

# Rachel's Environment & Health News

## #637 - Against The Grain

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A new book by Marc Lappe and Britt Bailey, *AGAINST THE GRAIN*, makes it clear that genetic engineering is revolutionizing U.S. agriculture almost overnight.[1]

In 1997, 15% of the U.S. soybean crop was grown from genetically engineered seed. By next year, if Monsanto Corporation's timetable unfolds on schedule, 100% of the U.S. soybean crop (60 million acres) will be genetically engineered.[1,pg.5] The same revolution is occurring, at the same pace, in cotton. Corn, potatoes, tomatoes and other food crops are lagging slightly behind but, compared to traditional rates of change in farming, they are being deployed into the global ecosystem at blinding speed.

The mass media have largely maintained silence about the genetic engineering revolution in agriculture, and government regulators have imposed no labeling requirements, so the public has little or no knowledge that genetically altered foods are already being sold in grocery stores everywhere, and that soon few traditional forms of food may remain on the shelves.

Genetic engineering is the process whereby genes of one species are implanted in another species, to give new traits to the recipient. Traditionally the movement of genes has only been possible between closely-related species. Under the natural order established by the Creator, there was no way dog genes could get into cats. Now, however, genetic engineering allows scientists to play God, removing genes from a trout or a mosquito and implanting them in a tomato, for better or for worse.

Three federal agencies regulate genetically-engineered crops and foods -- the U.S. Department of Agriculture (USDA), the U.S. Food and Drug Administration (FDA), and the U.S. Environmental Protection Agency (EPA). The heads of all three agencies are on record with speeches that make them sound remarkably like cheerleaders for genetic engineering, rather than impartial judges of a novel and powerful new technology, and all three agencies have set policies that:

\*\* No public records need be kept of which farms are using genetically-engineered seeds;

\*\* Companies that buy from farmers and sell to food manufacturers and grocery chains do not need to keep genetically-engineered crops separate from traditional crops, so purchasers have no way to avoid purchasing genetically engineered foods;

\*\* No one needs to label any crops, or any food products, with information about their genetically engineered origins, so consumers have no way to exercise informed choice in the grocery store. In the U.S., every food carries a label listing its important ingredients, with the remarkable exception of genetically engineered foods.

These policies have two main effects:

(1) they have kept the public in the dark about the rapid spread of genetically engineered foods onto the family dinner table, and

(2) they will prevent epidemiologists from being able to trace health effects, should any appear, because no one will know who has been exposed to novel gene products and who has not.

Today Pillsbury food products are made from genetically-engineered crops. Other foods that are now genetically engineered include Crisco; Kraft salad dressings; Nestle's chocolate; Green Giant harvest burgers; Parkay margarine; Isomil and ProSobee infant formulas; and Wesson vegetable oils. Fritos, Doritos, Tostitos and Ruffles Chips -- and french fried potatoes sold by McDonald's -- are genetically engineered.[1,pg.92]

By next year, if Monsanto's plans develop on schedule -- and there is no reason to think they won't -- 100% of the U.S. soybean crop

will be genetically engineered. Eighty percent of all the vegetable oils in American foods are derived from soy beans, so most foods that contain vegetable oils will contain genetically engineered components by next year or the year after.[1,pg.52]

It is safe to say that never before in the history of the world has such a rapid and large-scale revolution occurred in a nation's food supply. And not just the U.S. is targeted for change. The genetic engineering companies (all of whom used to be chemical companies) -- Dow, DuPont, Novartis, and preeminently, Monsanto -- are aggressively promoting their genetically engineered seeds in Europe, Brazil, Argentina, Mexico, India, China and elsewhere. Huge opposition has developed to Monsanto's technology everywhere it has been introduced outside the United States. Only in the U.S. has the "agbiotech" revolution been greeted with a dazed silence.

Monsanto -- the clear leader in genetically engineered crops -- argues that genetic engineering is necessary (nay, ESSENTIAL) if the world's food supply is to keep up with human population growth. Without genetic engineering, billions will starve, Monsanto says. However, neither Monsanto nor any of the other genetic engineering companies appears to be developing genetically engineered crops that might solve global food shortages. Quite the opposite.

If genetically engineered crops were aimed at feeding the hungry, then Monsanto and the others would be developing seeds with certain predictable characteristics: (a) ability to grow on substandard or marginal soils; (b) plants able to produce more high-quality protein, with increased per-acre yield, without increasing the need for expensive machinery, chemicals, fertilizers, or water; (c) they would aim to favor small farms over larger farms; (d) the seeds would be cheap and freely available without restrictive licensing; and (e) they would be for crops that feed people, not meat animals.

None of the genetically engineered crops now available, or in development (to the extent that these have been announced) has any of these desirable characteristics. Quite the opposite. The new genetically engineered seeds require high-quality soils, enormous investment in machinery, and increased use of chemicals. There is evidence that their per-acre yields are about 10% lower than traditional varieties (at least in the case of soybeans),[1,pg.84] and they produce crops largely intended as feed for meat animals, not to provide protein for people. The genetic engineering revolution has nothing to do with feeding the world's hungry.

The plain fact is that fully two-thirds of the genetically engineered crops now available, or in development, are designed specifically to increase the sale of pesticides produced by the companies that are selling the genetically engineered seeds.[1,pg.55] For example, Monsanto is selling a line of "Roundup Ready" products that has been genetically engineered to withstand heavy doses of Monsanto's all-time top money-making herbicide, Roundup (glyphosate). A Roundup Ready crop of soybeans can withstand a torrent of Roundup that kills any weeds competing with the crop. The farmer gains a \$20 per acre cost-saving (compared to older techniques that relied on lesser quantities of more expensive chemicals), but the ecosystem receives much more Roundup than formerly. To make Roundup Ready technology legal, EPA had to accommodate Monsanto by tripling the allowable residues of Roundup that can remain on the crop.[1,pg.75] Monsanto's patent on Roundup runs out in the year 2000, but any farmer who adopts Roundup Ready seeds must agree to buy only Monsanto's brand of Roundup herbicide. Thus Monsanto's patent monopoly on Roundup is effectively extended into the foreseeable future -- a shrewd business maneuver if there ever was one. However, this should not be confused with feeding the world's hungry. It is selling more of Monsanto's chemicals and filling the corporate coffers, which is what it was intended to do. "Feeding the hungry" is a sales gimmick, not a reality.

Monsanto's other major line of genetically engineered crops contains the gene from a natural pesticide called Bt. Bt is a naturally-occurring soil organism that kills many kinds of caterpillars that like to eat the leaves of crops. Bt is the pesticide of choice in low-chemical-use farming, IPM [integrated pest management] and organic farming. Farmers who try to minimize their use of synthetic chemical pesticides rely on an occasional dusting with Bt to prevent a crop from being overrun with leaf-eating caterpillars. To them, Bt is a God-send, a miracle of nature.

Monsanto has taken the Bt gene and engineered it into cotton, corn and potatoes. Every cell of every plant contains the Bt gene and thus produces the Bt toxin. It is like dusting the crop heavily with Bt, day after day after day. The result is entirely predictable, and not in dispute. When insect pests eat any part of these crops, the only insects that will survive are those that are (a) resistant to the Bt toxin, or (b) change their diet to prefer other plants to eat, thus disrupting the local ecosystem and perhaps harming a neighboring farmer's crops.

According to Dow Chemical scientists who are marketing their own line of Bt-containing crops, within 10 years Bt will have lost its usefulness because so many insects will have developed resistance to its toxin.[1,pg.70] Thus Monsanto and Dow are profiting bountifully in the short term, while destroying the usefulness of the one natural pesticide that undergirds the low-pesticide approach of IPM and organic farming. It is another brilliant -- if utterly ruthless and antisocial -- Monsanto business plan.

Ultimately, for sustainability and long-term maximum yield, agricultural ecosystems must become diversified once again. This is the key idea underlying organic farming. Monoculture cropping -- growing acre upon acre of the same crop -- is the antithesis of sustainability because monocultures are fragile and unstable, subject to insect swarms, drought, and blight. Monocultures can only be sustained by intensive, expensive inputs of water, energy, chemicals, and machinery. Slowly over the past two decades, the movement toward IPM and organic farming has begun to take hold in this country -- despite opposition from the federal government, from the chemical companies, from the banks that make farm loans, and from the corporations that sell insurance. Now comes the genetic engineering revolution, which is dragging U.S. agriculture back down the old path toward vast monocultures, heavy reliance on machinery, energy, water, and chemicals, all of which favors the huge farm over the small family operation. It is precisely the wrong direction to be taking agricultural technology in the late 20th century, if the goals are long-term maximum yield, food security, and sustainability.

It is a wrong direction for another reason as well.

When 100% of the soybeans in the U.S. are grown from Roundup Ready seed -- next year -- then 100% of America's soybean farmers will be dependent upon a single supplier for all their seed and the chemicals needed to allow those seeds to thrive. In sum, Monsanto will have achieved a monopoly on a fundamental food crop. It is clear that Monsanto's goal is a similar monopoly on every major food crop here and abroad. If something doesn't change soon, it is safe to predict that a small number of "life science" corporations (as they like to call themselves) -- the majority of them American and the remainder European -- will have a monopoly on the seed needed to raise all of the world's major food crops. Then the hungry, like the well-fed, will have to pay the owners of this new technology for permission to eat.

[To be continued.]

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)

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[1] Marc Lappe and Britt Bailey, AGAINST THE GRAIN; BIOTECHNOLOGY AND THE CORPORATE TAKEOVER OF YOUR FOOD [ISBN 1567511503] (Monroe, Maine: Common Courage Press, 1998). Available from Common Courage Press, P.O. Box 207, Monroe, ME 04951. Tel. (207) 525-3068.

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