

# Agricultural Biotechnology

## A Catholic Rural Life Perspective

June 2002

Science and technology are precious resources when placed at the service of humankind and used to promote our integral development for the benefit of all (*Catechism of the Catholic Church*, #2293). Scientific research and its applications, such as expressed in agricultural biotechnology and genetic engineering, carry a moral imperative. “Science and technology by their very nature require unconditional respect for fundamental moral criteria. They must be at the service of the human person (and) in conformity with the plan and will of God” (*Catechism of the Catholic Church*, #2294).

The National Catholic Rural Life Conference believes that plant and animal biotechnology must respect the sacredness of created life. The technology of genetic engineering requires an ethical critique of its social and economic consequences and a close scrutiny of the power and control over agricultural practices. A reverent understanding of Creation and a firm belief in a revealed purpose for humankind here on Earth leads to how we should interact with the physical world and our fellow human beings. Our position on agricultural biotechnology reflects a care for creation, a care for community and a just expression for rural areas dependent on agricultural production and for all impoverished areas suffering from hunger.

### *Genetically Engineered Plants*

In a broad sense, agricultural biotechnology is centuries old, beginning with human selection of certain plants and species for improved food and fiber production. The term today now includes *genetic engineering*, or the process of isolating, removing and inserting a gene from one life source to another. This includes transferring genes between unrelated species and breaking through natural barriers.

The United States and Canada are prominent nations broadly growing such transgenic crops for food and fiber. In the United States, for example, more than half of the soybeans and about one quarter of the corn cultivated in 2001 were transgenic. Two other commercial crops are transgenic cotton and canola. Genetically engineered wheat is due to be commercially introduced in 2003.

Genetically engineered crops include “Bt corn” which is a type of corn engineered with *bacillus thuringiensis*, a bacterium that kills pests and is commonly used as a preventive spray by organic growers. Genetic engineering allows this pesticide to be inserted into the genetic structure of a plant. Another category of modified crops is exemplified by “Roundup Ready” soybeans, a plant able to tolerate a specific herbicide that will kill all other plants in a bean field.

Similarly, the canola or rapeseed plant is also engineered for herbicide tolerance. Biotechnology companies are engineering fruits and vegetables that have commercially desirable characteristics, such as improved appearance. Bio-technicians continue to engineer crops with promising nutritional benefits, such as “golden rice” with high levels of Vitamin A.

### **Rigorous Examination**

Pope John Paul II reminds the faithful that the "earth is entrusted to man's use, not abuse" (Jubilee of the Agricultural World, November 11, 2000). "This is a principle to be remembered in agricultural production itself, whenever there is a question of its advance through the application of biotechnologies, which cannot be evaluated solely on the basis of immediate economic interests. They must be submitted beforehand to rigorous scientific and ethical examination, to prevent them from becoming disastrous for human health and the future of the earth."

### **Scrupulous Development**

In his World Day of Peace message, January 1, 1990, Pope John Paul II had also addressed the ecological responsibility of humankind: "We can only look with deep concern at the enormous possibilities of biological research. We are not yet in a position to assess the biological disturbance that could result from indiscriminate genetic manipulation and from the unscrupulous development of new forms of plant and animal life, to say nothing of unacceptable experimentation regarding the origins of human life itself. It is evident to all that in any area as delicate as this, indifference to fundamental ethical norms, or their rejection, would lead mankind to the very threshold of self-destruction."

### **Precautionary Approach**

Although the science of genetic engineering appears to be precise, laboratory "precision" needs to be countered with a respect for the complexity and diversity of life. Scientists focus on the appearance of certain desirable characteristics in specific plants and animals, but the process can also create unintended consequences for the natural environment and human health.

Whereas every gene carries instructions for the production of a protein, and proteins combine with other proteins in an organism, science is not yet able to fathom the intricate web of life. In the fantastic complexity of nature, is science certain that artificially altering or moving a gene between species will produce the same intended result each time?

Aside from the principles of science, will the prevalence of agricultural biotechnology in the hands of a few private interests tend to compromise ecological biodiversity rather than improve upon it? Social and economic consequences remain unresolved as transgenic seeds and crops are rapidly introduced into the global agriculture and food system.

Biotechnology advocates often make the argument that the genetic modification of organisms is not new and, moreover, oversight systems are in place to identify and reduce any environmental risks that might be associated with their use. In contrast, U.S. Government authorities recognize the important need for scientists, regulators and the public to review the adequacy of current oversight mechanisms. Critical research continues on pollen movement, spread of "transgenes" in natural communities, resistance development, and unpredicted impacts on target and non-target organisms.

The National Catholic Rural Life Conference, witness to the past century of the industrialization of agricultural life, is compelled to safeguard the integrity of biological and social relationships that may be compromised by profit-driven industries of biotechnology. **We call for a**

**moratorium on the commercial introduction of genetically engineered crops until a principled food policy is developed through public debate.**

*Fundamental Moral Criteria*

Agricultural biotechnology brings humankind extraordinarily close to upsetting the intricate order of biological and ecological relationships upon which life and health depend. Also disturbing, agricultural biotechnology is altering social and economic relationships within food production. There is deep concern about the ethical use of intellectual property rights and the patenting of genes and genetically modified organisms. Christian principles inform a way of living and shape a response to genetic engineering that is respectful to our fellow human beings, the physical world and a loving God.

• **Life and Dignity of the Human Person**

Every human being is created in the image of God. This is the primary principle of Catholic social teaching. In order to rise to our full human stature, we must first have sufficient food to lead a healthy life. But along with meeting basic human needs, an ethic of human dignity also extends to the quality of a person's life. No one should be subject to another's unfair control, or to labor in conditions which degrade human dignity. To love our neighbor and live fully in Creation – these are divine laws. The social consequences of a technology must stay in balance with its intended application, and not benefit some over the exclusion of others.

• **Care for God's Creation**

The profound sense that humankind and nature are enfolded in an intricate web of life leads to a sacred regard for the integrity of Creation. Conscious as humans are of nature's workings, we are given the gift of co-creation with God and the responsibility to build a new earth that leads to salvation. Catholic social teaching understands that “*to till and to keep*” the earth does not end in dominion over all life, but in humble stewardship that returns the earth in fullness to God. Men and women ought to approach Creation in awe and fear, knowing that human artifice of the earth can bring bounty or ruin, depending on willful choices and our regard for the sacred. (Catechism #2415)

• **Call to Community and Participation**

The common good comprises “the sum total of social conditions which allow people, either as groups or as individuals, to reach their fulfillment more fully and more easily” (*Gaudium et Spes*, 26). At the same time, there is a divine call for every man and woman to participate generously in promoting the common good. These principles call us to serve a higher purpose beyond immediate self-interests and ensure that no one is prevented from contributing to the common good by the restrictive actions of others. The need to feed the hungry cannot end when the social processes causing hunger and poverty remain.

*According to these moral criteria,*

Genetically engineered crops should not be commercially available unless:

- Independent, peer-reviewed assessment demonstrates that a genetically engineered organism has no harmful effects on human health or the environment.
- Foods with genetically engineered ingredients are labeled for the consumer's right-to-know.

- Genetically engineered seeds and plants are rigidly separated from other seeds and plants so that growers and their markets are protected from genetic drift and contamination.
  - Patent law is limited to technical processes and does not include patenting of genes, gene sequences or genetically engineered species.
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**Assessment:** A publicly enforced and fully transparent government system is needed to assess the environmental and human health impacts of genetic engineering. Life science companies that manufacture genetically engineered organisms should not only bear the cost of assessing potential impacts, but provide the burden of proof and assume any future impact costs. Until a practical assessment procedure and authority is in place, a moratorium ought to be in effect on the commercial release of genetically engineered organisms.

**Labeling:** Prior informed choice is essential to a civic and fully accountable food system. Labeling of genetically engineered foods informs the public of what is taking place in their food system. Labeling provides an opportunity to raise public awareness about the quality of their food supply and the integrity of the food system.

**Identity Preservation:** A rigid and thorough separation of genetically engineered crops and seeds from other agricultural crops is necessary to protect biodiversity, identity preservation and markets. Without such protection in fields or handling and shipping systems, specialty and non-GMO farmers may face contaminated yields and loss of domestic and export markets.

**Patent Rights:** Genes and genetic resources are part of the commons and the common good. For the world's food crops, there should be a review on how intellectual property protection or patents are granted. Based on the principle of the universal destination of goods, genetic resources are meant for the benefit and availability of all. Finally, patenting laws should not prevent the ultimate sharing with farmers in developing countries the benefits of any new discovery or technology.

*Failure to abide by these precautionary points will.*

- Accelerate the decline of agricultural biodiversity in local areas, where vast crop varieties have already been lost in the past century to monocultural practices.
- Allow a few, dominant seed companies to control the supply of seeds worldwide, reaping a greater share of the food dollar at the expense of farmers and primary producers.
- Deny farmers of the world their just benefits to the development of genetic resources by their endless experimentation and local application.
- Threaten the livelihoods of smallholder farmers and indigenous people around the world who depend on open access to resources, such as the traditional saving of seeds for future sowing.

*Conclusion*

The genetic engineering of plants and animals is not a question of playing God. This technology, like any human endeavor, is a call to do God's work. The moral imperative is to follow God's will and do good -- not to substitute our will and self-interest in such a way that causes harm. People of faith believe that humanity needs a humility of spirit in order to do God's work. The

science of agricultural biotechnology may indeed enhance food and fiber production, but the control of the technology by a few may diminish the human family as a whole.

Therefore, while NCRLC accepts the scientific advancement of agricultural bio-technology, it is clear that genetic engineering bears the values and ideology of its manipulators. Unless plant and animal biotechnology is subjected to compelling scrutiny scientifically and ethically, the public will bear the burden of social and environmental impacts of this technology gone awry. Communities of faith must challenge themselves to understand this new technology, and then to embed it within the moral strictures of a fair and just society. The promise of genetic engineering is admirable, but we must insist that human and ecological health be put before corporate profits. Before all else, we are called to respect life and the blessings of creation.