Genetically Engineered Foods and the Environment

When biotech corporations boast that genetic engineering can do wonders for the environment, we would do well to consider the source. After all, some of these companies are the same ones that have invented such deadly pesticides as DDT and Agent Orange.

Farmers have planted millions of acres of genetically engineered crops so far. A look at some of the environmental problems:

A threat to Monarch butterflies

Cornell University researchers have found that altered corn may be deadly to the Monarch butterfly. In laboratory tests in the spring of 1999, the scientists found that nearly half of Monarch caterpillars that ate milkweed leaves dusted with genetically engineered corn pollen died within four days. The surviving Monarchs that ate the genetically mutated corn pollen were much smaller and had smaller appetites than the control Monarchs, which ate normal corn pollen or no pollen at all.

In 2000, Iowa State University scientists found that plants growing in and near cornfields are being dusted with enough GE pollen to kill monarch caterpillars that feed on them.

Genetic contamination of the environment

Many scientists are concerned about the widespread release of genetically modified organisms (GMOs) into the environment. A European Union study released in March 2002 revealed that genetically engineered crops will inevitably contaminate organic farms, create superweeds and drive wild plants to extinction. Genetically engineered oilseed rape has cross-pollinated non-biotech crops two-and-a-half miles away, and research in Scotland indicates that bees can carry the pollen of genetically engineered plants six miles away.

Altered genes can jump species barrier

In May, 2000, Professor Hans-Hinrich Katz, a leading German zoologist, released research that shows that genes used to modify crops can jump to other species and cause bacteria to mutate. Katz found that the gene used to modify oilseed rape had transferred to bacteria living in the guts of honey bees.

"These findings are very worrying and provide the first real evidence of what many have feared," says prominent genetic engineering critic and scientist Dr. Mae-Wan Ho. "Everybody is keen to exploit GM technology, but nobody is looking at the risk of horizontal gene transfer. We are playing about with genetic structures that existed for millions of years and the experiment is running out of control."

Herbicide resistance and fears of the rise of superweeds

Some scientists fear that the extensive planting of genetically engineered crops will lead to a new class of "superweeds" that are resistant to pesticides. The largest class of genetic engineered foods is pesticide-resistant crops, such as Roundup Ready soybeans. The problem is that newly created transgenes may be spread unintentionally - by bird, insect or wind - from target crops to related weed species. The weeds then also pick up resistance to the pesticide.

The New York Times reports that the popularity of Roundup-Ready crops has caused the use of Roundup Ready to skyrocket so much the rare weeds that survive the herbicide will flourish, and that farmers will need to reduce their use of the herbicide to preserve its long-term usefulness.

And Ohio State University researchers have found that weeds are becoming fitter and stronger by cross-breeding with genetically modified crops. In the study, wild sunflowers, classified as 'weed' varieties, became hardier and produced 50 percent more seeds when crossed with genetically altered sunflowers that had been engineered to resist seed-nibbling moth larvae.

GMOs introduced into the wild pose greater risk of species extinction, scientists say.

Purdue University scientists have determined that introducing GMOs into wild populations "holds a greater theoretical risk of extinction of natural species than previously believed," according to a June 2002 Purdue University press release.

William Muir, professor of animal sciences, and Richard Howard, professor of biology, made headlines in 2000 when they determined that releasing genetically engineered fish into wild populations could lead to extinction of those wild fish. Specifically, they calculated that if 60 transgenic fish were released into a population of 60,000 wild fish, in 40 generations, the species would become extinct. They call this the "trojan gene effect."

Unfortunately, the two researchers have discovered additional scenarios that could lead to extinction even more quickly -- as quickly as 20 generations. "We consider this an extreme risk," Howard says. "That's the most severe time frame we've encountered so far."

Damage to the soil

Scientists are concerned that genetically mutated crops may damage the soil. Researchers for Nature magazine reported in December that some types of GE crops may be leaking powerful toxins into the soil. Many GE crops, such as corn and potatoes, have been engineered to produce poisons or toxins to fight pests that eat their leaves and stems. Researchers fear that beneficial soil organisms also may be killed, and that some insects may become resistant to the toxins.

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