Size and Distribution of Market Benefits From Adopting Biotech Crops

Gregory K. Price, William Lin, José B. Falck-Zepeda, and Jorge Fernandez-Cornejo

Abstract

This study estimates the total benefit arising from the adoption of agricultural biotechnology in one year (1997) and its distribution among key stakeholders along the production and marketing chain. The analysis focuses on three biotech crops: herbicide-tolerant soybeans, insect-resistant (Bt) cotton, and herbicide-tolerant cotton. Adoption of these crops resulted in estimated market benefits of $212.5-$300.7 million for Bt cotton, $231.8 million for herbicide-tolerant cotton, and $307.5 million for herbicide-tolerant soybeans. These benefits accounted for small shares of crop production value, ranging from 2 percent to 5 percent. U.S. farmers captured a much larger share (about a third) of the benefits for Bt cotton than with herbicide-tolerant soybeans (20 percent) and herbicide-tolerant cotton (4 percent). Innovators' share ranged from 30 percent for Bt cotton to 68 percent for herbicide-tolerant soybeans. For herbicide-tolerant cotton, U.S. consumers and the rest of the world (including both producers and consumers) received the bulk of the estimated benefits in 1997. Estimated benefits and their distribution depend on the specification of the analytical framework, supply and demand elasticity assumptions, the inclusion of market and nonmarket benefits, crops considered, and year-specific factors (such as weather and pest infestation levels).

Keywords: Agricultural biotechnology, distribution of benefits, Bt cotton, herbicide-tolerant cotton, herbicide-tolerant soybeans.

Acknowledgments

Contents