

Stacked Trait Corn Hybrids May Increase Corn Yields

URBANA, ILL.

A new study by University of Illinois agricultural economists challenges the assumption that improved technology has recently caused corn trend yields to increase at a faster rate.

"There has been considerable discussion in the agricultural community that improved technology has caused corn trend yields to increase at an increasing rate in recent years," said Scott Irwin, who prepared the study with former graduate student Mike Tannura and Department of Agricultural and Consumer Economics colleague Darrel Good. "There has been a fairly widespread acceptance that a new and higher trend began in the mid-1990s, and it should be used as a starting point for estimating future yields."

Their full report, "Are Corn Trend Yields Increasing at a Faster Rate?" (http://www.farmlandoc.uiuc.edu/marketing/mobr/mobr_08-02/mobr_08-02.html) is available in the Marketing and Outlook Briefs section of U of I Extension's farmlandoc website.

The authors investigated whether trend yields in the U.S. Corn Belt have actually accelerated since the mid-1990s. They examined the impact of weather and technology on corn yields from 1960 to 2007 in three states – Illinois, Iowa, and Indiana.

"We did not find evidence of a noticeable increase in the trend rate of yield growth for corn in Illinois, Iowa, and Indiana was not yet evident in the data through 2007," said Irwin. "Much of the increase in observed yields since 1996 has been the result of generally more favorable weather than experienced in the prior two decades.

"At the same time, there is some experimental evidence from university trials and anecdotal evidence from producers that stacked trait corn hybrids may be increasing corn yields."

The authors, however, urged caution in assuming that there has been a biotechnology-driven jump in corn trend yields until the increase is confirmed in large-scale yield data.

If there is an escalating upswing in corn trend yields, how should producers and policymakers respond?

"This question is important not only to individual producers, but also to current policy debates about the amount of additional acreage that will be needed for corn production in the future to meet ethanol-driven demand growth," Irwin said.

The authors' comparison of the trend yield projections to the historical record of Illinois corn yields suggests two important conclusions.

"First, reaching a trend yield of 300 bushels per acre in Illinois in 2030 would require a rate of growth that is unprecedented – six bushels per year," said Irwin. "Second, a jump in the current trend yield growth rate from 1.7 bushels to three bushels per year is within the range of historical experience since 1940."

The authors also raise the possibility that something of a historical cycle may be at work. In 1969, Louis Thompson looked at the impact of weather and technology on corn production and concluded a prolonged cool period between periods of warmer than normal weather had led to an increase in production.

In 1975, Thompson again noted the importance of weather and questioned whether technological advances could ever overcome its influence.

"More unfavorable weather for the development of corn followed in 1980, 1983, and 1988," Irwin noted. "This further identified the 1960s through the early 1970s – the period that Thompson first studied – as a favorable weather period.

"The obvious question is whether a parallel should be drawn between the weather patterns over 1960-1972 versus 1973-1995 and 1996-2007 versus future years. Without taking a position on the existence of long-term weather cycles or the potential impacts of global warming, history certainly suggests a good deal of caution in projecting recent and favorable weather patterns into the future." Δ