kg.	cost/day Rs.
Nil	Nil	20	6	2.5	
Nil	Nil	10	5	4.0	
Nil	40	Nil	Nil	3.5	
Nil	20	Nil	2	5.0	
Nil	10	10	4	3.5	
Nil	5	5	6	5.0	
Nil	Nil	Nil	6	7.0	
10	Nil	Nil	4	6.0	

Contd.....8

D) Requirements and feeding pattern of lactating cows:

Body weight - 400 Kg. Milk yeild - 12 Kg.

Requirements - DCP - 1 Kg. TDN - 7 Kg.

A Kg.	B Kg.	C Kg.	D Kg.	E Kg.	cost/day Rs.
Nil	Nil	25	4	3	
Nil	Nil	30	3	2	
Nil	25	Nil	2	6.5	
Nil	10	15	4	4	
25	Nil	Nil	1	7	
Nil	Nil	Nil	5	9	
Nil	15	10	4	4.6	
Nil	5	5	5	7	

E) Requirements and feeding pattern of lactating cows:

Body weight - 400 Kg. Milk yield - 15 Kg.

Requirements - DCP - 1.085 Kg. TDN - 9

A Kg.	B Kg.	C Kg.	D Kg.	E Kg.	Cost/day Rs.
Nil	Nil	10	5	7	
Nil	Nil	15	5	6	
Nil	Nil	25	6	3	
Nil	Nil	Nil	4	10	
Nil	30	Nil	2	65	
Nil	15	Nil	2	8	
Nil	10	15	2	6	
Nil	5	5	5	8	
10	Nil	Nil	4	9	

Contd.....9

Feeding of Milch Cows:

1. A cow, in general, eats a dry matter of about 2 - 4% of its body weight.

2. As a rule of thumb, about 2/3rds of the dry matter may be given in the form of roughages while the remaining third is offered in the form of concentrates. There is no substitute for good quality greens in the nutrition of dairy cattle.

3. The lactating cows may be given concentrate mixture(12 DCP, 70 TDN) at the rate of 1 Kg. for 2 Kg. milk yield, over and above the maintenance requirement.

4. A number of combinations of feeds were prescribed(Table - 3) for cows at different levels of milk production, however, these must be treated only as guide-lines and the feeder should use some discretion also in selecting feeds and quantitating them for his cows.

******

A NEW STRATEGY FOR FEEDING THE CROSS-BRED COW.

by

DR. B. A. CHAUGULE

Socio-economic justice for all, is a pledge of our nation. Socio-economic justice through the cross-bred cow is the pledge of the Bharatiya Agro-Industries Foundation. Securing socio-economic justice for small and poor farmers, the landless labour and the unemployed, is our goal. Cross-bred cow is our instrument towards that goal. The genetic architecture of the cross-bred cow, gives her a potential to produce more milk. The health cover in the package of our Programme, enables her to maintain sound health for an un-interrupted performance in milk production. And the feeds fed to her, help her not only and primarily to live, but also live better for a performance - commensurate with her genetic architecture.

To ensure economic justice through the efficient cross-bred cow, it is essential that we help the cow to produce milk abundantly and cheaply. Feeds are the raw-materials from which milk is produced to the biological machine of the cow. The better the quality and quantity of feeds, the more the milk. The cheaper the feeds, the cheaper would be the milk produced; the better would then be the economic returns to the owner of the cow and finally, the greater the socio-economic justice that would accrue to him.

The feeds and fodder situation in this country is alarmingly unhappy. The cattle population is crushingly double, for the mere 5% or less of the cultivated area under fodders, with the result that the entire cattle population appears as if moving towards its death half starved. The possibility of increasing the area under traditional fodders is too bleak to the needs. The only alternative in sight is, therefore, to either cut down the number of cattle to half, which even in

the remote future appears most improbable; or to increase the fodder supply to double, on the lands cultivated as well as uncultivated, by means, traditional or non-traditional. It is this latter, that has given the Foundation, an opportunity as well as a challenge.

Small farmers with small and marginal holdings are unable to raise enough feeds and fodders for their cattle, with their traditional crops and traditional agriculture. High yielding varieties of crops, improved methods of their culture and economic crop-patterns can for some time help him grow, "two ears of corn where one grew before", and divert some of his limited areas to fodder crops. The Foundation has already, in the areas of Lift Irrigation Schemes under its control, introduced new crops and cultural practices, and evolved crop-patterns that have been helping small farmers to grow for their cross-bred cows, "two blades of grass or fodder, where one grew before". But the task is gigantic and the limits of the potentials are drawing close.

Through a timely realization of this situation, the Foundation has therefore adhered to a strategy for fodder production, in which the competitive confrontation of cattle and human population for land will be reduced or avoided, giving place to a complimentary symbiotic association. This is possible only through a deliberate search for and development of fodder plant that could grow on lands unsuitable for traditional crops, to fertilize the lands and feed the cattle. The most outstanding achievement of the Foundation in the development of production of such fodders, therefore, is the introduction of several nutritious, new and non-traditional leguminous fodders like kubabul, hedge lucerne and sesbanias (including Agastha), and evolution of methods of their - cultivation, suitable to lands uncultivable in the traditional sense, and unsuitable for traditional crops. Basic applied

research on this is done at Uruli Kanchan, and its encouraging results and experiences are applied far and wide in many parts of the country. Successful introduction and cultivation of these fodders over 100 acres in salty, neglected drought stricken areas in Gujarat, including substantial areas under demonstration in the Banni area of Kutch on the Indo-Pakistan border; and plantation of over 150 acres of barren forest area near Manikpur in U.P., have held out high promise for the development of fodders in vast neglected areas in different parts of the country. Government of Maharashtra have already handed over about 500 acres of lands near Aurangabad for such development, where work of fodder production is already in progress. A number of similar offers have come and work in those areas will commence soon.

Fodders from such areas can be supplied not only to the small and marginal farmers, but also to the landless labour and the unemployed participants in the cross-bred cow programme. The new fodders being perennial, hardy and less demanding of sophistication than traditional ones, can be grown with ease on bunds and back yard wastes, on marginal lands as well as mountain slopes. An acre to a hectare of such lands under these new fodders could easily support a cross-bred cow with little if any of other feeds for her.

Lands which are considered wastes through the traditional eyes, and lands that are condemned to wastes through unwise soil crop husbandry, could now be economically exploited under non-traditional fodders in the cause of cross-bred cow and in the service of the economically poor. Cultivated lands are limited but waste lands are relatively abundant. Such lands, if not developed, could become a contagious liability through their continued neglect. The same, however, could become an economic asset with an ecological wisdom. Existence or increase in waste lands have denied employment opportunities to millions so far.

Their exploitation for fodder production with labour intensive technologies developed by the Foundation, will open up employment potentials beyond measure. A feature that makes one proud of the Foundation is that it believes in man as the shaper of his own environment and of his own destiny. It is reluctantly willing to accept anything as difficult or impossible, and that un-congenial situations like salty, alkaline and waste lands created primarily by the folly of man, can be set right through technology and wisdom of man. Precisely because of this faith in the perfectibility of man and his staff, Padmashri Desai, the Director of the Foundation sees "wealth in every waste". To restore waste lands to wealth, according to his vision has therefore been a splendid opportunity as well as challenge to all of us.

To develop an ability and vision to take up that challenge, and to develop skills to be able to raise fodders successfully and economically in all situations, requires technical competence of high order. The Rural Institute for Economic Milk Production (RITEMP) at the Foundation site is instituted precisely for this job of building up competence in the inservice personnel and linkmen engaged in activities of cross-bred cow programmes, and in economic milk production. The course in Dairy Farming comprises lectures and practicals in latest soil-crop-animal-man ecological system that will help the trainees to appreciate the importance of acquiring and applying this knowledge for economic milk production from the cross-bred cow. The environs of the Institute are admirably suited to inculcate in the trainees, the spirit of service in the Foundation and a truely scientific sense for the use of science in economic milk production. Their exposure to regional, zonal and area activities of the Foundation, gives them enough -

confidence to feel that they have grown bigger than the task they would face in the fields. Six months of training in the Institute, thus, makes the trainees not only more knowledgeable in economic fodder and milk production from the cross-bred cows, but also and more importantly, builds them better for service in the socio-economic cause of the Foundation, and also wiser in the choice of values for themselves.

- - -

9th September 1976.

THE BHARATIYA AGRO-INDUSTRIES FOUNDATION

DIGESTION IN RUMINANTS

Dr. D.V. Rangnekar,
Programme Coordinator,
Central Research Station.

The ability of Ruminants to digest fibrous food, utilise non-protein nitrogen and convert it into highly nutritive material like milk and meat represents the most unique provision, the nature has made for the benefit of human beings. This has become possible because the digestion in ruminants is essentially microbial and because they have four stomachs of which first one the rumen is very large and functions as a 'Fermentation Vat'. The relationship between the microbes in rumen and the ruminant animal is one of the most intriguing example of symbiosis known to man. It is not only pertinent but essential to have the knowledge of digestive processes in ruminants for persons, engaged in feeding and management of cattle, so as to be able to develop most appropriate and economical feeding programmes. An attempt will be made in this note to give a terse account of 'Digestion in Ruminants' bringing out the salient features.

1. Structure & Development of the Ruminant stomach:

The stomach of an adult Ruminant is divided into four compartments namely Rumen, Reticulum, Omasum and Abomasum. Thus it differs from that of the pig or fowl who are single stomached. These compartments are derived mostly from the stomach.

In adult animals, rumen and reticulum together hold feed equal to about 1/7th of the total body weight of the animal, and comprise 85% of the total capacity of the stomach. However, in the new born, abomasum is as large as rumen and as the calf starts consuming forage, the rumen and reticulum development is hastened by providing forage at an early age.

The Rumen - Reticulum form a functionally integrated sac filled with digesta and micro-organisms since the opening between the two is large.

The reticulum lies against the diaphragm and resembles an anterior pounch of the rumen. The inner wall of Reticulum has thin ridges arranged in a reticular (net like) fashion from which the name of the organ is derived. The rumen is divided into five compartments by muscular folds and its inner surface is covered by papillary protruberances of various shapes and sizes.

Contd.....2

The Omasum lies to the right of rumen and reticulum. It is also called the many-plies because of the numerous parallel sheets of tissue within it. Omasum is comparable to a loosely closed book ovoid in shape and with binding extending to the top and bottom. Its function is screening of large particles and absorption of water, acides etc.

The abomasum lies on the right side of the rumen connecting abomasum with the small intestine. The internal surface is much folded into spiralled ridges. In function, it is similar to stomach of the non-ruminants secretion of enzymes, acids etc.

The digestive juices in the intestines and formation and elimination of feces occurs in ruminants about as in non-ruminants. It is only in the first 3 compartments that ruminant diverges from others. The saliva in ruminants unlike non-ruminants has no enzymes but contains bi-carbs, which helps to maintain pH of the rumen contents.

2. Ingestion and passage of feed through rumen:

The eating habits and the design of the mouth in ruminants are such as to allow rapid grazing and gathering great deal of food in a short time. Eating habits vary with climate; usually it is more frequent during the day but in warm climates diminishes during the day. Rapidity of ingestion varies with the nature of feed; concentrates, ground and pelleted feed is eaten more rapidly than coarse hays.

After entering the rumen the ingesta gets throughly mixed in the rumen as a result of reticulo-ruminal movements. Another distinctive feature in ruminants is process of rechewing the food or rumination which is intimately connected with the use of herbage as food. After grazing or eating when the ruminants are at rest they regurgitate the food and rechew it at leisure, causing reduction of particle size of the coarser particles of ingesta. The rechewing during rumination is more thorough than the initial mastication during feeding and there is thorough mixing with saliva. After remastication the material is re-swallowed back and gets mixed up with the rumen contents and almost immediately another bolus is regurgitated.

While there are no means of shunting the rechewed bolus directly into the Omasum, the finer state of particles in it favours passage from Rumen.

The separation of course and finer particles between the reticulum and rumen takes place as a result of relative positions of their compartments and mixing contractions. As a result of contraction

Contd.....3

of the ventral sac liquid swells up and mass of solid digesta spills over into the anterior sac and reticulum. The mass contains fine as well as coarse particles and rapid contraction of reticulum expels coarse particles into rumen as they flow on top. Screening action at the omasal opening also separates coarse and fine particles. The turn-over time for food in rumen is estimated to be about 2 days in cattle

3. Rumen Microbes:

The rumen microbial population consists mostly of a mixture of Bacteria and Protozoa. The bacteria number about 10^9 to 10^{10} per ml. of rumen contents. The bacteria in rumen are of anaerobic and both cocci and rod shapes are found. A large No.of species and strains of bacteria have been recognised and isolated from Rumen, these are generally grouped and classified according to the food constituents they attack and the substances they produce. The No.of bacteria and the type which predominates in rumen at any one time depends on the nature of the diet. The No.of protozoa is smaller - 10^6/ml. and are usually ciliates. Some of them ingest food particles and can digest complex carbohydrates while others cannot and utilise bacteria and simpler carbohydrates.

The bacteria start getting established from 6th week and by 12th week they are predominantly as that of mature animals. However, more time will be required in animal on high milk ration, for establish-ment of adult type of microbes.

The Rumen microbes not only digest complex carbohydrates like celluloses and utilise non protein nitrogen substances but they also synthesise B Vitamin. In the foregoing pages digestion and synthesis of proteins, digestion of carbohydrates and vitamin synthesis will be discussed.

4. Digestion and Synthesis of Proteins:

The nitrogenous compounds in feeds that are present are of Proteinous and non-proteinous nature. The rumen contents have been shown to have the capacity to break down protein and non-proteinous compounds essentially due to proteolytic enzymes secreted by the bacteria and protozoa. No such enzyme is present in saliva or is secreted by rumen and reticulum. Rumen bacteria break down proteins largely to amino acids - which are utilised by micro-organisms. The amino acids - which are not assimilated by the microbes are further broken down to ammonia. The non protein nitrogenous compounds like urea and nitrates are rapidly converted into ammonia. The ammonia thus

Contd.....4

liberated is utilised in appreciable quantities by bacteria and converted to bacterial protein. For better utilisation of ammonia or the non-protein nitrogen material the feed should have sufficient source of readily available energy source and minerals which promote rapid multiplication of bacteria.

The surplus ammonia, which is not utilised by bacterial is absorbed there in the rumen wall and enters liver. In the liver it is converted to urea and is secreted through urine and saliva. The urea secreted in saliva again enters rumen. In cases where large quantities of non-protein nitrogen compounds are eaten at one time and the quantity of ammonia produced exceeds the capacity of liver to convert into urea and toxicity may result.

It is generally recommended that the quantity of urea to be fed to cattle should be to the extent of 1% of the total ration. The ration should contain ready available source of energy like grains, starch or molasses, and adequate supply of minerals. Additional quantities of sulphar in such rations is recommended. Many workers have shown that milch cattle can be kept on ration containing urea as the sole source of protein without any harmful effect on production and health. Cattle have been shown to tolerate considerable amount of urea. Dicreasing the rate of intake of urea by spraying it over roughages or by processing it(coating) so that its break down is slowed has been shown to improve urea utilisation.

The knowledge that rumen micro-organisms can utilise non-protein nitrogenous compounds has resulted in increasing substitution of oil-cakes and other protein rich feed byurea.

Urea feeding is also reported to increase fibre digesti-bility thus improve utilisation of coarse feed.

5. Digestion of Carbohydrates:

The most interesting and useful feature of ruminant digestion is the utilisation of cellulose by mico-organisms in the rumen by fermentation. Another unique feature in ruminants is that much of the carbohydrates are assimilated as volatile fatty acids - (the end product of fermentation in rumen, and not as simple sugars), unlike simple stomached animals.

The cellulose, which forms the bulk of coarse fodder is not amenable to action by any digestive enzymes and it is entirely due to

Contd.....5

the celluloses secreted by the rumen bacteria that the cattle are able to digest it.

The celluloses are first broken down to simpler carbohydrates called cellobiose which is then again broken to simple sugars and subsequently to volatile fatty acids.

The ultimate products of fermentation of carbohydrates in rumen are volatile fatty acids consisting mainly acetic, propionic and butyric. The total VFAs in rumen content are 2 to 5 gm. per 100 g. of dry matter. They are reported to supply as much as 40 p.c. of the energy requirement of the animal. The ratio in which the acetic, propionic and butyric acids usually occur is 65:20:10, however, this ratio varies considerably with the nature of the ration. Increase in the fibre content of the ration increases Acetic acid production, whereas increase in grain in the ration or increasing concentrates, or grinding and pelleting of fodder decreases acetic acid production and increases propionic acid content. Change in the VFA ratio has a direct effect on the milk quality since acetic acid is an important precursor of milk fat. Hence increase in the fibre content of the ration increases fat percentage of milk and vice-versa. Whereas increase in fibre might decrease energy content of the ration and decrease animal's production while increasing grain content would have opposite effect, hence it is necessary a proper ratio is maintained in rations. The S.N.F. content of milk has also been shown to be effected by change in the nature of diet. Increase in the grain or concentrate content of the diet increases propionic acid production and would result in increase in S.N.F.

6. Vitamin Synthesis:

Rumen micro-organisms have been shown to synthesise vitamins, all the known B complex vitamins and the Vitamin K.

The ruminant is not dependant on the exogenous source of these vitamins. For proper synthesis of vitamin B_{12} adequate content of cobalt in the ration is essential. Deficiency of cobalt in the feed results in symptoms similar to that due to deficiency of vitamin B_{12}. This condition cannot be rectified by oral administration of vitamin B_{12} but is aleviated by feeding cobalt. Major disorders of rumen which drastically alter ruminal bacteria affect synthesis of vitamins.

** **

DEV 1.30

SCHEME FOR STARTING SMALL SCALE DAIRY FARMS.

A PROJECT

By:

P.C. PUNJABI A-33/77

M.I. SINGH

YADAV CHANDNA A-10/77

SCHEME FOR STARTING SMALL SCALE DAIRY FARMS

INTRODUCTION:

Dairying as a part of agricultural operations has been practiced by farmers since ancient times. Successful dairying anywhere in the world depends upon how good are the main resources

(1) The farmer
(2) The land
(3) Livestock
(4) Water
(5) Fodder.

Though these resources exist in abundance in the country, very little has been done to establish a diary run on scientific basis.

Due to factors, such as low yielding capacity of animals, poor quality of feeding materials and lack of marketing facilities, dairying had a low priority in the agricultural economy.

Assumptions:

(1) High yield buffalo are used:

Various varieties of animals are available in India. The yield varies very widely from the low yield variety giving 1.5kg per day to very high yield variety giving 39 kg per day.

Another factor to be consider

to the lactation period which varies from 180 days to 333 days (for Cows).

We have used the Murrah variety which if properly maintained gives upto 32 kg per day for about 220 days a ~~month~~ year. This variety costs about Rs 7000 per head and has a productive life of 10 years.

On the average it calves once a year. The probability of the calve being a male is 40%. While the probability of the buffalo being a "She" is 60%. Out of the "She" buffalo 5/6 of them will be productive and 1/6 will be dry. The time taken for a newborn to start giving milk is accounted for by assuming a growth rate of 30%.

A male buffalo is sold on attaining the age of one year for fourhundred rupees. The dry "She" buffalo does not fetch anything in the open market. (It can however be used for drawing bullock carts).

The ~~various~~ other factors that have been considered in selecting this variety are; local availability of the breed and ease of adjustment of this variety to local conditions. The latter factor is an important one as it has been observed that certain breeds are not able to adjust to the change in climate and diet as a result the productivity comes down.

These buffalo are mated only with bulls of the same class. This is absolutely essential in the case of the "Murrah" variety. The variety is the most productive in the country and any attempt at cross breeding would result in inferior output.

The fat content of the milk is 7.5% and it is highly suitable for milk products, [This point has been elaborated later] like ghee and butter.

(2) Sound management practices:

As indicated earlier proper management of the dairy is essential. Proper and timely action is required in the case of balanced feeding, timely breeding and culling.

The importance of these cannot be overemphasised. Balanced feeding plays a very important role in the quantity and quality of milk produced. The proper mix is obtained through scientific research and the data is made available free of cost by the concerned bodies.

Cattle if not mated at the proper time will show a marked variation in both the quantity and quality of milk.

It is essential that harmful (medically or otherwise) cattle be isolated at the earliest possible.

(3) Adequate source of water supply.

Water is essential for a dairy

It is essential to bathe the cattle Twice a day. A positive correlation has been establish between the washing of the cattle and the output of milk. We have constructed a tank which will be filled with water from a tubewell.

(4) Disposal of water:

It has been assumed that the water is to be drained from the tank daily and fed into the neighbouring field. There is no way of estimating the revenue from the disposal of water hence no revenue is included. The indirect benefit that can be assumed is the good will that will be generated due to supply of water to the neighbouring farms. A more direct benefit is the recycling of water which will result and ~~assure~~ garunteed water supply will result.

(5) Protecting animals from disease:

A vet has been employed to attend to the cattle to ensure proper health.

(6) Price realigation for milk:

Year	Price	percentage increase
1972	1·30	
1973	1·37	5·4
1974	1·46	6·6
1975	1·59	8·9
1976	1·70	6·92
1977	1·82	7·05
1978	—	

average = 7%.

A price rise of an average of 7% has resulted over the last six years. This unusually high rise in price is unique of the state of Punjab. Due to a rise in demand of milk product a steady rise in the price for milk has resulted. It is expected that the price rise will continue for another 8 to 9 years after which it will stabilise due to high competition and saturation of demand.

(7) Reason for Selecting the Choosen Site:

Of all the States Punjab and Haryana are the largest consumer of milk and milk product. The present location is within easy reach of the market and Rawmaterial. An unproductive Strech of land has been selected. An additional advantage is the existance of ~~road~~ network and excellent groundwater conditions.

(8) Decrease in productivity:

The percentage of productive cows decreases from 30% to 25% after about nine years

Feasibility Study

1. Market and Demand:

1.1 a. Name of company: Punjab Milk Diary

1.2 b. Consumers: (with address)

(i) Anik Ghee
Opposite bus stand
Malaat
Punjab.

(ii) Singh Ghee company
Ghee Mandi
Malaat
Punjab

1.3 c. Consumption pattern (Market)

Year	Consumption (tonnes)	
	Anik	Singh
1977	27,232	28263
1976	25,691	27023
1975	23,787	26 080
1974	22,441	25,262
1973	21,373	24,631

1.4 Market Share:

The two consumers have indicated that they can absorb all our output for the entire period of analysis (10 years).

Yearly output (1977): 281.6 tons

as percentage of consumption of Anik = 1.03%.

" Singh = 0.99%.

Hence there will be no difficulty in selling the output of milk.

1.5 Distribution pattern.

The consumer company sends its trucks to the various farms to collect the milk twice a day. The milk is collected in large vessels of capacity 75 l. Transportation cost would be. Rs 50 per day

1.6 Likely growth of market:

The market seems to be growing at a fairly rapid rate. The production is limited by the lack of Raw material. Hence no problem is envisaged in sale of output (milk) to the manufacturer.

1.7 Pricing of product:

The product price is governed by the prevailing market prices (for that fat content). The price is fixed at the present level of Rs 1.90 per litre for 7% fat content.

1.8 Price trend:

Over the past years the prices have increased by an average of 7% per annum. This increase is expected to continue for about another 8 to 9 years

1.9 Unique selling proposition:

Our company enjoys the following advantages over the competitors

(i) Scientifically managed ensures garunteed quality. (7% fat)

(ii) Proper scheduling ensures garunteed delivery.

(iii) Planned expansion ⇒ scheduling for buyer.

2 Size and location

2.1 Output (output as measure of size.)

YEAR	OUTPUT (10^3 kg)	OUTPUT (10^3 Rs)
1977	281.60	535.04
78	295.68	601.12
79	380.19	826.96
80	492.80	1146.75
81	640.64	1595.19
82	704.00	1876.16
83	704.00	2007.10
84	704.00	2147.9
85	704.00	229785
86	704.00	229785
87		

2.2 Constraints on Size:

It has been decided to limit the capacity to 100 buffalo due to anticipated market behaviour (uncertainty) few years hence.

2.3 Geographical distribution of market:

The dairy is located at a distance of 12 miles from the market. However it enjoys the advantage namely that it is situated next to an existing road. No branch is proposed.

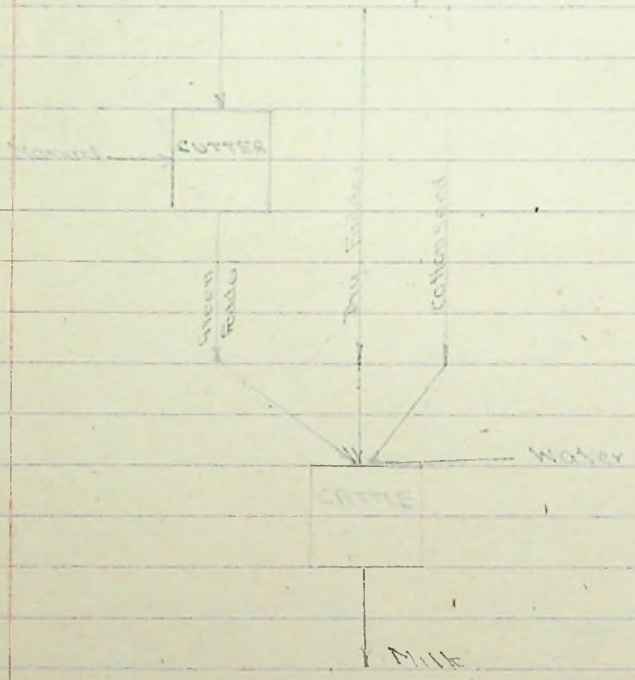
As the future demand is known and a planned expansion proposed. Two acres of land is purchased at the commencement itself. One shed is construct now.

3. Project Engineering:

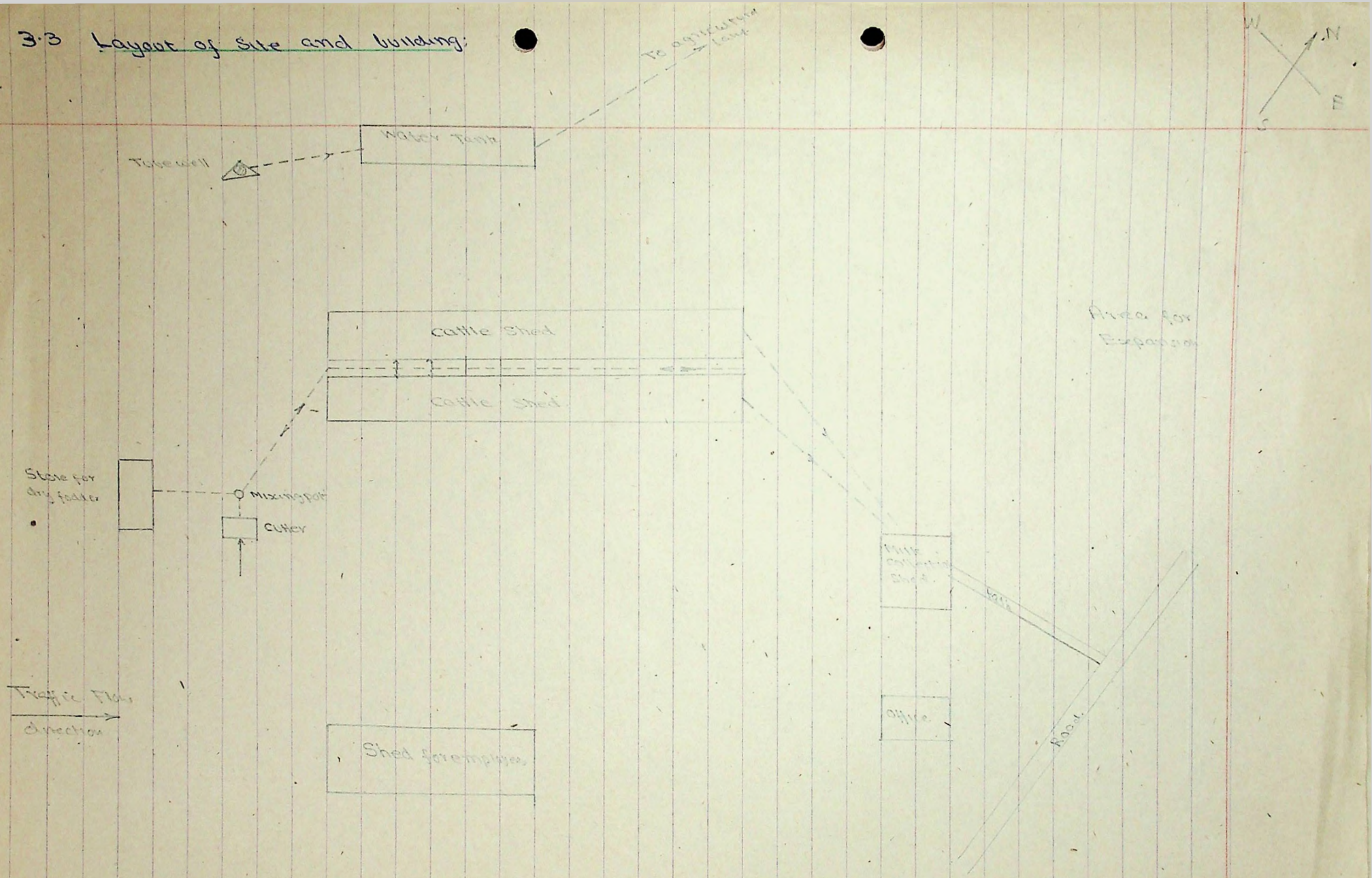
3.1 Selection of cattle:

a. Name of breed: Murrah
b. No of cattle: 40
c. Age of cattle at purchase: 1 year
d. Output per cattle per day 32 l.
e. Fat content 7%.
f. Bulls (no) 2.

3.2 Process Flow:



3.3 Layout of Site and building:



3.4 Employees quarters

Each employee is provided with a room 10' x 10' with a lantern.

3.5 Source of Water:

A borewell will provide the necessary water both for drinking and other function.

3.6 Disposal of Water:

Water will be drained through an open drain into a neighbouring agricultured plot.

4 Investment outlay:

4.1 Fixed asset:

4.1.1 Land:

Area : 2 acre : 87120 Sqft

Type of land: Barren

Cost Rs 2000 per acre

Total cost of land = Rs 4000

4.1.2 Shed for cattle: (including store etc)

length = 150 ft

width = 35 ft (with aisle).

Area = 5250 ft²

construction rate Rs 10/ft²

Total construction cost = Rs 52500

4.1.3 Shed for employees:

length = 10 ft

width = 10 ft

number = 4

Area = 400 ft²

construction rate = Rs 15/ft²

Total construction cost = Rs 6,000.

4.1.4 Pump:

Rating 1 HP

Diesel pump

Cost Rs 5000.

4.1.5 Well:

Dimension: 30 ft depth

6ft diameter
Cost Rs 10,000

4.16 Other Fixed assets:

(a)	Water pipes	1000
(b)	Reservoir tank	3,000
(c)	Waste water disposal pipe	4,000
(d)	Fencing	1,500
(e)	Rods + pots	500
(f)	trolley for fork	300
(g)	trolley to carry milk (2)	1,400
		11,700

4.17 Office equipment:

Table	400
Chair (2)	200
Cupboard	700
	1300.

4.18 Live stock:

40 buffalo	@ Rs7,000	=	280,000
2 bulls	@ Rs2,500	=	5,000
			285,000

Total Fixed assets : Rs 375, 500

5 Recurring expenses:

5.1. Fodder: (per head)

Year:	Cost of fodder (10^3)
1977	175.20 *
78	191.39
79	256.75
80	360.80
81	490.93
82	532.8
83	554.16
84	576.32
85	545.40
86	632.40

* Green 37.5 Kgs @ 1¢ = 5.75
Dry 4 Kgs = 0.25
Concentrate - = 4.00
B 10.00

5.2 Fuel:

Cost of diesel = B 1.30
daily work = B 10.
Cost increase 15%.

Year	Cost (10^3)
1977	3.650
78	4.197
79	4.826
80	5.551
81	6.384
82	7.341
83	8.443

Year	Cost :
84	9.709
85	11.165
86	12.840

5.3 Wages:

No. of workers = 4 (year 1-3)

Wage rate - Rs 9/day (1977)

Year	No of workers	Wages (10^3)
1977	4	2.88 11.52
78	4	3.00 12.00
79	4	3.120 12.49
80	5	3.240 16.20
81	5	16.8
82	6	20.88
83	6	21.66
84	6	22.32
85	6	23.04
86	6	23.76

5.4. Vet:

The vet is payed Rs 300 pm for yr 1 – 4.

Year	vet cost (10^3)
1977	3.5
78	3.5
79	3.5
80	3.5
81	4.0
82	4.0
83	4.0
84	4.5
85	4.5
86	4.5

5.5 Miscellaneous:

A misc excpense of Rs 300 pa is included.

5.6 Transportation Cost:

Year	Costs (10^3 thousand)
1977	18.2
78	19.11
79	20.06
80	23.22
81	30.07
82	31.08
83	33.26
84	34.92
85	36.91
86	-

SENSITIVITY ANALYSIS

The purpose of sensitivity analysis is to identify the most crucial factors, which, if they vary from their estimated values unfavourably will cause a significant adverse change in the criteria of evaluation e.g. NPV or IRR. (Assuming other factors constant)

It is quite obvious that only those factors that change the cash flows would cause any change in NPV or IRR.

From the cash flow statements, it can be seen that these factors are.

I. Sales
II. Cost of Sales
III. Investment.
IV. Cost of capital for NPV.

Sales :- The sales value as can be seen from the P and L statements is the result of three components.

a) Sale of milk.
b) Sale of dung
c) Sale of buffaloes and male calves.

The sale of milk is the product of milk yield and price fetched by milk. Hence an adverse effect in either the milk yield or price fetched by milk will have the same % effect on the sale of milk.

Hence either of these factors can be used for testing the sensitivity of cash flows.

The sale of dung forms less than 1% of the total sales value. It is obvious that even a very significant change in this value would have a negligible effect on the total sales value and hence the cash flows. This factor has not been considered at all.

The sale of buffaloes and male calves also form

a very low percentage of sales. Besides this, there is one more difficulty with calculating the sensitivity of ~~the~~ cash flows to this factor. Assuming a certain mortality rate, it would require simulation to determine what part of the new-borns are males, dry calves and productive calves.

Since it is expected that it would be very sensitive, this factor is not considered.

Cost of Sales

The predominant component of cost of sales as is evident from the P&L statements is the cost of fodder. This may be due to either an increase in the price over the inflation adjusted estimates used or in the quantity of fodder consumed by the cattle.

Hence quantity consumed has been used as a factor for testing the sensitivity of NPV.

Investments : The cash flows show that Investments are approx. 4 lakhs in a total NPV of 32 lakhs. Hence a significant difference in Investments would not have a significant effect on NPV.

Besides at least the first component of 3.75 approx is, more or less instantaneous and no significant difference between estimates and actuals is expected.

Hence this factor has not been considered to measure the sensitivity of NPV.

Cost of Capital :- There is possibility of some variation in the cost, since the bank rate of 8% assumed for owner's capital may not hold, in case he finds other attractive investment opportunities.

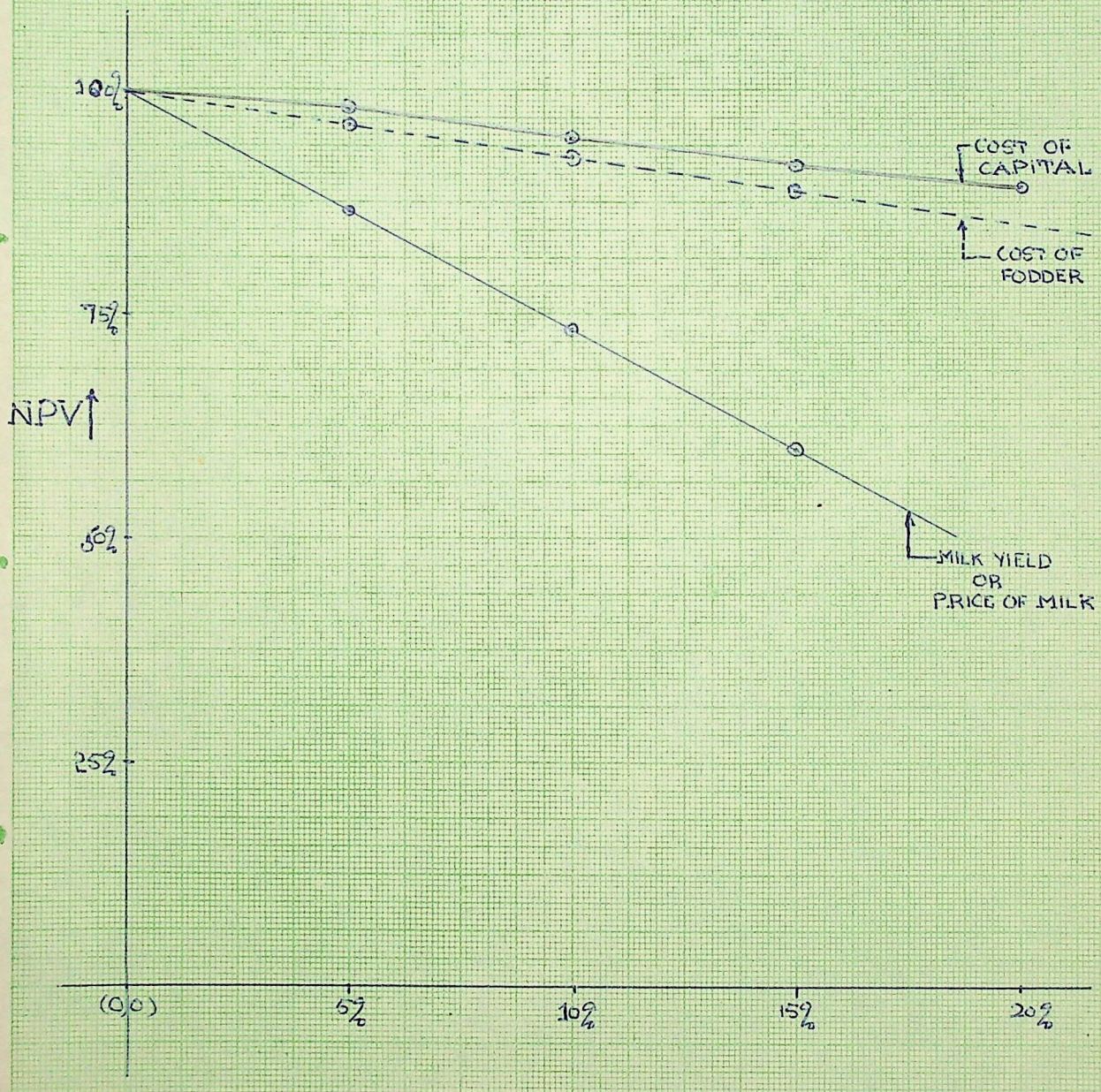
Hence this factor has also been considered.

One look at the graph indicates that there is only one really crucial factor affecting NPV, which is the sales value realization from the sale of milk. Even a couple of litres difference from the estimated yield of 32 litres would reduce the NPV by 18%.

It is for this reason that the milk yield has been deliberately kept at 32 litres instead of the normal expectations of 35 litres from this breed of buffaloes.

However that is no cause for relaxation. This analysis brings out the necessity of better care in terms of increased fodder if necessary and better medical care etc. of the cows. Any amount of expenditure on these items would give adequate returns.

SENSITIVITY ANALYSIS



Cash Flow From Operations

Sl No	Item		1	2	3	4	5	6	7	8	9	10
1	Sales	Rs	533240	612160	839710	1163630	1621550	1963070	2127760	2269350	2420105	2483405
2	Cost of goods Sold	Rs	240908	240052	297910	415080	548585	597000	621760	648110	675085	722310
3	Business Profit	Rs	292332	372108	541800	748550	1072965	1366070	1506000	1621240	1745020	1681595
4	Depreciation	Rs	32255	29199	26446	28134	26715	25450	23179	21125	19262	17567
5	Profit after depreciation	Rs	265077	342908	515354	720416	1046250	1340620	1482821	1600115	1725758	1664028
6	Allowance for depr. @ 33⅓% of 5	Rs	38559	114303	171785	240139	348750	446873	494274	533372	575252	554676
7	Taxable income	Rs	176718	228605	343569	480277	697500	893747	988547	1066743	1150506	1109352
8	Interest on Loans	Rs	28538	9556	—	—	—	—	—	—	—	—
9	Post tax interest payment [8(1-6)]	Rs	8346	2962	—	—	—	—	—	—	—	—
10	~~Cash flow from operations~~											
10	Tax (60% Slab rate + 15% Surcharge)	Rs	91520	133400	213440	307280	439530	557328	614208	661126	702359	686691
11	Cash flow from operations (3-10+9)	Rs	208658	241670	328360	441270	633385	808742	888792	960114	1042661	~~991256~~ 994904

Depreciation Rates:

Workers' quarters and shed	: 5%
Pump and diesel engine	: 10%
Other Fixed Assets	: 2.5%
Office equipment	: 2.5%
Buffaloes and Bulls	: 10%

Projected P&L Statements for 10 years

Year Ending		1	2	3	4	5	6	7	8	9	10
1 SALES											
i) Milk	Rs	535040	601120	826960	1146750	1595190	1876160	2007100	2147900	2297850	2297850 ~~2459400~~
ii) Dung	Rs	3200	4640	5680	7360	10100	11200	11200	11200	11200	11200
iii) Buffaloes	Rs	—	—	—	—	—	57000	90000	90000	90000	75000
iv) Male Calves	Rs	—	6400	7070	9518	16198	18717	19466	20245	21055	20690
Total	Rs	538240	612160	839710	1163630	1621550	1963070	2127760	2269350	2420105	2403905
Less Costs:											
Fodder	Rs	175200	191390	256750	360800	490975	532800	554160	576360	599400	642400
Wages	Rs	11520	12000	12480	16200	16800	20880	21600	22320	23040	23760
Fuel	Rs	3650	4197	4827	5551	6384	7341	8443	9709	11165	12840
Veterinary	Rs	3500	3500	3500	4000	4000	4000	4000	4500	4500	4500
Gross Profit	Rs	344370	401073	562153	777079	1103331	1398049	1539557	1656461	1782000	1744165
Less											
Depreciation Charges	Rs	32255	29199	26446	28134	26715	25450	23179	21125	19262	17567
Transportation	Rs	12000	19110	20060	23227	30066	31679	33257	34921	36910	38510
Interest on Loans	Rs	28538	9556	—	—	—	—	—	—	—	—
Taxes	Rs	97520	133400	213440	307280	439580	557328	614208	661126	702129	686691
Allowances	Rs	88359	114303	171985	240139	348750	446873	494274	533372	575252	554676
Miscellaneous Expenses	Rs	300	300	300	300	300	300	300	300	300	300
Net Profit (After Tax)	Rs	79198	95205	130129	172997	257920	336419	374339	405617	448147	422661

Net Project Cash Flow Relating to Total Investment

		0	1	2	3	4	5	6	7	8	9	10
1	Initial Outlay											
	i) Land and well –	14000										
	ii) Shed (Depn 2½%)	52500				(59055)						
	iii) Workers' quarters (2½%)	6000				(1500)		(1600)				
	iv) Pump (10% depn.)	5000										
	v) Office equipment	1300										
	vi) Buffaloes	280000										
	vii) Bulls	5000										
	viii) Other fixed expenses	11700										
		(375500)										
2	Salvage Value of assets Buildings, Sheds and Land											78620
3	Tax shield due to Zero Salvage value of buffaloes											59730
4	Cash Flow from operations	(375500)	208658	241670	328360	441270	633385	308742	391792	960114	1042661	994904
5	Net Project Cash Flow (1+2+3+4)	(375500)	208658	241670	328360	380715	633385	807142	391792	960114	1042661	1133254

Cost of Capital (9.2%) [80% bank loan at 9.5% and 20% owner's money at 8%].

NPV = Rs 3297719 IRR = 79%

Payback period < 2 years

Sources & Applications of Funds Statements

		0	1	2	3	4	5	6	7	8	9	10
Sources												
Increase in Capital	Rs	75.1	–	–	–	–	–	–	–	–	–	–
Depreciation	Rs	0	32255	29199	26446	28134	26715	25450	23179	21125	19262	17567
Allowances	Rs	–	88359	114303	171785	240139	348750	446873	494274	533372	575252	554676
Increase in loans	Rs	300400	–	–	–	–	–	–	–	–	–	–
Profit	Rs	–	79198	95205	130129	172997	258420	336419	374339	405617	448147	422661
Total	Rs	375500	199812	238707	328360	441270	633385	808742	891792	960114	1042661	994904
Uses												
Increase in Assets	Rs	375500	–	–	–	60555	–	1600	–	–	–	–
Decrease in Loans	Rs	–	199812	100588	–	–	–	–	–	–	–	–
Dividend to owner	Rs	–	–	138119	328360	380715	633385	807142	891792	960114	1042661	994904
Total	Rs	375500	199812	238707	328360	441270	633385	808742	891792	960114	1042661	994904

SCHEMES FOR STARTING SMALL SCALE DAIRY FARMS

INTRODUCTION:-

Dairying as a part of the agricultural operations has been practised by farmers since ancient times. Due to factors, such as low yielding capacity of animals, non-availability of feeding materials and lack of marketing facilities, higherto dairying had a low priority in the agricultural economy. Many farmers have come forward for a starting small dairy farms, due to changing pattern of agricultural economy.

Beginning with a he-ar-d of high milk yielding cross-bred animals alongwith good management practices, dairying is a profitable enterprise. The need for some basic information on costs of this operation has been felt. To fulfil such a need, the schemes have been prepared.

In presenting, there is, following certain points are assumed. These should be understood by any person who is wishing to take up this profession.

1) Only high milk yielding cross bred cows will be maintained.
2) Sound management practices such as, balanced feeding, timely breeding and culling are followed.
3) That there is adequate source of water supply.
4) That measures will be taken to protect the animals from diseases.
5) That there is a regular market for the disposal of milk so produced.
6) Suitable land and equipment are acquired.
7) Money for capital and recurring expenditure is forthcoming.
8) a) In the case of schemes with smaller numbers of animals housing for calves, store, labour charges (asit is expected to be put in by the farmer and his family) has not been included;
   b) These schemes have been presented for the benefit of small farmers and landless agricultural labourers to provide work throughout the year and more than economically sound.

Farms requiring large capital and bigger herd strength, it would be desirable to have a trained person to manage or the farmer may himself get training needed to run the farm .

The schemes prepared to not purport to give any detailed information on the actual running of the farm for which one should refer to published/printed materials.

It is mentioned that it is always better to start with a small herd and develop the herd to bigger sizes by suitable culling and selection. The farmer also develops experience and skill by this and gains confidence in herd management. Though, this may be found to be a slow process, it would be economical, as heavy initial capital for purchase of the animals is reduced.

The figures give for the costs for construction of buildings, equipment, animals, feeds and rate of sale of milk, etc, are only approximate and may vary from place to place and time to time.

.....2/-

SMALL SCALE DAIRY FARMER WITH TWO CROSS BRED COWS:

A. Capital Expenditure :-

i. Livestock:	
Adult milch animals 2 x Rs.3000/-	Rs.6000
ii. Building:	
Cow byres 8' x 10' (0.8 Sq) x Rs.1500 per sq.	Rs.1200
iii. Equipment:	
Milk pails, buckets, chairs etc.	Rs. 100
	Rs.7300

B. Recurring Expenditure:

i. Feeds & Fodders		
Green Fodder	Rs. 1150	
Dry Fodder	Rs. 500	
Concentrates	Rs. 2170	
Milk for calves	Rs. 190	
		Rs. 4010
ii. Misc.items of expenditure:		
a) Interest on Capital 10% on Rs.7300	Rs. 730	
b) Dep. on animals at 15% on Rs.6000	Rs. 900	
c) Dep. on Buildings 5% on Rs.1200	Rs. 60	
d) Vety.Charges, Water & Elec.Charges etc.	Rs. 150	
		Rs. 1840
	Total:	Rs. 5850

C. Income:

i. Milk Sales 2 x 19 Kgs.x300 - Rs.1.26	Rs. 7200
ii. Return from manure. 2x2 Tons x Rs.10	Rs. 40
iii. Appreciation of young stock females	Rs. 1000
iv. Sale of male calf 3 days old 1 x Rs.10	Rs. 10
Total:	Rs. 8250
Net profit over expenditure Rs.8550-Rs.5850	Rs. 2300
Percentage income over fixed investment of Rs. 7300	Rs. 33.0%

Feed Requirements:

a) Green fodder:

Adult cows	2x25x370	-	18,500 Kgs.
Calves	1x15x300	-	4,500 Kgs

23,000 x 5 paise per Kg. Rs.1150

b) Concentrates:

Adult cows in milk 2 yield 10 Kgs of milk - 2x4x300 - 2400 Kgs
Dry cows: 2x65x1 / 180 Kgs.
Calves at 0.5 Kg per day - x 365 days - 183 Kgs. Rs. 2174

c) Dry Fodder:

Adult cows	- 2x4x370 days	- 2960 kgs
Calf cows	- 1x1x270 days	- 270 kgs
		3260 x 15 p. / kg
		489-00 OR Rs.500

d) Milk:

One calf upto 2½ months at 2½ kgs/day
1 x 2 - 5x75xRs.1/- Rs.187-50 OR ---------- Rs.190

GRAND TOTAL: Rs.4010

Land Requirements:- For fodder production of 23,000 Kgs P.A.

a) If the entire area is under any guinea, para, hybnapier 1/2 acre or 33 at 60.75 tons/acre/annum.

b) If maize 4 crops/year at total of 40 tons/acre/annum, 2/3 acre or 65 cents or 30 guntas

c) If maize 50% and lucerne 50% at total yield of 40 tons/acre/annum, 1/3 acre maize 1/3 acre lucerne 2/3 acre or 65 cents of 30 guntas. Among all the above cropping programmes, the one shown at C is most suitable.

4 SCHEME FOR TEN CROSS BRED COWS DAIRY FARM:

A. Capital Expenditure:-

i Livestock:

Adult milch animals 8xRs. 2500	Rs. 20000	
Dry cows 2 x Rs.2000	Rs. 4000	
One pair of bullocks - Rs.1500	Rs. 1500	
		Rs.25500

ii. Buildings:

i. Cow byres 40x10(4.0 Sq) x Rs.1500	Rs. 6000	
ii. Calfshed/bullocks (1.0 Sq) x 10 x 10	Rs. 1500	
iii. Pump-house 10x8(.8 sq) Rs. 2000	Rs.1600	
iv. Servants quarters 10x20(2 sq) x Rs.1500	Rs. 3000	
v. Office/Store/Pharmacy 20x15(.. sq) x Rs.1500	Rs. 4500	
		Rs. 31000

iii. Well:- i) Well 20 dia x 30 Deep Rs.8000
ii) Pump, water, accessories Rs.5000 Rs. 13000

iv. Implements & Equipments:-

i. Agricultural equipments, bullock cart	Rs. 1500)	Rs. 2000
ii. Milk pails, chaffcutter power/hand	Rs. 500)	

GRAND TOTAL CAPITAL INVESTMENTS: Rs. 71500

B. Recurring Expenditure:-

i)	i. Cost of feeds 122100 Kgs x 5 ps/kg	Rs. 6105	
	ii. Dry fodder 22200 Kgs x 15 ps/kg	Rs. 3330	
	iii. Concentrates 14235 Kgsx 75 ps/kg	Rs. 10676	
	iv. Milk for calves 1125 x Re.1/kg	Rs. 1125	
			Rs. 21235
ii)	i. Labour charges at Rs.120 p.m. per person/ labourer		Rs. 1500

....4/-

ii. Misc.expenses like, Vety Charges, water, electricity, etc. Rs. 635/-

iii. Dep. on animals at 15% (25500) Rs. 3825
---do--- Buildings at % (16600) Rs. 340
Interest on 57100 - at 1 (Rs. 5710) Rs.11000
Rs. 1500
Rs. 17165

Returns: -(A) Sale of milk - average number of animals in which 8x365x10 - 2 OR 200.0 Kgx1.25 Rs. 36150

(B) Income from manure 2 tons per animal per annum(2x12) 24 x 10 Rs. 240

(C) Value of appreciation of female calves at the age of one year 6 x 700 Rs. 4200

Sale of young stock male at birth 4 x 10 Rs. 40

Rs.74780

Net income on necessity expenditure per annum Rs. 74780 Rs. 2830
Rs.34150

Feed requirements:-

i. Green Fodder:

No. of adults 10x20x370 (Cow) 74000Kgs
Bullocks 2x20x370 14800 Kgs
Calves 8x14x300 33600 Kgs
122400 Kgs

ii. Dry fodder(probably ragi/straw & Hariyali Hay)
No. of adult cows 10x4 Kgs/dayx370 Kg 14800 Kgs
No. of bullocks 2x7 Kgs per dayx370 Kgs 5180 Kgs
No. of Y.S.below 1 year 370x1x6 - 22200 Kgsx15 ps 2220 Kgs
22200 Kgs

iii. Concentrates: Rs.3330

Average milk per day 10 Kgs/Animal 8x4x365 11740 Kgs
Average animals dry 2x1kg/day x 365 730 Kgs
Bullocks 2x1kg/day x 365 1730 "
Youngstock 6 at x 0.50 kgs/day x 365 1095 "
10676 Kgs

iv. Milk:

Milk for 6 calves upto 2½ months @ 2.25 kgs/head/day @ Re.1 per kg of milk 6x2.5xRe.1 Rs. 1125

Land requirement for fodder production(Any of the following cropping sequencies could be made use of preferable to one suggested at (f)

....5/-

Total green fodder requirement, p.a. 122100 Kgs

a) If the entire area is under perennial guinea grass yielding at 60 tons per acre per annum
2.25 x 60 - 135000 Kgs. 2.25

b) If the entire one is under Lucerne perennial yielding at 40 tons per acre - 3.20 x 40-128000 Kgs 3.20

c) If the area is under maize, 4 crops p.a. @ 10 tons per acre per crop acres. 3.20x10x4 @ 10 3.20

d) If the area under Lucerne half and the other half under guinea grass 50,000
Lucerne 40 x 1.25 acre
Guinea 60 x 1.25 acre
2.50 75,000 125000-2.50
1,25000

e) If the one is under maize, 50% lucerne 50% acres - 3.20 x 40 - 128000 Kgs 3.20

f) If 1 acre under lucerne 40,000
1 acre under lucerne 60,000
1 acre under guinea
0.75 acre under maize
2.75 (4 acres/year 30,000
1,30,000

SCHEME FOR TWENTYFIVE CROSS BRED COWS DAIRY FARM:

A. Capital Expenditure:

i. Liv Stock :

Adult milch cows	18 x 2000	36,000	Rs.48000
Dry cows	7 x 1500	10,500	
One pair bullocks	1500	1,500	

ii. Buildings -

i. Cow by res 52 x 20 (10.5 Sq.)	1500 Sq.	15,750	
ii. Bullocks calf shed 20x20 (4 Sq)	1250 Sq.	5,000	
iii. Pumphouse 10x8 (8 sq)	2000/Sq.	1,600	
iv. Servants quarters 10x10 (4 Sq.)	1500 Sq.	6,000	
v. Office/s/Store/Pharmacy 10x20 (2 Sq)	1500/Sq.	3,000	Rs. 31000

iii. Well:

i. Well 40 wide 30 deep 10000.0 or bore-well
ii. Pump, Motor accessories 5 HP 5,000.0
electrical charges, pipe line. 700 x 2" Rs.15,000

iv. Implements & Equipment :

i. Agric.equipment, bullock cart	Rs.1500	
ii. Milk pails, tubes, buckets, and weighing balance	Rs.1000	
iii. Chaff cutter power/hand. Total Capital Investment:	Rs. 500	Rs. 3000
		Rs.97350

....6/-

B. Recurring expenditure :

I. Cost of feeds :

i. Grasses	10360	
ii. Dry Fodder	6771	
iii. Concentrates	23270	
iv. Milk	1500	Rs. 41901

II. Labour:
Farm labour at 120/- month - 5760 Rs. 6000

III. Misc.expenses :

i. Int. on Cap. 9% on 97350	Rs.8761-50	
ii. Dep. on animals: 15% on 8000	Rs. 7200-00	
iii. Dep. on Bldngs: 5% on 31350	Rs. 1567-50	
iv. Vety.Expenses, misl.charges	Rs. 471-00	Rs. 18000
		Rs.65901

RETURNS/INCOME :

I. Sale of milk: Daily/head 10x365x20xRe.1/10Kgs/Animal/20 Animals	Rs. 73000
II. Sale of manure/30 adult animals x 2 tons x Rs.10	Rs. 600
III. Appreciation of young stock 8 years at Rs.800 at the end of 1 year	Rs. 6400
IV. Sale of 12 years meat 1 wk age Rs.10 animal	Rs. 120
	Rs.80120

Net income on recurring expenses: Rs.65901-80,120 Rs.14,221/-
Per centage return on fixed capital of Rs.97,350/- Rs.14.6%

I. Feed Requirements :

i. Green Fodder :

No. of adult cows 25 daily requirements 20 Kgs.
370 x 20 x 25 - 18,5000 Kgs.
Bullocks No. 2 daily requirement 10 Kgs.
370 x 10 x 2 - 7400 Kgs.
Followers 8 below 1 year at 1: Adult: Young stock daily.
Intake 5 Kgs. - 5 x 8 x 370 - 14,800 Kgs. Rs.10360

ii. Dry Fodder (Ragi straw, hariyali hay):
Cows: 25 x 4 Kgs x 370 - 37,000 Kgs
Bullocks: 2 x 7 Kgs x 370 x 5180
7 x 8 x 1 x 370 2960
Total: Dry: 45, 140 Kgs x 15 Paise/Kg Rs. 6771

II. Concentrates :

Adults: in milk 17 yld 10 Kgs/day milk:
1 : 2 : 5 Milk 18 x 4 x 365 - 26250 Kgs

Av. dry animals 7 at 1 Kg cow/day 7x1x365 - 2555 Kgs
Bullocks 2 at 1 Kg/Dry x 365 - 730 Kgs
Young stock No. 8 at 0.5 Kg/Dry x 365 - 1460 Kgs
Total concentrates: 31, 025 Kgs x 0.75 paise per Kg Rs.23, 270

III. Milk:-

Milk for 8 calves upto 2.5 at 2.5 Kg/Head/Daily at Re.1/- per kg of milk 8 x 2.5 x 75 x 1 - Rs. 1,500

Land requirement for fodder production (Any one of the following cropping sequencies could be made use of preferably the one suggested at (a).

a) Entire area is under guinea grass at 60 tons/acre/4 acres Annum: 3.5 acre - x 60 - 21,00,000 Kgs - actual

b) Entire area under lucerne at 40 acre/tons/annum 5.25 acres
acre/x/40/-21,00,000 Kgs actual 5.25 acres

c) Of entire area under lucerne at 40 ton acre.
Half (hf) under guinea at 60 tons/acre
Lucerne 2.25 x 40 tons - 90,000 Kgs
Guinea - 35,000 Kgs } 4.5 acres
- 25,000 Kgs

d) Area under lucerne 1 acre x 40 40,000
Guinea 2 Acres - x 40 1,20,000
Maize 4 - 1.5 acre x 40 60,000
Total: 4.5 acres 2,20,000 4.5 acres

SCHEME FOR FORTY CROSS BRED COWS DAIRY FARM

A. Capital Expenditure :

i. Live-stock:

a) Adult milch cows 32 x Rs.2500 Rs.80,000
b) Dry cows: 8 x Rs.2000 Rs.16,000
c) Bullocks 2 pairs - 2 x Rs.1500 Rs. 3,000
Rs.99,000

ii. Buildings :

a) Cow Hydres 40 x 10 x 4/16 sq. x 1500 24,000
calfsheds) 20x20 - 4 Sq. x 1500 bullocks 6,000
b) Pump House 10 x 8 (0.8 sq) Rs.2,000 16,000
c) Servants quarters 10x20x8xSqx1500 12,000
d) Office/stores/pharmacy 20x15x2(6 Sq.x1500) 9,000
Rs. 62,600

iii. Well : either open or borewell, pump water, accessories 15,000 Rs.115,000

iv. Implements & Equipments :

a) Agri imple., bullocks carts 2,500
b) Milk pails, buckets, feeding etc. 1,000
c) Chaff Cutter Power 1,500
Rs. 4,500

Capital Expenditure on fixed items: Rs.1,81,100

....8/-

Recurring Expenditure :

a) Green feeds	20,500	
b) Dry fodder	11,700	
c) Concentrates	41,100	
d) Milk	3,750	
		Rs. 77,050
Labour: Farm Labour: 8 x 120 x 12	11,520	Rs. 11,520

Misc. items expenditure :

a) Interest on Capital: 9% on 181100	16,300	
b) Dep. on animals: 15% on 99000/-	14,850	
c) Dep. on Buildings: 5% on Rs.62600	3,130	
d) Vety. expenses, electrical charges	1,520	
		Rs. 35,800
		Rs.1,24,370

INCOME :

a) Milk sales : 32x1-0x35 - 116800 Kgs x 1.25	Rs.1,56,000
b) Returns from manure: 40-4-20/3 - 50x2-100x	Rs.1,01,000
c) Appreciation of 20 youngstock at end of Rs.800/-	Rs. 1,600
d) Sale of 20 male youngstock at year 3 days Rs.10/-	Rs. 200
	Rs.1,63,200

Net profit: Rs.1,63,200 - Rs. 1,24,370 - Rs.38,830
Percentage income fixed capital invest of - 21.4% Rs.1,81,100

Feed requirements :

1) Green Fodder :

a) Adult cows: 40 daily requirements: 25 Kgs/cow 50 x 370 x 25 Kgs	3,70,000 Kg
b) Bullocks: 4 x 370 x 20 Kgs	29,600 "
c) Calves: 20 x 300 x 15 Kgs	9,000 "
Total Green Fodder:	4,08,600 "
4,08,600 Kgs x 4 paise/Kg	Rs. 20,403

2) Dry fodder: (Maize/Jower/Kadbi/Harihalli-hay):

a) Adult cows 40 x 4 Kgs x 370	59,200 Kgs
b) Bullocks - 4 x 7 Kgs x 370	10,360 "
c) Calves : 20 x 300 x 15 Kgs	7,200 "
Total Green Fodder:	77,960 "

Rs. 11,694 OR Rs.11,700 (77,960 Kgs x 15 Ps/Kg)

...9/-

3) Concentrates :

a) Average adults in milk yield 10 kg of milk/day (1 : 2 : 5 milk) 32 x 4 x 365 -	46,720 Kg
b) Average dry animals: 8.1 kg/per day per cow 8 x 1 x 365	2,920 "
c) Bullocks 4 at 1 kg per day x 365	1,460 "
d) Youngstock 20 at 0.5 kgs/per day per head x 365	3,650 "
Total concentrates: 54,750 Kgs	54,750 "

54,750 x 0.75 ps per Kg - Rs.4,063-50

4) Milk for 20 calves upto 2½ months at the rate of 2.5 Kgs/head per day @ Re.1/- per kg of milk
20 x 2.5 x 75 1 Re. Rs. 3, 750

Green Requirements: 4,08,600 Kgs OR 408 x 6 tonnes

Area under guinea grass 4 acres x 60 tonnes	240
Area under maize 4 acres 2 acres x 40 (10 tonnes x 4 x 2 acres)	80
Area under lucerne 2 acres x 40	80
Jowar, Bajra, Cowpea- 1 acre x 2 crops - x 10 tons	20
	420

11 Acres for crop growing
2 acres for roads, buildings, etc.

Total area of the farm 13 acres and if expansion is envisaged, atleast of 15 acres would be required.

Common fodder crop rotations and their package practices for Southern Regions:

(Yield per hectare Quintals)

	Sowing :	Green	Dry	D.C.P:	T.D.N.:
a) Maize/cowpea	1.2	300	69.0	4.8	41.1
maize cowpea	21.4	300	69.0	4.8	41.1
(two cuts on 15,9,15.11)	3.7	750	1632	11.7	109.2
Maize/cowpea	10.11	300	369.0	4.8	41.1
		1650	370.2	26.1	232.5
b) Hyb Napier/Guinea (6 cuts 15.5, 1.7, 15.8, 1.10, 1.12, 1.2 cowpea)	1/3 15/3	1500	250	13.5	175.0
c) Parasgrass Controcema pubescence(8 cuts 30-45 days integal)	1.6	1600	320.0	24.0	185.0
d) Lucerne 10/12 cuts at 30 days at Co-op: 1	1.9	1000	200.0	32.5	125.0

1) Maize Cowpea, 2) Maize cowpea 3) Maize cow pea teosintee Jower(2 cuts), 4) Maize cowpea seed rate (1) Maize 40 Kg cowpea, 15 Kg (2) Maize 40 Kgs cowpea 15 kgs. (3) Maize 20 Kgs cow pea 15 Kg Teorinto 10 Kgs Jowar 20 Kgs (4) Maize 40 Kgs cowpea 15 Kgs.

...10

Fertilizer/Manure:

1. Crop 40 tons FYM/60 Kg. N2/30 Kg P205/("40 Kg K 20)
2. & (4) Crops 60 Kg N2/ 30 Kg P205/20 Kg K20
3. Crop 60 Kg N2/40 Kg P203/ = 30 Kg K2 followed by 60 Kg N2 as top dress after first cut.

Crop rotation II. Hyb.Napier or Guinea inter planted with cowpeas.
Seed rate - Hyb. Napier/Guinea rootslips - 12,500, Cowpea - 30 Kgs
fertilizer/manure - Hyb. 50 tons FyN.60 Kg N2/

Napier.

Guinea 30 Kg N after every two cuts
Cowpea 30 Kg P2 65/- 15 K2 K20

Crop rotation III para grass/centrocem pubsscense.
Seed Rate: Paragrass 8-10 Sq(Stem cuttings)
Centrocema Pubsscense - '8' Kgs

Fertilizer/manure 50 tons/40 Kg K20/ 30 K2 0 10 Kg N after each cut

Crop IV Lucerne

Seed rate 25 Kgs - Lucerne Seeds - V 50 Perennial

Fertilizer/Manure - 25 tons FYM 20 Kg N2/60 Kg K2 05 Kg K20

2 tons applied every year in November.

CROPPING PROGRAMME FOR TWENTYFIVE ACRE IRRIGATED FOODER FARM

Area	5 Acres	5 Acres	5 Acres	5 Acres	5 Acres	
	Lucerne () per acre sowing Sep.Oct., seed rate 8.10 kgs fertilizers FYM.30 tonnes K205 60 Kg. K20 20 Kg once a year)	Guinea grass plant/ Feb. to Nov. (/acre seed rate 5,000 rootslips ferti:FYM30 to 40 ton. N 40-50 Kg)	Maize (/ acre) seed rate 15/20 Kg.FYM.10-20 tons N. 16-20 (split. 2) F205 10.0 Kg. K2 06-10 Kg		Maize/Cwopea seed rate - 10/ 5 FYM.10-20 tons. N.16 (Split P 205 10.0 Kg. K208.10 Kg)	
January	17	14	40	40	1 Pla.	71 Ton.
February	17	15	1 Planting		---	72 "
March	16	17	----	1 Plant	40	73 "
April	16	17	40	----	2 Plan.	73 "
May	16	18	2 Plantings	40	----	74 "
June	17	19	2 Plantings	40		75 "
July	17	20 plantings	40	----	3 Pla.	77 "
August	17	20	3 plantings	40	-----	77 "
September	17	19	------	3 plant	40	75 "
October	17	14	40	----	4 pla.	71 "
November	17	14	4 plantings	40	-----	71 "
December	17	13	-----	4 plant	40	70 "

....11/-

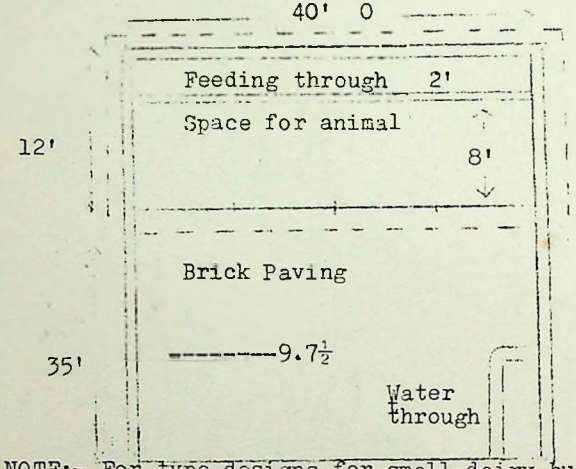
Respected No. of animals to be maintained 75 Adult Stock: about 50 in milk 16 dry bullocks. 12 Calves(Adults Unit).

HOUSING :

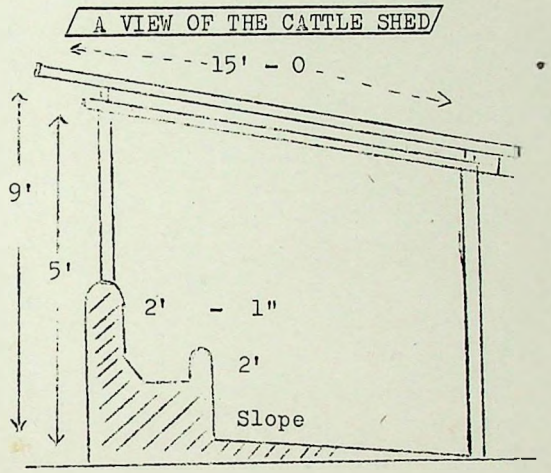
For maximum labour saying, a system of loose house is recommended. In this system, the animals are always free within the enclosed area and they have the option to feed at the man gers, rest under the shade or room in the open block of pad. For a herd of 20 cows and 2 buffalos, the loose housing system shall consist of a shed 40 x 15'. Along the 40 feet length on one side, shall be wide feed man ger with 5 feet wall on the outside which acts as one of the boundaries. The remaining 12' . 10' of the 15' wide shall be paved with Brick/B.S.S./ Cement Sloping away from the manger. There shall be an open paved are 40 x35 feet surrounded by 5 ft walls, with one gate for the animals. The room of the dovered shed can be put on brick pillars holding wooden asbestos roof sheets.

////////////////

PLAN



A VIEW OF THE CATTLE SHED



NOTE:- For ~~type designs for small dairy~~ buildings and cattle sheds, please refer to the "RECOMMENDATIONS FOR FARM CATTLE HOUSING FOR PLAN AREAS WITH MEDIUM RAINFALL PART-I & II, NEW DELHI"

I.S.: 4466(P & I) - 1967 and IS: (Pt-II) - 1968.