
National Center for Food and Agricultural Policy

Contact:**Leonard Gianessi**

202-328-5036

Janet Carpenter

202-328-5044

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Press Release

New Report Quantifies Benefits to U.S. Farmers from Planting Genetically-Engineered Soybeans

In 1999, half of U.S. soybean acreage was planted with varieties that had been genetically engineered to tolerate application of the herbicide glyphosate. Researchers at the National Center for Food and Agricultural Policy (NCFAP) have just completed a report that analyzes the reasons soybean growers have chosen to plant the genetically engineered soybean varieties. Soybean growers were found to save an estimated \$220 million in annual weed control costs due to the introduction of glyphosate-tolerant varieties.

The insertion of DNA from a soil bacterium made it possible to spray glyphosate over growing soybeans to kill weeds without causing harm to the soybean plants. Glyphosate would otherwise kill conventional soybean plants by shutting down an enzyme critical for plant development. Researchers from Monsanto studied soil bacteria and found the same enzyme, with a difference that glyphosate does not interfere with its functioning. The bacterial version of the enzyme continues to function after the application of glyphosate, allowing soybean plants to continue normal development. Soybean plants contain at least 10,000 different enzymes.

The NCFAP report concludes that U.S. growers have planted the genetically engineered soybean varieties on a large percentage of soybean acreage primarily to take advantage of the following benefits:

- Broad spectrum weed control
- Crop safety
- Flexible treatment timing
- Cost savings.

Herbicides have been used on more than 90% of U.S. soybean acreage for the last 25 years. The NCFAP report compares the efficacy of glyphosate to 180 available alternative treatments, concluding that glyphosate controls a significantly larger number of weed species. Prior to using glyphosate, soybean growers commonly used three to four different herbicides in the same field for weed control. The report quantifies the result of growers' ability to substitute one active ingredient (glyphosate) for alternative treatments that utilized three to four herbicides: an aggregate net reduction of 16 million acre treatments with herbicides.

The NCFAP report points out that the glyphosate applications cause less crop injury to soybean plants than do many of the alternative herbicide treatments. In addition, glyphosate can be used to kill weeds up to five to six inches tall while many alternative herbicides are not effective if the weeds are taller than one to two inches.

The NCFAP report analyzes the costs of using glyphosate for weed control in soybeans in comparison with the costs of previously-used herbicide programs. The report notes that glyphosate programs were priced to be competitive with conventional programs. Since the introduction of glyphosate-tolerant varieties to the soybean market in 1996, prices of glyphosate and competitive herbicides have been reduced by their manufacturers. The report documents a \$220 million net reduction in annual weed control costs for soybean growers in 1998 compared to 1995.

Preparation of the NCFAP report [Agricultural Biotechnology: Benefits of Transgenic Soybeans](#) by Leonard P. Gianessi and Janet E. Carpenter was supported financially by a grant from the Rockefeller Foundation.

The report is available at NCFAP's website: www.ncfap.org

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