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Biotechnology — The Public Discussion

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The public discussion over biotechnology foods is a luxury the well-fed people of the industrialized world can afford. But in developing nations, where the population is growing while the supply of farmland shrinks, people are grappling with a much thornier—and higher-stakes—dilemma. Unless they can grow more food on less land, they may not have enough to eat.

Agricultural biotechnology is helping to resolve that quandary by making it possible to grow more and healthier food in conditions and places where it could not be grown before. The new agricultural biotechnologies offer a promising hope for producing enough food for a growing world population

According to a recent report by the United Nations, 800 million people worldwide, many of them children, are already chronically undernourished. There is every reason to believe that problem will grow worse. The world's population, which recently hit six billion, could top nine billion by 2050, with most of the growth occurring in nations plagued by abject poverty. Meanwhile, the amount of usable farmland per person could be cut in half As farmers in developing nations clear-cut more land and consume more natural resources to grow the food their mounting populations need to survive, the world faces an environmental dilemma in addition to a humanitarian one.

Innovations in agricultural biotechnology could transform that picture, helping produce food for a growing population while reducing the environmental strain of agriculture. Yet biotechnology is opposed by some activists who claim both to speak for the people it promises to feed and to defend the environment it stands to protect.

Opponents of agricultural biotechnology characterize it as a new, untested frontier. But biotechnology is as old as agriculture itself. Human beings have improved the genetic characteristics of crops for centuries, from cross- and selective breeding by the earliest farmers to Gregor Mendel's 19th Century experiments on pea pods. Today, high-tech science is making it possible to target genetic characteristics more precisely and safely. Because of advances made in science and through the efforts of governmental regulatory agencies we have the safest food supply ever in the history of humankind.

Some of the most important innovations are plants that draw nutrients from the soil more efficiently. As a result, many are able to grow in the tough conditions—such as drought, changing weather patterns and depleted soil—that farmers in the developing world often face Some biotechnology crops may be developed to grow year-round regardless of the season, potentially relieving food shortages in tropical areas Food biotechnology, for example, is already boosting production of legumes, a major dietary staple in the Philippines, Sri Lanka and India Projections say biotechnology could boost food productivity in the developing world by 25 percent overall, helping to feed more people while consuming fewer natural resources.

Agricultural biotechnology could also reduce crop losses to pests and disease, an especially welcome innovation in developing regions like Africa, which lost 60 percent of the 1998 cassava crop—the region's largest source of calories—to mosaic virus. The European corn borer destroys 40 million tons of corn a year, equivalent to the annual food supply, in calories, for 60 million people—approximately the population of France But biotechnology crops can be produced with genetic characteristics that enable them to resist pests and disease, improving crop yields while providing farmers with an alternative to chemical sprays Biotechnology corn, which is already widely used in the United States, produces its own insecticide Research is under way on virus-resistant strains of sweet potatoes and other crops And agricultural biotechnology can also help foods to stay fresh longer by ripening more slowly, a potentially life-saving innovation in developing nations that lack refrigeration.

Biotechnology could help to alleviate malnutrition by making dietary staples more nutritious. "Golden rice," for example, is being produced through biotechnology to deliver higher doses of beta-carotene, the protein the body needs to make Vitamin A. Similar strains of canola and other crops may soon be on the way. Researchers are even working on a banana that would deliver the vaccine against Hepatitis B, potentially replacing costly, often inaccessible inoculations with a locally grown, inexpensive piece of fruit.

The new food biotechnologies are one of the great scientific advances in agriculture. Based on rigorous scientific findings that have been extensively evaluated by regulatory agencies in the U.S., there is no increased risk to the consumer of using these foods compared to other foods in the diet. There are many promising new food biotechnologies being developed. The benefits these confer will be dependent upon the extent to which the public believes they are safe. Based on a recent survey conducted by the International Food Information Council in

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