

BOOK REVIEW

Anonymous 2010. Impact of Genetically Engineered Crops on Farm Sustainability in the United States. The National Academy Press, Washington D.C. 270 pp. ISBN 13-978-0-309-14708-8.

This book is an accomplishment of great merit due to its extremely important subject and high scientific reputation of the authors. In fact this book is authored by over forty members of the “Committee on Impacts of Biotechnology on Farm Level Economics and Sustainability” of the National Research Council and the National Academy of the USA.

It should be emphasized that since genetically engineered crops with entomopathogenic bacterium *Bacillus thuringiensis* were broadly introduced into farming in 1996, their use in the USA has grown rapidly, currently accounting 80–90 percent of soybean, corn and cotton acreage in 2009. To date, crops with the traits that provide resistance to some herbicides and to specific insect pests have greatly benefited adopting farmers by reducing crop losses due to insect infestations, and increasing flexibility in time management, and facilitating the use of more friendly pesticides, and tillage practice. However, it is understood that excessive reliance on a single technology combined with lack of diverse farming practices could undermine the economic and environmental gains from those genetically engineered crops. Other reports of the National Research Council have addressed the effects of genetically engineered crops on the environment and human health. Nevertheless, the final conclusion states that the United States economy greatly benefits from the using broadly genetically BT engineered crops in the national and world economy.

The specific topics and arguments supporting use of genetically engineered plant varieties are well explained and supported in the following chapters: Chapter 1 “Introduction” (p. 1–18); Chapter 2 “Environmental impacts of genetically engineered crops at the farm level” (p. 135–189); Chapter 3 “Farm level economic impacts”

(p. 135–189); Chapter 4 “Farm-system dynamic and social of genetic engineering” (p. 187–212). Chapter 5 “Key findings, remaining challenges, and future opportunities” (p. 213–236). The book contains also: Appendix A – “Herbicide selection” (p. 237–244); Appendix B – “Tillage systems” (p. 245–246). Appendix C – “Biographical sketches of Committee Members” (p. 247–250).

The scope of the book is so broad and complex that it is impossible to characterize its contents in a short review. Therefore, the interested individuals are advised to read it carefully and to make their own conclusions. However, the most important findings and final statements are the following: (1) Genetically engineered crops may have social impacts similar to previous advanced technological developments in agriculture; (2) Many adopters of genetically engineered crops have experienced either lower costs of production or higher yields and sometimes both; (3) Reliance on one herbicide reduces its effectiveness as a weed-management tool; (4) Targeting specific insect pests with Bt-toxins in corn and cotton has been successful, and insecticide use has decreased with the adoption of insect resistant crops; (5) The adoption of herbicide-resistant crops could help improve water and soil quality by reducing the need for tilling; (6) The transfer of genetically engineered traits from genetically engineered crops to other crops of relatives has not been a concern for most types of crops.

The authors emphasize that this book contains the first comprehensive assessment of the environmental, economic, and social impacts of the GE-crop revolution on the United States farms. It also addresses how GE crops have affected American farmers, both adopters and non-adopters of the technology, their incomes, agronomic practices, production decisions, environmental resources, and personal well-being. This book offers several new findings and recommendations that can be very useful to farmers, industry, science organizations, policy makers and others in government agencies.

The full text of the book is freely available at the address:

http://books.nap.edu/catalog.php?record_id=12804

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