Op-Editorial

What's Wrong with Crop Biotechnology in Hawaii

Hector Valenzuela

Biotechnology has been heralded as one of the hot industries with the potential to help Hawaii's ailing economy loosen its dependence from tourism and the military. Policy makers and university administrators have enthusiastically talked about the great potentials for biotechnology in Hawaii. As an acknowledgement the biotech industry named Governor Cayetano the "Biotech Governor" of the year for 2002 for helping to launch the biotech industry in the state. But the entire biotech picture is not as rosy as some would claim, as shown by the recent fines imposed by the EPA on Pioneer Hi-Bred for GMO pollen contamination in their Kauai research plots.

Currently the local crop biotech sector is represented mainly by a number of out-of-state multinational corporations that establish biotech plots in the state as part of their in-house research programs. Because of its moderate weather, Hawaii has become an experimental oasis for the world's seed biotech companies. Overall over 1,400 permits have been issued for field testing of biotech products in Hawaii, more than in any other state in the country. Globally over 145 million acres of land were planted in 2002 with biotech crops to produce mostly soybeans, corn, cotton and canola. Market penetration has been intense- over 70% of the products found in the supermarket, such as cereal, bread, and pet feed, contain genetically modified ingredients.

And herein lies one of the main problems that critics have about biotechnology: the secrecy involved in the testing and dissemination of genetically modified products to the American consumer. Until recently, there has been precious little public discussion in Hawaii (or in the US for that matter) concerning the pros and cons of the widespread adoption of crop biotechnology. Furthermore, the biotech industry has spent considerable PR resources fighting efforts to better inform the public about crop biotechnology.

In summary, some of the important contentions on the debate concerning the use of biotech products include:

1) Environmental pollution. Biotech crops in general contain foreign genetic material that does not occur naturally in the crops in which this material is introduced. Many unknowns remain concerning what will be the effects of these foreign products (such as genetic material from other species such as viruses) as these are released on the environment. A salient example is that of pharmaceutical products produced on 'pharm' crops. What will be the effect of some of these 'pharm' products on the soil ecosystem, when these novel products are exuded through vast

acreages through the roots of these plants?

2) Cross-contamination. When biotech crops are planted on extensive acreages, the risk exists of cross-pollinating relative weedy species, or relative non-modified crops grown on neighboring farms. This could result in unintended ecological consequences. For example, this cross-contamination may produce 'super weeds' that are more resistant to herbicides than their non-modified siblings. If these biotech crops are grown near the center of origin of the species the native species or varieties being grown by subsistence farmers may become contaminated with novel genes, perhaps causing irreparable damage to the basic genetic base that crop breeders rely on to continually introduce new and better features (such as disease resistance) to our modern non-modified species.

3) Effects on human health. Industry pressure lead the White House to declare that genetically modified crops are 'substantially equivalent' to non-modified crops, thus circumventing normal FDA and EPA testing. But this may not be the case. The foreign materials that are introduced into biotech crops could have unintended consequences on human health through direct action, or by interacting with other chemicals in ways that we currently don't understand. Concern also exists that many of the novel genetic materials introduced into crops may cause unintended allergenic or toxic reactions on humans or children that are especially sensitive to specific chemicals. For example, recent research from Europe showed that some of the genetic material introduced into the UH's developed biotech papaya is identical to a known human allergen. But this significant finding seems to have escaped the eyes of UH researchers and of the overseeing regulatory agencies.

4) The Right to Know. In democratic societies such as ours, consumers would like to feel confident that regulatory agencies will keep us abreast of potential environmental and health risks when new products are introduced into the marketplace. With all the controversies surrounding the introduction of biotech products, it is thus amazing to learn that the public in the US still knows little to nothing about the biotech industry, and about the extent to which biotech products have become part of our daily diets. Not surprisingly, in countries where consumers are more aware about the risks posed by biotech products, such as in Europe and in Japan, the public consensus has been: keep biotech products out of our dining tables.

5) Corporate profits vs. farmer independence. With all the promises to save the world from hunger and disease aside, the major incentive for corporations in their promotion of the biotech revolution are the incredible potential profits. In some cases farmers need to purchase the biotech seed (such as 'Roundup Ready' soybeans) as well as the pesticide

(Roundup herbicide, which represents 80% of Monsanto's profits) from the same company- to obtain the full benefits of this production "package". But, in the long-term, will farmers benefit, or will farmers just continue to become more and more dependent on corporations to maintain their livelihoods? Other technologies introduced by corporations over the past few decades (such as hybrid seed and pesticides) have resulted in what some ag economists term a cycle of 'dependency'.

6) Alternative technologies. Is biotechnology the only answer out there to solve the crop production problems farmers encounter in the farm? Not really. Alternative programs such as classical breeding, and agroecological techniques exist to deal with many of the production problems found in the farm. However, the bulk of the research conducted by universities has focused on chemical and on biotech agriculture rather than on the search for ecologically-based solutions. Little to no research has been conducted in Hawaii or elsewhere to develop chemical-free, or organic farming, production systems.

The challenges currently faced by the biotech industry does not mean that the science in itself is wrong. On the contrary, biotechnology is a fascinating field that is rapidly expanding our knowledge base in the biological sciences. But the public should not be kept on the sidelines, as corporations and universities use tax payers' subsidies to help develop and release new novel products into our environment. In the end an educated citizenry will be better prepared to make educated decisions concerning issues that clearly affect them and the future of their children- issues such as the quality of the food they consume, and the quality of the environment they live in.

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