

EVALUATING GENETIC ENGINEERING IN AGRICULTURE

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The year 2004 saw California become a flashpoint on the genetic engineering issue. In April, the world's first commercial planting of a pharmaceutical crop — rice engineered with human genes — was averted due in large part to the efforts of the coalition Californians for GE-Free Agriculture, a project of OAEC. In March, Mendocino County voters passed a ban on genetically engineered (GE) organisms. This was followed by bans in Marin and Trinity counties and a moratorium in the city of Arcata. OAEC is leading a campaign to pass a Sonoma County ballot initiative in 2005 to enact a ten-year moratorium on the growing, sale and distribution of living GE organisms. In 2005 and 2006 we expect to see another wave of initiatives and ordinances restricting GE organisms in counties, cities and schools across the country.

While we respect that many people and cultures all over the world have strong religious, ethical or political reasons to completely reject the genetic engineering of organisms under any circumstances, at OAEC we do not have such a categorical position. We do believe that many GE technologies and applications should be prohibited because of the inevitability of ecological contamination or similar unacceptable risks. We also believe there are conditions where some GE technologies may be appropriate for further research, and perhaps eventual public or private use. Here are some of the evolving criteria that we are using to help us develop our position on any particular use of GE technologies.

What are the long-term human health effects of consuming genetically altered foods?

Since GE foods arrived on U.S. supermarket shelves a decade ago (these products are now present in some amount in an estimated 70% of all processed foods), there has been virtually no research into their health effects. Since these foods are not labeled, we are not able to correlate any negative or positive effects to their consumption. Though the FDA assures us that there have never been any undue health effects, the truth is that we are part of the world's largest experiment on the subject...and no one is collecting the data. Before any new GE foods are released, there must be thorough and independent testing for negative human health effects, and a mandatory federal labeling law put in place to inform consumers.

What are the long-term ecological impacts of GE organisms?

In 10 years of reviewing GE organisms, the federal EPA has never yet required a complete and comprehensive Environmental Impact Review of any GE organism, and relies solely on data voluntarily presented by the developer of the GE organism. There must be comprehensive, independent, peer-reviewed, long-term environmental assessments prior to the release of any new GE organisms.

What is the reproductive biology of the organism in question?

The risk of unintended genetic contamination of related domestic and wild relatives of each new GE organism must be assessed as part of a responsible analysis. Contamination can and already has occurred in many ways: during seed production, distribution and planting; through cross-pollination or seed movement by wildlife; during harvest with shared equipment and facilities; and during transportation, milling and processing when the seed is still viable. Crops that are nearly always self-pollinated (such as rice, tomatoes and grapes) present a lower contamination risk than those that readily cross-pollinate (such as lettuce, corn and squash). Crops that reproduce from seed generally present a higher risk of contamination than those propagated vegetatively because the seed is saved, and travels more freely and more widely. Also, crops that contain viable seed when harvested (such as rice, wheat, apples, and

tomatoes) are more risky than plants harvested before they produce viable reproductive seed (such as broccoli, lettuce and onions), although any individual plant not harvested will go to seed and become a contamination vector. Therefore, the reproductive mechanisms and agricultural production methods of the organism must be taken into account when analyzing each new GE application.

What are the consequences of unexpected contamination?

In the U.S., there are currently no precedents or formal procedures for handling the consequences of genetic contamination of otherwise GE-free farms. Farmers whose land is contaminated are at risk of losing increasingly valuable GE-free markets, without recourse. The developer of any technology, and the regulatory agencies charged with independent health and safety review, are responsible to ensure that the new technology does no harm to people or the environment. Because of the many fundamental questions regarding the public health and environmental safety of GE foods and crops, and since GE is the newcomer to the market, the developer of the technology should be held fully liable for any and all contamination of other crops, ecosystems or food.

Who owns and controls the direction of GE research, the resulting data and the eventual products?

All commercially available GE crops have patents held by multinational agrichemical or pharmaceutical corporations. Farmers who plant GE crops effectively lease the GE seed from the patent-holding corporation and are not entitled to save seed, to hold any inventory over from year to year, or to deviate from using the exact chemicals specified by the seed contracts. This is a significant departure from thousands of years of seed-saving tradition, and is a well understood threat to food security and economic independence in the developing nations that produce most of the world's food. Due in large part to this understanding, farmers in India, Asia, Africa, and Europe have been at the forefront of GE opposition movements, forcing Syngenta, Monsanto and other GE technology developers to abandon research and sales efforts in many of those continents' countries.

GE technology corporations have also aggressively sought to restrict access to the results of their research. Their data are almost never reviewed by government agencies or published in independent journals, and are therefore not subject to democratic, public debate or to the scrutiny and rigor of the scientific, peer-review method. These corporations argue that they must protect their "confidential business information" and "property rights." This is what the tobacco and chemical industries argued for decades, while concealing their knowledge of the deadliness of their products. We believe that our rights to democratic process, public health and environmental security far outweigh the property rights claims of these few private corporations. Until the federal government requires public release of all research data by the corporations seeking to release GE organisms into our food and environment, we will demand a moratorium on all new commercial releases of GE organisms.

We think that research into potentially useful and safe applications of GE could continue, with these provisions:

- Research must only be allowed in fully contained facilities to prevent accidental release or contamination.
- Research must be directed by the needs of farmers who are practicing sustainable agriculture, and should emphasize farmer participation and co-ownership of the products.
- No corporation or person should own a patent on a life form or a reproductive process, though it is appropriate to give patent rights on the individual techniques and equipment used in GE research.

- The data on efficacy and safety must be publicly available and independently verified prior to beginning field trials or commercial production. The locations of field trials and production must be made public.

New GE crops and animals, owned by a handful of global corporations and leased under repressive conditions at high costs to farmers around the world, will not solve the world's food and agriculture problems. Instead, the current corporate control of GE research and commercialization only serves to exacerbate existing inequities in the concentration of wealth, extending the political subjugation of the world's poorest people and creating more global food insecurity. In the end, we believe that to solve the many challenges facing the world's farmers — and to create a more sustainable, economically viable and democratically based food system — there are far better research and production strategies than agricultural genetic engineering and the patenting of life.