



## Pew Initiative ON Food AND Biotechnology

Over the last decade, scientists' ability to alter the traits of living organisms by directly changing their genetic makeup has moved out of the laboratory and into the mainstream of domestic agriculture. Already many U.S. farmers have found benefits in growing corn, soybeans and cotton that have been genetically modified to make them more resistant to pests or certain herbicides.

These developments represent only the first examples of the potential uses of agricultural biotechnology. The ability to directly alter genetic material is a powerful new tool with applications to a broad range of agriculture – including commodity crops, fruits and vegetables, livestock, trees and fish. The potential benefits of this new tool will continue to stimulate research and the development of new uses across many areas.

At the same time, important questions have been raised about the safety, environmental impact, and economic effects of this new technology. A number of groups believe that these questions need more complete answers before the technology is more widely used in commercial products.

Both proponents and opponents of agricultural biotechnology are actively trying to shape public opinion and the policy agenda. Industry has launched advertising and information campaigns to communicate the safety of genetically modified foods and the benefits of agricultural biotechnology. Some consumer and environmental groups have used grassroots campaigns to highlight the food safety and environmental risks that can be associated with the technology. Not surprisingly, the public debate on this issue has become contentious, polarized, and confusing.

*The Pew Initiative on Food and Biotechnology* has been established to be an independent and objective source of credible information on agricultural biotechnology for the public, media and policymakers. Funded through a grant from The Pew Charitable Trusts to the University of Richmond, the Initiative advocates neither for, nor against, agricultural biotechnology. Instead, the Initiative is committed to providing information and encouraging debate and dialogue so that consumers and policymakers can make their own informed decisions.

Ultimately, the marketplace will determine the success of agricultural biotechnology. A critical factor will be whether consumers have confidence in the federal regulatory system to ensure food safety and protect the environment. For that reason, the Initiative will support informed public dialogue on ways that the regulatory system may need to evolve to address the issues posed by the anticipated development of this new technology and the growing body of scientific knowledge.

The Initiative will produce reports and sponsor workshops and conferences to showcase the diverse points of view that recognized experts have on the broad array of topics relevant to the debate about agricultural biotechnology. The reports and workshop products will be disseminated widely and made available through the Initiative's web site ([www.pewagbiotech.org](http://www.pewagbiotech.org)) so the public, the media and policymakers can have equal access to information. Through collaborations with other organizations, the Initiative aims to encourage a healthy and productive dialogue about the scientific, economic, marketing, and regulatory issues relevant to agricultural biotechnology.

The Initiative will also create a forum for a small group of representatives from environmental groups, industry, academia, farm and consumer organizations, and other interested parties. This process will focus on developing consensus on responses to the various regulatory and marketing challenges that exist today or are likely to arise in the near future from the next generation of agricultural biotechnology products.

Through these efforts, the Pew Initiative on Food and Biotechnology intends to help move the discussion about this technology beyond conflict and toward a sustained process of constructive engagement about the regulation and use of this important tool.

### **Background: The Context for a New Initiative**

As often occurs with the introduction of transformative technologies, the development of genetically modified foods and other products of agricultural biotechnology has touched off significant public debate.

Proponents of agricultural biotechnology assert that it has the potential to improve the nutritional value of foods, reduce crop losses to pests and drought, slow down soil erosion, reduce the use of chemical pesticides, and increase food security in the developing world. Biotechnology may make animals and fish grow faster and be more disease-resistant; produce trees that grow quickly or with improved pulp and paper characteristics; or alter ornamental trees and grasses to require less care and be more stress and disease-resistant. Plants may be altered to produce valuable industrial chemicals or human medicines, and animals could be modified to produce human blood factors or transplantable organs. While many of these potential applications have not yet been tested for their technical or economic feasibility, it is clear that the current generation of genetically modified crops is but the first of many possible applications of biotechnology to agriculture. Today's relatively simple gene manipulations are likely to yield to more complex applications as scientific knowledge grows.

But the increasing use of agricultural biotechnology has raised important questions and public concerns. Public opinion polls show that American consumers have concerns about genetically modified foods and generally want to be informed whether their food contains genetically modified ingredients. Environmental groups and

ecologists have raised concerns about the flow of modified genes to wild or non-modified plants and the potential ecological disruption caused by introducing a reproducing or highly competitive, genetically altered species into an ecosystem. Farm groups have raised concerns about the economic impacts of agricultural biotechnology and how its benefits and costs will be distributed across the farm sector. Farmers have raised questions about legal liability if genetically modified crops accidentally mix with their own conventional or organic crops. Still others have raised moral and ethical concerns about the technology. The recent Starlink episode, in which genetically modified corn that had not been approved for human consumption found its way into the human food supply, also raised questions about the handling and marketing of genetically-modified foods.

As new agricultural biotechnology applications are developed and brought to market, these questions and concerns are certain to become more urgent. The task of reviewing these products and responding to these concerns will fall to federal regulators. At present, agricultural biotechnology products are regulated under a federal regulatory coordinating framework developed fifteen years ago and based on laws that predate the advent of biotechnology. When first published in 1986, the federal regulatory agencies explicitly recognized that the framework should be periodically reviewed and updated as scientific knowledge and experience increased.

Most of the more than fifty products approved for commercial use by federal regulatory agencies to date have dealt with introducing herbicide-resistant or pesticide-producing genes into corn, cotton, and soybeans. To date, there appears to be little evidence to suggest that the genetically modified foods presently on the U.S. market are less safe to consume than their conventionally grown counterparts. Questions about the various possible environment benefits or adverse impacts of these crops are a matter of active debate and research.

However, the review of future biotechnology products, such as genetically engineered livestock and pharmaceutical plants, are likely to be even more challenging for several reasons:

- Increasing attention to these issues has highlighted areas of scientific uncertainty and information needs. The lack of scientific data can make it more difficult for agencies to assess food safety, public health and environmental risks for some novel products.
- As novel biotechnology applications are developed, regulations and policies designed for existing enhanced commodities may not apply, creating regulatory and marketing uncertainty for companies and consumers alike.
- As the technology becomes more complex and more broadly applied, the technical and scientific capability of the federal agencies may be strained. Critical resource and informational needs for regulators need to be anticipated and identified.

- The cost and benefits associated with the introduction of biotechnology will likely require adaptation in an agricultural production system already stressed by other economic forces.

By creating the platform for debate about such topics, the Initiative will give the American public the opportunity to be well informed about developments in agricultural biotechnology and how such products are regulated.