

## Herbicide Use in Argentina Has Led to \$30+ Billion in Worldwide Economic Benefits

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A series of changes in government policies and economic conditions resulted in stagnation of crop production in Argentina in the 1980s (rising export taxes, frozen bank accounts, deep debt, and the total collapse of credit [1]). Argentine farmers minimized their use of inputs as a risk management strategy at a time of economic instability [2]. Since the 1990s, the acreage and production of grain and oilseed crops (particularly soybeans and maize) have increased dramatically (Figure 1). The primary cause of the expansion of production and economic viability of soybean and maize production in Argentina was the widespread adoption of herbicides (particularly glyphosate) for weed control. Increased use of glyphosate facilitated the rapid adoption of no-till crop production (Figure 2) reversing decades of destructive farming practices leading to higher crop yields, economic viability and expansion of planted acres.

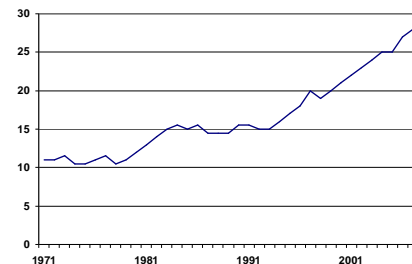


Figure 1: Argentina, Grains and Oilseeds (Million Ha)

In Argentina, tillage had been the traditional way of removing weeds from crop fields. However, tillage caused reductions in soil nutrients, soil organic matter, soil structure, and soil moisture and increased soil erosion [3]. In the early 1990s, some Argentine researchers cited empirical and experimental evidence of the potential for no-till using herbicides instead of tillage to reverse the negative effects of tillage [4]. At the same time, the possibility to increase total production and supply both the domestic and the international market was perceived by Argentinean farmers as an important opportunity [5]. A farmer-led organization AAPRESID (Argentinean No Till Farmers Association) was founded to promote the adoption of no-till. Research demonstrated that an additional four inches of soil water was accumulated in the no-till system, which facilitated the expansion of soybean and maize acreage into areas where water availability had limited plantings [3]. In many cases, no-till reduced erosion by 90% from 10 or more tons per hectare [3]. Soybean yield increased by 11% while the cost of production decreased due to savings in fuel and labor costs [6]. Effective, inexpensive herbicides made the no-till system viable in Argentina.

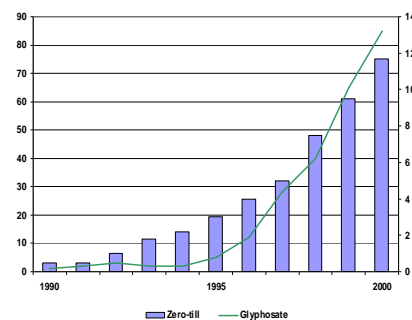


Figure 2: Argentina, Area Under Zero-till (Million Ha, right) and Glyphosate Use (Million liters, left)

The cumulative benefits to Argentinean farmers of the adoption of no-till from 1991-2008 has been estimated at \$12.0 billion in increased gross income and \$4.7 billion in decreased production costs[2]. Worldwide consumers of soybeans and maize have benefited from the additional production from Argentina, which has helped keep global food prices from escalating. The cumulative benefit of reduced prices to worldwide consumers of soybean and maize and on prices of any consumer products that include those commodities has been estimated at \$17.0 billion from 1991-2008 [2].

### References

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