



Agricultural Biotechnology's Environmental Success Story

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Farmers have adopted biotechnology since 1996 because biotech crops grow healthier plants that yield more per acre with reduced production costs.

But planting biotech crops also helps to enhance air, water and soil quality.

Enhanced Sustainability and Reduced Environmental Footprint

Agricultural biotechnology has helped enable large shifts in agronomic practices that have led to significant and widespread environmental benefits.

No-till agriculture, in limited use prior to 1996, has been widely adopted due to the superior weed control from biotech crops that are able to tolerate herbicides with low environmental impacts. This has led to improved soil health and water retention, reduced runoff, and reduced greenhouse gas emissions from agriculture.

Peer-reviewed scientific studies have repeatedly found biotech varieties to be much friendlier to the environment, more sustainable than conventional counterparts, and far more economical and productive than organic.

Protecting Soil and Water

Farmers have found that the use of biotech crops can reduce the need for plowing to control weeds. This leads to better conservation of soil and water and a decrease in soil erosion and soil compaction. No-till agriculture has enabled farmers to shift to more effective, simpler weed control regimes.

In terms of Environmental Impact Quotient (EIQ) calculations and volume of active ingredient, global use of herbicides and insecticides has declined since the introduction of biotech crops. Active ingredient use in herbicides and insecticides has decreased 630 million pounds between 1996 and 2006, or a 7.8 percent reduction.¹

In the United States alone, pesticide applications are estimated to have been reduced by nearly 70 million pounds in 2005.²



¹Brookes, Graham, & Peter Barfoot. 2008. *GM crops: global socio-economic and environmental impacts 1996-2006*. PG Economics Ltd., UK.

²Sankula, Sujatha. November 2006. *Quantification of the Impacts on U.S. Agriculture of Biotechnology-Derived Crops Planted in 2005*. National Center for Food and Agricultural Policy.

Reducing Air Emissions

A reduction in plowing has also enabled farmers to significantly reduce the consumption of fuel and decrease greenhouse gas emissions. Studies show that biotech crops have saved farmers 551 million gallons of fuel through reduced fuel operations from 1996 to 2006.³

For one year alone, fuel savings combined with biotech crop-related soil carbon sequestration has resulted in eliminating nearly 15 million metric tons of carbon dioxide emissions in 1996. This is equivalent to removing 6.56 millions cars from the road in one year.³

³Brookes, Graham, & Peter Barfoot. 2008.



Conservation and the Environment

Biotechnology can help produce environmentally friendly animals, as well as conserve endangered species. Farm animals and their feeds have been improved through biotechnology to reduce animal wastes, minimizing the impact on the environment.

Today's reproductive and cloning techniques offer the possibility of preserving the genetics of endangered species. Genetic studies of endangered animals can also result in increased genetic diversity which can result in healthier populations of species.



Disease and Pest Resistance

Biotechnology is helping food plants resist disease and pests. For example, a genetically enhanced virus-resistant papaya literally helped save the Hawaiian papaya industry for farmers who suffered devastating losses from the ringspot virus, for which there was no other effective treatment.

Crops improved through biotechnology have thus had a significant impact improving sustainability and reducing the environmental impacts associated with agricultural production.

In the near future, we'll see crops that will be resistant to environmental stresses like drought and crops that use soil nutrients more efficiently, boosting productivity in areas of the world with inadequate rainfall or poor soil.

...just the beginning of Agricultural Biotechnology's Environmental Success Story!