

FACTS

against

MYTHS

VIKAS ADHYAYAN KENDRA

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INFORMATION BULLETIN

Subverting the South's Food Production: The Myths Behind GM Crops

*"How do you dominate a country where 700m people are directly dependent on farming?
You infiltrate its agriculture. Who controls a country's food security controls that country.
Monsanto is doing this. It only wants to make money.
To do this, it wants to control the seed business.
The days of direct colonisation are over; the days of indirect colonisation are not..."*

-Prof. Pushpa Bhargava

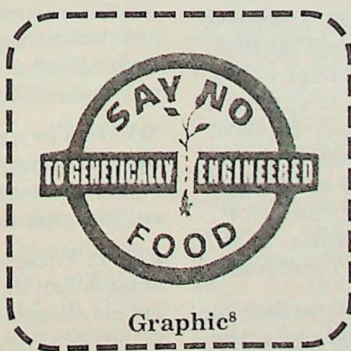
Centre for Cellular & Molecular Biology, quoted in The Guardian Weekly, London, July 8, 99.

COMMENT

Global food production are under the threat of being dominated by TNCs and India is no exception to this threat. Biotech TNCs are investing heavily into genetically engineered food crops vying with each other to the lucrative Indian market whilst promoting its use among farmers. An ominous addition to this threat was the recent high-powered attempt to introduce the so-called 'Terminator' genetic system by the US Dept. of Agriculture in cooperation with US TNCs. The Department along with the FDA and the Environmental Protection Agency regulate GM crops and foods in the US. However, these agencies reportedly appeared to sound... like cheerleaders for genetic engineering, rather than impartial judges of a novel

and powerful technology. All three agencies have set policies that no public records need be kept of which farms are using genetically engineered seeds, nor does anyone need to label any crops or any food products with information about their genetically engineered origins. In the US, every food carries a label listing its important ingredients, with the remarkable exception of genetically engineered ingredients..."¹ Such policies have two main effects. They keep the public in ignorance on the rapid spread of genetically engineered foods; and they will prevent epidemiologists from tracing health effects, should any appear, because no one knows who has been exposed to novel gene products.

Sensing the Terminator Technology as a threat to their survival other biotech agglomerates quickly came up with their own version of the technology. The British firm, Zeneca, introduced the



Verminator so-called because one of its introduced genes comes from a mouse. Immediately in its wake came a new range of technologies with over dozen patent claims being filed for these "discoveries" dubbed as Traitor Technology (for negative traits bred in a seed). The more formal name for these technologies is GURTS — Genetic Use Restriction Technologies. These technological "breakthroughs" serve to prevent seeds from germinating in the next generation and thus prevents traditional farmers from saving seeds from their harvest for the next season. Once these farmers can be persuaded to use such GM seeds, they will become dependent on these mega corporations for their seeds each year. The fact that these seeds, in effect, 'self-destruct' after use, secures the corporation's patent rights to the seeds without the need for any external policing by the patent holder. This new technology is totally dominated by the US TNC, MONSANTO. Along with five other mega-corporations (Novartis, AgroEvo, Dupont, Zeneca and Dow), Monsanto controls the world's food supply. With its merger with another US TNC, American Home Products, the new company which emerged from the union, will be the largest agro-chemical/life industries company in the world with a market capitalisation of \$96 b.

In the race for the world's scarce resources India is a prime target by these mega corporations. (See previous issue of FAM on biotechnology). For Monsanto, India is particularly attractive as it is the biggest cotton growing country in the world earning Rs.25,000 crores in export earning each year. Consequently, it is also a huge market for agrochemicals and seeds. The entry of these corporate giants into the food sector sparked off widespread reaction all over the country and began heating up when Monsanto tied up with Maharashtra Hybrid Seeds C., Ltd., (MAHYCO). Mahyco got permission to import developed cottonseed from the TNC on March 30, 1996. Subsequently, it applied to DBT (Dept. of Bio-Technology) for a multi-centric trial permit which was granted to it on July 27, 1998. Monsanto, was also given permission by the DBT to conduct field tests of genetically engineered Bt Cotton in 25 locations in A.P., Maharashtra, Gujarat, Karnataka, M.P., Haryana, Punjab, Rajasthan and Tamil Nadu.

These developments are indeed Orwellian in their nature and impact; rooted in the

discoveries in molecular biology in the second half of this century. These discoveries promoted a mechanistic vision of organisms as being no more than bundles of genes with determined functions that new technologies are able to identify, isolate and re-combine at will. As a result, those with the necessary technology and capital (i.e. the life industry) see the world living resources as interchangeable parts with which to play an immensely profitable "cut and paste" game. Their technologies are promoted as the most efficient tool — even the only one — to overcome the problems like hunger and starvation, etc., faced by humankind. But they are part and parcel of a paradigm characteristic with mass production of goods and services by mega TNCs. Genetic engineering with its GMOs are thus the latest *avatars* in this paradigmatic construct involving arrogant interference with nature. Ironically, however, even prior to the introduction of GMOs the spread of so-called high-yielding, patented hybrids had swept away a large number of these local seed strains or consigned the ghosts of their genes to the vaults of cryogenic seed banks. (See issue previous to this for function of seed Banks)

Clearly, the GMOs will ultimately impact the environment, health and agriculture. It has already led to a host of related problems — the depletion of the gene pools, biodiversity degradation, loss of plant varieties with dependence on toxic chemicals, rise in the vulnerability in biological and economic terms, undermining the resistance to drought and diseases.

Thus, in agreeing to buy biotec seeds from the TNCs, Indian farmers will be dependent upon a single supplier for all their seed and chemicals needed to allow those seeds to thrive. A small number of "life science" corporations will have a monopoly on the seed needed to raise all the world's major food crops. Then the hungry, like the well-fed, will have to pay the TNCs of this new technology for permission to eat. This makes it imperative to expose the hollow and grandiose claims on GM crops.

MYTH: *The aggregate shortage of food in the world and the concern to address the crisis prompted the growth of genetic engineering as a sure-shot solution.*

FACT: Paraphrasing Gandhi's well-known observation, there is enough food in the world but not enough for everyone's greed! According to the UN's World Food Programme, more than

enough food is already being produced to provide everyone in the world with a nutritious and adequate diet.

More to the point, hunger has seldom been the result of an aggregate shortage of food. It has instead consistently been one of inequalities in political and economic power. As economist Amartya Sen points out, hunger is the inevitable outcome of the normal workings of so-called market economy. In such an economy, food goes to those who have the money to buy it. "Only those who have the income to translate their biological needs into "effective demand" get to eat. In today's global supermarket, people earning \$25 a year, if they are lucky, must compete for food with people in the same or other countries who earn \$25 a hour, or even \$25 a minute". To illustrate: In Costa Rica (Central America), while beef production doubled between 1959 and 1972 per capita beef consumption in the country fell from 30 pounds to less than 19. The reason? US consumers could pay higher prices for the meat than Costa Ricans. It is the market logic that explains why 20% of parents and 10% of children in Britain experience "food poverty"; why Ethiopia used its prime agricultural land at the height of the 1984 famine to produce livestock fed for European markets and why insufficient food is a perennial feature of life for an increasing number of people.

Thus, genetic engineering in agriculture will do nothing to address these underlying structural causes of hunger. It will instead only exacerbate the situation.

MYTH: *The biotech industry's research are motivated strictly by the urgency to a) address the crisis of global food production and the need to b) feed the hungry in especially the South with inexpensive and nutritious food.*

FACT: This is nothing but advertising puffery. Few of the foods it has produced so far are benefiting the poor in the North let alone the poverty-stricken masses in the South. To illustrate:

- » In the US, G.M. crops, soybeans and maize, are being grown but 90 per cent of the former and 60 per cent of the latter are primarily for feeding farm animals. The focus of their genetic research is on animal feed. In 1998 Monsanto, for instance, announced a

joint-venture with the giant grain TNC. Cargill, to create and market new grain processing and animal feed products.

- » USAID, among others encouraged certain countries in the South e.g. Egypt to provide top priority to investment in livestock production. Thus, from 1980 to 1997 crop production in Egypt rose merely by 10 per cent but livestock production leapt by almost 50 per cent¹ Egypt now grows more food for animals than for its human population — almost 40 per cent of the total farmland is under animal fodder. But what about food crops for the people? Well, that is taken care of by Uncle Sam! Human supplies of grain for the Egyptian people have been made up through importing US grain. And with this, the country's external debt was five times the value of its exports while the biggest beneficiaries from Egypt's switch to livestock production have been large US grain merchants e.g. Cargill which had exported US grains at hugely subsidised prices to Egypt. A clear-cut illustration of dumping food on the South!

The related myth of mass production of nutritious food for the poor is just another tall claim. Biotech research in food is primarily geared in meeting the commercial needs of the food processing industry rather than the nutritional needs of poor. Monsanto's high-starch potato, for example, has been developed to make commercial-grown potatoes more suitable for the deep-fry vats of fast food outlets not just in Northern countries but increasingly in the South like in India; and not quality or cheaper food. Flav'r-Savr tomatoes had been engineered some years ago by Calgene (now part of Monsanto) for delayed ripening so that they would have a longer supermarket shelf-life. In the US, they had to be withdrawn from sale because it failed to meet public acceptance. (The tomatoes are now re-cycled into tomato purees!). The same applies to soya that is not used for animal feed. What is left over, around 60 per cent, goes into processed foods — ranging from bread, ready-made meals and sauces to biscuits, cakes and chocolate—all containing substances derived from GM soya. More to the point on cost reduction, biotechnology actually increases the costs of farmers. This takes places in the following ways:

- » technological fees charges by TNCs e.g. Monsanto, etc., for using their technologies (e.g. fees charged as part of the Technology Agreements for crops like Bollgard cotton, etc.);
- » increased use of insecticides (e.g. Monsanto's Roundup) and pesticides when in built organic defenses of GM plants fail (e.g. in the case of Bt cotton);
- » increasing prices of agro-chemicals and patented seeds;
- » payment of royalties to TNCs for use of seeds originally taken from poor farmers;
- » the monopoly control on seeds through IPRs, and the growing ownership of mega TNCs over the entire agricultural system

Finally, the point on tackling global hunger. To keep the record straight, from the period of the 70s to 1990 the track record of tackling this problem has been poor. Lappe and Collins in "World Hunger: The 12 Myths" had pointed out that despite increasing the food available to each person in Latin America by 8 percent, the number of those actually going hungry went up 19 per cent; as also in South Asia. In a seeming paradox *food production increased faster than the rate of population growth*, but so did the number of people going hungry.

In the South where the rural poor are increasingly landless labourers history shows that it is a hard task "to steer the benefits of agricultural research towards labourers".²

Processed foods like GM food do not provide many of the health benefits that fresh foods do. The result is that instead of at least in enhancing the health of the people these so-called convenience food have adverse impact on peoples' health. To illustrate, a 1996 British study of malnutrition among poor families showed that "by far the most energetic action" to address the problems of costly low-quality foods has come "from within deprived communities, which have set up projects to improve access to healthier food, for instance, food-buying cooperatives, battering project and subsistence agriculture".

These technologies may allow some fruits and vegetables grown by commercial producers in the South to reach consumers in the North more easily without perishing quickly. It will also be

great news for firms, airlines and car manufacturers. But this type of trade is nonetheless an energy-and-resource-intensive system which is highly polluting. Above all, it will not improve — nutritionally — the health of the people generally and that of the starving masses in the South in particular.

MYTH: *The Terminator Technology will benefit the world agricultural community by insuring farmers with the opportunity to share in the advantage of enhanced planting seed that has a clear advantage over the centuries-old but outdated practice of farmer-saved seed, a major obstacle today to farmers in the South.*

FACT: Not so! How can this technology be deemed an "opportunity" when traditional farmers will have little or no option but to grow such seed?!

More to the point, the Terminator seed will actually drive 5 b. traditional farmers out of plant breeding who cannot afford to buy seeds each year. After all, it is these very creative farmers who since ages have generated and conserved productive varieties in their farms. 80 per cent of the crops from these fields are from saved-seeds rather than proprietary seed stocks purchased at a company shop;

- » unintended plant targets could be affected by the technology, the full impact of which would not become apparent until subsequent seasons;
- » the nutritional consequences of grain produced using this genetic modification are unknown. Even those of cotton, whose seed caske is used as animal feed, the crops will enter the food chain;
- » There will be possible impact on biodiversity via gene transfer but a more immediate concern is the advance of mon-cropping. Single genotypes covering large areas are not only vulnerable to pests and diseases but their promotion inhibits work to encourage conservation farming based on diversity and location specific varieties;
- » Terminator or 'suicide seeds' will depend on chemical activation. As Dr. M.S. Swaminathan, credited to be the architect of the so-called Green

Revolution, queries: what will be the impact of the chemical 'tetracycline', used for activation, on soil ecology.

To corroborate, there is also the cost factor. For most farmers, the need to buy Monsanto's seed each year (instead of using saved ones) will lead to a steep rise in their input costs and, in many cases, bankruptcy. Along with the Terminator variety Monsanto's seeds will certainly cost more than the traditional ones. This means that farmers will also have to pay a so-called technology fee which American farmers are already paying @ \$8/- an acre to Monsanto.¹ While this may not pose a major problem for the rich farmers, small and poor farmers will be ruined by these increased costs of seeds. These small and marginal farmers whose economic survival depends on being able to save seed from one year to the next, are also likely to be ruined by the added input costs. Not only will they have to pay for their seeds every year: they will also have to buy chemical herbicides and fertilizers. Herbicide use in the South, particularly on smaller farms, is low because it is cheaper to employ people to get rid of weeds. Many small farmers are hard pressed by removal of subsidies due to SAP have slid into debt. Just as with the so-called Green Revolution, the result is likely to be a new way of farm bankruptcies, leading to landlessness for poorer farmers and an increased concentration of land as rich farmers and land sharks buy up bankrupted farms. In Punjab, its high input costs resulted in the number of small holdings declining by nearly a quarter between 1970 and 1980. Many were left destitute — a situation that the "Gene Revolution" now threatens many of those who survived the turmoil of the "Green Revolution".

MYTH: *In terms of crop yield and a host of other benefits GM crops have greater advantages and benefits than traditional cropping methods that are outdated.*

FACT: Not so! Gradually but steadily it is becoming clear that traditional agricultural systems are, on the contrary, far more beneficial than these so-called new techniques of genetic engineering. For instance, a Report² corroborated this pointed by illustrating that

- » the application of naturally developed and locally adapted plant varieties have thrived successfully in the Garhwal district of the Himalayas. Traditional

grains e.g. 'Thapachini' and 'Jhumkiya' have out-performed the so-called high-yielding hybrids in terms of straightforward productivity. They also have a higher percentage of grain to husk and produce more fodder for cattle. Besides, they require less than 10 per cent of the inputs hybrids demand and they become in all respects more efficient and farmer-friendly.

- » A researcher at the Essex University cites evidence from 2 countries of 2 m. households farming five million hectares more sustainably. He provided further examples of nearly 250,000 farmers in southern Brazil using such green techniques to double maize and wheat yields; 200,000 in Kenya likewise doubled maize yields; and 100,000 coffee farmers in Mexico who went entirely organic and increased productivity by 50 percent;
- » One million wetland rice farmers in 9 Asian countries have shifted away from pesticide dependence to sustainable agriculture and increased yields by approx. 10 percent.

MYTH: *GM crops are eco-friendly sound and socially responsible as it raises farmers' wealth, makes farming less tedious and polluting, and provides people with a choice.*

FACT: GM crops stimulate the evolution of "super weeds" and "super bugs" necessitating higher doses of chemicals and make food supplied more vulnerable to pest damage. The out crossing of engineered traits to other plants also poses a major threat to food products. In addition, the adoption of genetically-engineered crops is likely to reduce genetic diversity, resulting in freer types of food crops; the narrowing of the genetic base of food adds to the likelihood of pest and disease epidemics.¹

While the TNC, Monsanto, had claimed that its products like glyphosate weed killer, Roundup, is eco-friendly, "biodegradable", etc., to mammals, birds and fish, there is mounting evidence that glyphosate-based herbicides can be lethal to beneficial insects such as ladybirds and lacewing flies which are predators of common agricultural pests such as aphids (c.h.)

In the US, evidence has emerged showing that the pollen which has been genetically

engineered to contain a toxin gene can unintentionally kill the monarch butterfly. Citing a report in the journal, *Nature*, TWN Features³ stated that American scientists at Cornell University discovered the pollen from GE corn containing a toxin gene, Bt, which killed 44% of monarch butterfly caterpillars which fed on milkweed leaves dusted with the pollen. In the same experiment, caterpillars fed with the usual (non-engineered) pollen all survived!

Finally, the point on "choice". Given the ecological, economic and social risks of GM crops, many farmers — if they had access to complete information — might prefer not to grow such crops. But bio-tech companies and their supporters attempt, hook or crook, to deny farmers the opportunity of planting non-engineered crops.

MYTH: *Ecologists and environmentalists are unwittingly endangering the lives of starving peoples in the South by calling for a ban on GM crops.*

FACT: Implicit in this claim (disclaimed above) is that GM foods will feed growing numbers of starving people in the South. This has tremendous moral appeal. Its claimants appear highly responsible, even altruistic. Yet, as exposed above, this is a false claim. The claim may seem plausible provided we are conveniently blind to the root causes of hunger and famine, and mistakenly assume that the hungry must be so because there is not enough food.

By presenting starvation as a problem of food shortage, supporters of genetic engineering offer a seductively simple, but false, analysis of global hunger. To quote the representative at the Convention on Biological Diversity, T. Egziabher of Ethiopia: "There are still hungry people in Ethiopia, but they are hungry because they have no money, no longer because there is no food..."

Undoubtedly, more food will have to be grown in future if the increasing numbers of people the world over are to be adequately fed. But those who starve or go hungry today (whether in the South or in USA) do so mainly because they are denied ready access to food. A whole range of unjust and inequitable political and economic structures, especially those relating to land and trade, in combination with ecological degradation, marginalise poorer people and deprive them of the means to earn.

MYTH: *Consumers are protected from the potential hazards of GM crops through the establishment of an alert mechanism, the mandatory labeling clause that their food product is GM Free.*

FACT: However, according to the consumer movement,⁴ "Genetic Food Concern" of UK, many companies are conning consumers into believing that their products are "GM Free" (i.e. totally unaffected by GM). However, a rare exception is the firm WEETABIX! It has a total GM-free policy which includes ensuring that the wheat starch and added vitamins in their products have not been produced by GM-enzymes.

Many other companies, however, resort to all sorts of tactics to hoodwink the consumer. They give assurances like: "Our products contain no GM ingredients, GM material, or GM protein". For instance, GREGGS, the nationwide bakery chain of UK had maintained recently that they had removed all GM soya and maize "protein" from their products. But in reality several of their products are effected by GM derivatives and enzymes!

Moreover, such types of statements usually implies that GM derivatives or enzymes are present, or that GM has been used in some part of the production process. Such firms and businesses do not supply a guarantee in writing, that the product contains no GM ingredients, derivatives or enzymes, and that no GM has been used in any part of the production process

MYTH: *The protection of patents and other forms of intellectual property rights like TRIPPs is essential. In the long run patents help in a) stimulating innovation, b) improving agricultural development and thereby benefiting society at large through disclosures of such inventions.*

FACT: This false claim now extends to plants, micro-organisms, biotechnology, food and essential drugs!

Above all, the claim refers to the *Basmati* patent claimed by the US firm, RiceTec. The patent-claim to this rice variety is derived from the Indian *Basmati* crossed with semi-dwarf varieties including Indica varieties. The *Basmati* varieties are farmers varieties bred since millennia by Indian farmers. The method of crossing different varieties to mix traits — in this case the *Basmati* characteristics from

Basmati and the semi-dwarf features — is also not novel. It is a very common method of breeding.

In fact, the national agricultural system has released new semi-dwarf varieties, *Kasturi* and *Pusa Basmati-1*. The patent application states these “new varieties more properly should be described as *Basmati* substitute or quasi-basmati”. However, it uses the same breeding step of crossing *Basmati* varieties with semi-dwarf varieties to claim “characteristic and qualities similar or superior to those of good quality *Basmati* rice grains produced in India and Pakistan.

Thus, on the one hand the patent is for rice derived from Indian *Basmati* which has the essential characteristics of Indian *Basmati* and is hence a variety “essentially derived” from a farmers variety. It cannot therefore be treated as novel. On the other hand, the patent claims the “invention” of a “novel line”. RiceTec’s *Basmati* 867 cannot be “same as traditional *Basmati*” and novel at the same time! The characteristics for which RiceTec has claimed a patent are derived from traditional *Basmati*. However, the patent claim basically denies the prior breeding by farmers and by denying the role of farmers as breeders, falsely claims a derivation as an invention.

If the false claim to invention is maintained, then RiceTec and the US Patent Office deny the innovation and creativity of Indian farmers embodied in the *Basmati* from which *Basmati* 867 is derived. In the future, such myths, which are an infringement of the collective right and collection innovation of traditional farmers everywhere, can actually be used to treat the farmers as infringing on the RiceTec.

If patents like RiceTec were recognised in India, the patent claim could force Indian farmers growing *Basmati* to pay royalty since the claim covers functionally equivalent varieties

Patents on such living matter, according to Vandana Shiva,⁵ redirects attention towards those products that provide for the broadest and easiest patent protection, not for the largest public good. Rather than being a measure of innovation, patents and IPRs are more of a statement of territory than a measure of innovation. But when those “territories” are food and the substances behind the production of food, there is an order of protected power that is broad and far reaching.

As already pointed out, these developments emanate from the discoveries in molecular biology. Since then, they have been exploited to perform a highly profitable “cut and paste” game called “innovation” that helps transform living organisms into raw material and the hereditary base of their properties into “genetic resources” which are then used in their “inventions”.

The other related claim is sheer rhetoric. It is not the countries who are supposed to benefit from worldwide intellectual property protection who are demanding patent protection. The demand is being put forth by TNCs!

Patent protection in agriculture is really protection from traditional farmers. It will displace the farmer as a competitor, transform him into a supplier of free raw material, and make him dependent on industrial supplies for vital inputs like seeds. In short, it will ultimately discredit and destroy traditional knowledge-systems about seeds and livestock including methods of soil rejuvenation and water management. The cow for instance will give way to patent livestock and according to this (mythical) claim, the calf of the patented livestock will be subject to royalty charges.

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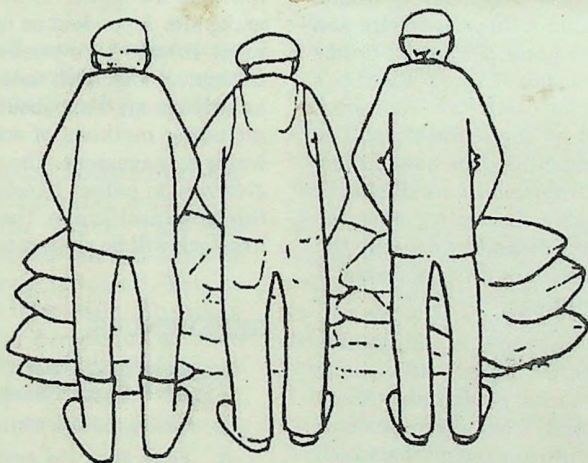
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For more information on the critique of GMOs (Genetic Modified Organisms) see:

An anti-GM Food Web site:
wkweb4.cableinet.co.uk/brown/index.htm.

PROTESTING OVER G.M. CROPS

In early January 1998, 120 members of the French peasant farmers' union, Confederation Paysanne, entered a Novartis warehouse in Jnôrac, France, to destroy transgenic maize (corn) seeds. They were protesting the French government's decision to allow the growing of genetically modified maize. During the action the genetically modified maize was mixed up with non-modified maize and 'humidified'. Novartis has estimated the protesters damaged 30 tons of the grain.



Protestors Humidifying Grain!

Source: Safe Food Campaign Fast Sheet, Pesticide Action Network (PAN) Asia and the Pacific

Facts Against Myths is a monthly bulletin of factual information on a number of development myths and fallacies, etc, including information against alien development models, paradigms and false concepts on caste, creed and gender.



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