

10-11-1999

Genetically modified (GMO) soybeans

Michael D. Duffy

Iowa State University, mduffy@iastate.edu

Follow this and additional works at: <http://lib.dr.iastate.edu/cropnews>

 Part of the [Agricultural Economics Commons](#), [Agricultural Science Commons](#), [Agronomy and Crop Sciences Commons](#), and the [Plant Breeding and Genetics Commons](#)

Recommended Citation

Duffy, Michael D., "Genetically modified (GMO) soybeans" (1999). *Integrated Crop Management News*. 2176.
<http://lib.dr.iastate.edu/cropnews/2176>

The Iowa State University Digital Repository provides access to Integrated Crop Management News for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current information on integrated crop management from Iowa State University Extension and Outreach, please visit <https://crops.extension.iastate.edu/>.

Genetically modified (GMO) soybeans

Abstract

Genetic modification of crops has taken the national and international spotlight in recent months. Crops classified as genetically modified organisms (GMOs) have become increasingly available to Iowa farmers over the past few years. Although GMO crops have gained in popularity, the extent of their impact on costs and returns to Iowa farmers are not fully understood. There have only been a few comparisons of GMO versus non-GMO crops. This article discusses the impact of GMO soybeans versus non-GMO soybeans with cross-sectional data for 1998.

Disciplines

Agricultural Economics | Agricultural Science | Agriculture | Agronomy and Crop Sciences | Plant Breeding and Genetics

INTEGRATED CROP MANAGEMENT

Genetically modified (GMO) soybeans

Genetic modification of crops has taken the national and international spotlight in recent months. Crops classified as genetically modified organisms (GMOs) have become increasingly available to Iowa farmers over the past few years. Although GMO crops have gained in popularity, the extent of their impact on costs and returns to Iowa farmers are not fully understood. There have only been a few comparisons of GMO versus non-GMO crops. This article discusses the impact of GMO soybeans versus non-GMO soybeans with cross-sectional data for 1998.

The source of the data was the 1998 Costs and Returns Survey conducted by the Iowa Agricultural Statistics Service. The survey used personal interviews with farmers to determine the extent and nature of their crop production practices in 1998. The Iowa State Leopold Center for Sustainable Agriculture funded an expansion of the survey in Iowa to increase the reliability of the estimates. There were 365 soybean fields covered in the survey.

Genetically modified soybeans. In 1998, just over 40 percent of Iowa soybean acres were planted with GMO soybeans. Based on the survey, the number of soybean acres planted by a producer did not significantly influence whether or not a GMO variety was used.

The farmers were asked why they planted GMO soybeans. The majority, 53 percent, said they planted them to increase yields through improved pest control. Twenty-seven percent said they used GMO soybeans to decrease pesticide costs. Another 12 percent said they used GMO soybeans to increase planting flexibility, and the remaining 8 percent gave some other reason for using GMO soybeans.

In 1998, GMO soybeans averaged 49.3 bushels per acre. The non-GMO soybeans averaged 51.2 bushels per acre. Thus, on average, the non-GMO soybeans yielded 1.9 bushels more per acre than the GMO varieties.

Farmers using GMO soybeans made an average of 1.00 preplant tillage trips across the field. Those using non-GMO soybeans made an average of 1.45 trips. The use of no-till or drilled soybeans was also higher for those using GMOs. A third of those using GMO soybeans used no-till and 39 percent used drilled soybeans. For the non-GMO soybean farmers, only 13 percent used no-till and 17 percent used drilled soybeans.

Total weed management costs were \$8.74 per acre cheaper with the GMO soybeans. Herbicide costs were \$6.98 per acre lower with the GMO soybeans. Other weed management cost savings were for herbicide applications and row cultivation.

Table 1 shows the cost and return comparison for the GMO and non-GMO soybeans. Total

variable costs are approximately \$9 per acre lower for the GMO soybeans. However, with the slightly lower yield the overall advantage shifts very slightly to the non-GMO soybeans. The difference in returns is less than \$2 per acre without land charges and less than \$5 per acre, including all costs.

Table 1. Average cost and return comparison per acre for GMO and non-GMO soybeans in Iowa (1998).

Cost	GMO	Non-GMO	
Tillage and planting	\$11.59	\$13.06	
Seed	\$26.42	\$18.89	
Total weed management	\$24.91	\$33.65	
Total cost, excluding land and labor	\$115.11	\$124.11	
Return to land, labor, and management*	\$144.50	\$145.75	
Return to management**	\$(11.63)	\$(15.83)	

*Uses a price of \$5.27 per bushel.

**Subtracts a land charge of \$2.80 per bushel and the labor charges reported by Iowa State University.

Conclusions

When considering the results presented herein, it is important to remember that this was a cross-sectional study not a direct comparison. Many factors could have influenced the results.

From the data for 1998, it does not appear that GMO soybeans have a distinct advantage or disadvantage over the non-GMO. There are some added flexibility factors to consider. However, on the average, there does not appear to be any compelling reason to adopt or not adopt the GMO crops.

The GMO situation will continue to be a fluid one. Genetically modifying higher-yielding varieties could improve yields. However, pest resistance could result in higher costs or decreased effectiveness. In 1998, the conclusion from this cross-sectional study was that the use of GMO crops did not matter. Other factors, including marketability, will influence the decision whether or not to use GMO varieties.

This article originally appeared on pages 183-184 of the IC-482(23) -- October 11, 1999 issue.

Source URL:

<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/1999/10-11-1999/gmosoybeans.html>

IOWA STATE UNIVERSITY

University Extension