A Modest Proposal Regarding Genetic Engineering in Mendocino County

by Ron Epstein

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The new millennium will be ushered in by the biotech century. The earlier we prepare the better. In the short term, we will be affected in these main areas: medical treatment; industrial, agricultural, and forest use; and food. First, let us take a brief look at some problems with the use of genetic engineering in agriculture and in our food. Then I would like to make some simple suggestions about steps we can take to assess the situation here in Mendocino County.

Agriculture

I don't think anyone knows the extent to which genetically engineered plants are currently being grown, either commercially or in home gardens, in Mendocino County. The dangers to agriculture include new and lethal plant viruses, super-weeds, super-pests, greater use of herbicides with herbicide resistant plants, loss of soil fertility, threats to non-target species and biodiversity, and the unknown effects of releasing new and unnatural forms of life in the environment. Genetically engineered trees are rapidly being developed and planted, despite the almost complete lack of knowledge about their effect on forest ecosystems.

When genetically engineered crops are grown for a specific purpose, they cannot be easily isolated both from spreading into the wild and from cross-pollinating with wild relatives. Cross-pollination can take place almost a mile away from the genetically engineered plantings and can also threaten neighboring organic plantings. Human beings, animals and birds may accidentally carry the seeds far vaster distances. Spillage in transport and at processing factories is also inevitable. The genetically engineered plants can then force out plant competitors and then radically change the balance of ecosystems or even destroy them.

Under current United States government regulations, companies that are doing field-testing of genetically engineered organisms need not inform the public of what genes have been added to the organisms they are testing. They can be declared trade secrets, so that the public safety is left to the judgment of corporate scientists and government regulators many of whom switch back and forth between working for the government and working for the corporations they supposedly regulate. Those who come from academic positions often have large financial stakes in biotech companies.

Scientists have already demonstrated the transfer of transgenes and marker genes to both bacterial pathogens and to soil fungi. That means genetically engineered organisms are going to enter the soil an spread to whatever grows in it. Genetically engineered material can migrate from the roots of plants into soil bacteria, in at least one case radically inhibiting the ability of the soil to grow plants. Once the bacteria are free in the soil, no natural barriers inhibit their spread. With ordinary soil pollution, the pollution can be confined and removed (unless it reaches the ground-water). If genetically engineered soil

bacteria spreads into the wild, the ability of the soil to support plant life may seriously diminish. It does not take much imagination to see what the disastrous consequences might be.

The development of new genetically engineered crops with herbicide resistance will affect the environment through the increased use of chemical herbicides. Monsanto and other major international

chemical, pharmaceutical, and agricultural corporations have staked their financial futures on genetically engineered herbicide resistant plants.

Recently scientists have found a way to genetically engineer plants so that their seeds lose their viability unless sprayed with patented formulae, most of which turn out to have antibiotics as their primary ingredient. The idea is to keep farmers from collecting genetically engineered seed and force them to buy it every year. The corporations involved are unconcerned about the gene escaping into the wild, with obvious disastrous results, even though that is a clear scientific possibility. Nor do they seem to care about exacerbation of the problem of antibiotic resistance.

Food

Soon the majority of the food in the supermarket will be genetically engineered. A large quantity is already in the stores, though most people are unaware because the food is unlabeled. Included are processed foods, fish, grains, vegetables, fruits, and dairy products. Major risks of eating genetically engineered food include exposure to unknown allergens or toxins, loss of nutritional value, genetic danger from mutations, and unknown effects on our body cells and metabolism.

Many scientists have claimed that the ingestion of genetically engineered food is harmless because the genetically engineered materials are destroyed by stomach acids. Recent research suggests that genetically engineered materials are not completely destroyed by stomach acids and that significant portions reach the bloodstream and also the brain-cells.

Furthermore, the natural defense mechanisms of body's cells are not entirely effective in keeping the genetically engineered substances out of the cells.

Some dangers of eating genetically engineered foods are already documented. Risks to human health include the probable increase in the level of toxins in foods and in the number of disease-causing organisms that are resistant to antibiotics. The purposeful increase in toxins in foods to make them insect-resistant is the reversal of thousands of years of selective breeding of food-plants, which were originally developed by breeding out toxins and strong flavors from wild plants. Furthermore, when plants are genetically engineered to resist predators, often the plant defense systems involve the synthesis of natural carcinogens.

For vegans and vegetarians, genetically engineered food poses special problems. It can contain insect, animal, and even human genes, making it unsuitable for consumption. Since genetically engineered food is currently not labeled as such in the United States and most other countries, those who do not wish to eat food containing specific genes have no recourse.

Basically what we have at present is a situation in which genetically engineered foods are beginning to flood the market, and no one knows what all their effects on humans will be. We are all becoming guinea pigs. Because genetically engineered food remains unlabeled, should serious problems arise, it will be extremely difficult to trace them to their source. Lack of labeling will also help to shield the corporations responsible from liability.

What We Can Do

We can educate ourselves further about the topic. Information about both the dangers of genetic engineering and organizations trying to combat them is available on my website "Genetic Engineering and Its Dangers" <http://online.sfsu.edu/~rone/gedanger.htm>. Here in the county an excellent resource

is the Center for Ethics and Toxics (CETOS) in Gualala, which has recently published a fine book by Marc Lappe and Britt Bailey entitled *Against the Grain: Biotechnology and the Corporate Takeover of Your Food*.

Locally the most important first step that we can take is to do an assessment of the use genetic engineering on the county level. Since the biotech industry claims that genetic engineering is both safe and the wave of the future, it should be happy to cooperate with efforts to document local applications. We should urge our new board of supervisors to take the lead. It can direct the appropriate county departments to collect the appropriate information about agricultural and forest use of genetic engineering on a voluntary basis and to make it available to the public and to related businesses, such as nurseries and farm suppliers. Information about possible risks should also be disseminated. The county departments of agriculture and of public health, along with the UC agricultural extension office, could all play important roles. With information available, then the citizens of our county can all make their own informed decisions about genetic engineering in their own lives. Isn't that what democracy is all about?

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