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Choosing corn hybrids

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Abstract

What management decision can make a 40 to 50 bushel per acre difference in grain yield without increasing input costs? If you've read the title to this article, you can probably guess the answer: hybrid selection! Hybrid selection is a critical component for achieving high yields and yet is not often given enough attention. Seed prices in Iowa are increasing about \$1.30 per acre per year (Figure 1). This increase will continue as more genetic traits and stacks become available.

Keywords

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Choosing corn hybrids

by Roger Elmore, Lori Abendroth, and Jim Rouse, Department of Agronomy

What management decision can make a 40 to 50 bushel per acre difference in grain yield without increasing input costs? If you've read the title to this article, you can probably guess the answer: hybrid selection!

Hybrid selection is a critical component for achieving high yields and yet is not often given enough attention. Seed prices in Iowa are increasing about \$1.30 per acre per year (Figure 1). This increase will continue as more genetic traits and stacks become available. Over the past 30 years, Iowa corn producers have seen a yield gain of 2 bushels per acre per year. Yet today, it is possible to have two hybrids grown in the same field with identical inputs that differ in yield by up to 40 to 50 bushels (Figure 2).

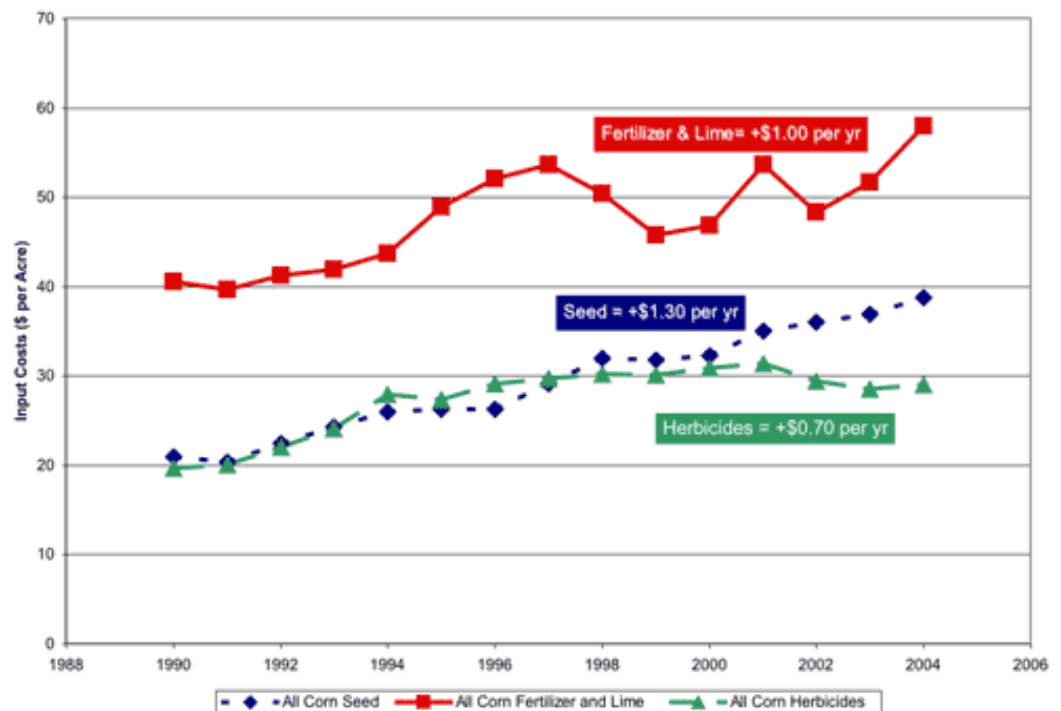


Figure 1. Corn costs per acre by input class. Iowa Farm Business Association, Mike Duffy, Dec. 2005.

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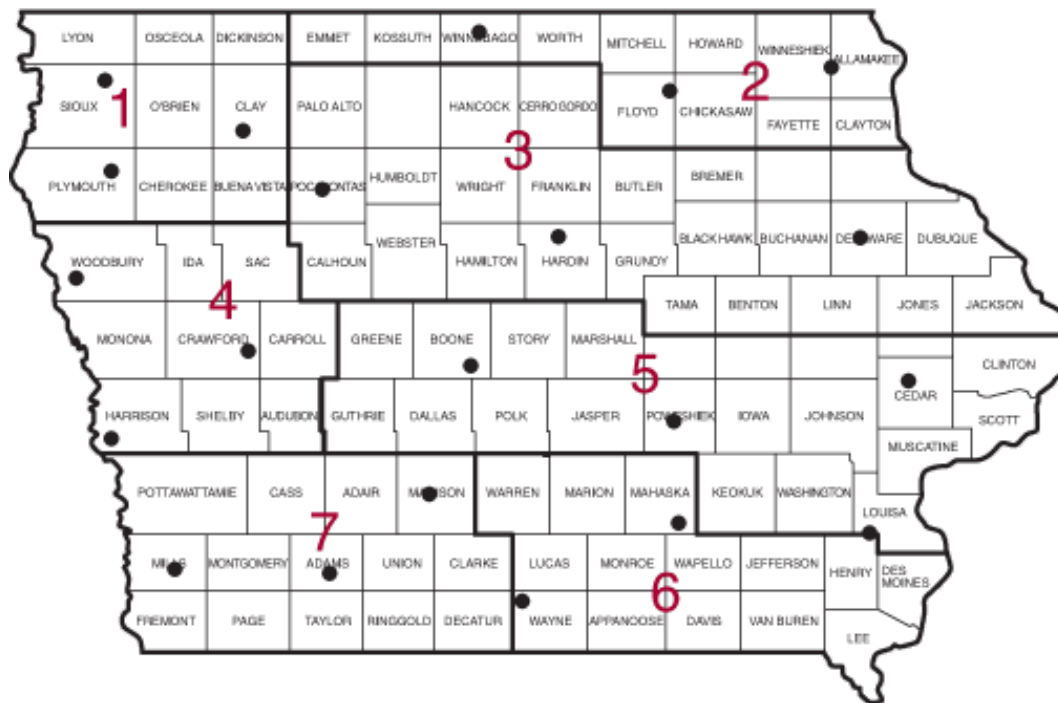


Figure 2. Average yields and yield ranges from the 2005 Iowa Crop Performance Test-Corn. District 1: Average 171 (range 138–192), District 2: Average 202 (range 171–221), District 3: Average 204 (range 179–224), District 4: Average 187 (range 172–202), District 5: Average 197 (range 170–220), District 6: Average 168 (range 146–191), District 7: Average 192 (range 164–213).

Important hybrid characteristics

- Yield, yield, and yield! Selecting a hybrid for its yield potential is the producer's opportunity to set the bar high for the coming year. Stresses that occur during the season may reduce the yield potential of that particular hybrid. Therefore, it is crucial to select a high-yielding hybrid that has the potential to do extremely well in your particular field. A producer cannot make a "bad" hybrid "good"—proper hybrid selection cannot be overstressed.
- Balance yield with reasonable grain moisture. Hybrids must be well adapted and suited specifically to the area where they will be grown.
- Standability is key for maintaining the yield potential established during pollination. Yields of some hybrids in the 2005 Iowa State University hybrid trial at Sheldon had significant lodging (assessed at harvest, Figure 3). Yields, on average, were reduced by almost 1/2 bushel per acre for every 1 percent increase in lodging. Lodging ranged from 14 to 100 percent depending on hybrid. Midseason standability also is important; Iowa producers must consider a hybrid's resistance to greensnap.
- Insect and disease tolerance are always important concerns.
- Genetically modified traits are more important today than ever. These traits are potentially excellent yield-protection tools if they are used when and where they are needed.

We must make sure we have a legitimate need before selecting hybrids with them.

Information sources: unbiased data

The primary source of data must come from an unbiased source—one that is not promoting any product or company. Although company and private trials are good sources of data to consider, they should never be the sole source of information used in hybrid selection. Most land-grant universities conduct well-designed, statistically sound, replicated, and randomized hybrid trials. Using current data from university research is especially important because of the short life associated with today's hybrids. Many university agronomists across the Corn

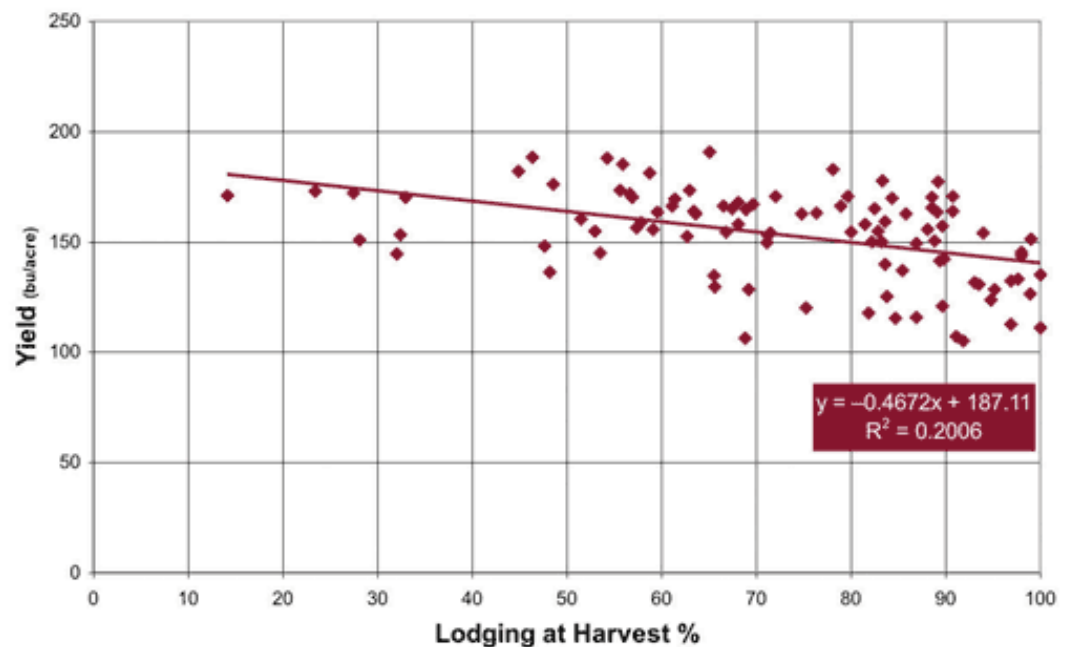
Belt affirm that a producer's chance of having a high-yielding hybrid significantly increases if they select a hybrid that performs well across multiple sites and/or years versus one that simply does well on their farm or in a trial somewhere the previous year. The strength of using university results comes from the ability to compare the yield potential of numerous hybrids in multiple locations and multiple seasons.

The Iowa State University program is conducted in cooperation with the Iowa Crop Improvement Association. Data are published at the end of the harvest season and [on the Web](#). After midsummer, visit www.croptesting.iastate.edu.

Data from 2005 were available last fall. In 2006, the trials will be conducted at 18 locations. Data from each 2006 location will be on the above Web site as soon as statistical analysis is conducted. This is usually only a day or two after the trial is harvested. Producers must be wary of "saving money" in the fall from early hybrid discounts. The potential for profit is much greater if the producer looks at multiple yield results before making any hybrid selections.

Diverse hybrids

Finally, growing diverse hybrids is imperative! We don't want to plant hybrids that perform similarly across numerous locations. Of course, we must choose hybrids that are consistently high yielding with reasonable grain moisture content, but we don't want hybrids that look identical in all the other traits that we can select for. If three high-yielding hybrids perform the same across several locations in university research, plant only one of them. Yet, if there are differences in genetic traits, maturity, or disease susceptibility, then planting all three of them is a good idea because it spreads your risk and increases the potential for having high yields.



Corn yield and lodging from the 2005 Iowa Crop Performance Test-Corn.

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