

BETWEEN THE ROWS

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DELAYED PLANTING AND FACTORS INFLUENCING PERFORMANCE

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Background

When wet conditions delay corn planting, growers start to consider changes in field operations that allow planting to occur with as little additional delay as possible. Several field operations can be adjusted with little impact on overall performance. Hybrid selection, however, is one of those management decisions that needs to be held firm despite delayed planting conditions.

Hybrid performance from past seasons can help determine the best product mix for growers. Part of the performance information package considers adaptability to various agronomic situations. A product with excellent performance is likely adapted to many conditions, including late planting.

Factors Influencing Hybrid Performance

In the central cornbelt, we generally have about a 3- week window that is described as the “optimum” planting date for maximum yield performance. This is based on planting date research by various agronomic research organizations both public and private. This window is generally about April 20 through May 10 over most of our marketing area. This date may be a little earlier in the south and slightly later in the north. After this optimum window, yields can show a slow decline in performance, but this is affected by the rest of the growing season and is not the same every year.

Several other factors besides a later planting date influence yield performance. Factors that influence this yield decline from late planting could include:

- 1) Shorter growing season (including fewer GDU accumulation and shorter day length during grain fill).
- 2) Increased insect and disease pressure (some corn insect and disease pressure builds during the growing season).
- 3) Moisture or heat stress (risk of heat or drought stress increases late in July and August).

Because of these factors influencing yield, many growers try to plant early.

Declining yield performance from late planting is a relative term and is based on averages of several years of performance data, and probably cannot be counted on to be accurate under every circumstance. However, it can be used as a guide to help manage the planting season operations. Bob Nielsen, Purdue Agronomist, in a recent article explains that planting date only accounts for about 11-12% of variability in yield trend departures from year to year. In other words, a number



of yield influencing factors other than planting date also affect the ultimate maximum yield for a given year.

Hybrid selection is normally based on planting within the “optimum” window for maximum performance. Our experience tells us that any hybrid change should be delayed as long as possible to take advantage of the yield performance of the first choice group of hybrids. Switching to earlier products can reduce yield potential in addition to the later planting date impact. A general recommendation would be to consider hybrid maturity as a factor after about May 25 in most areas.

Wyffels Research published a report in 2008 explaining the effect of delayed planting on corn development. The report describes how hybrids adapt to later planting by shortening the number of days for each stage of development. This adjustment to the growing season allows hybrids to be planted later than expected.

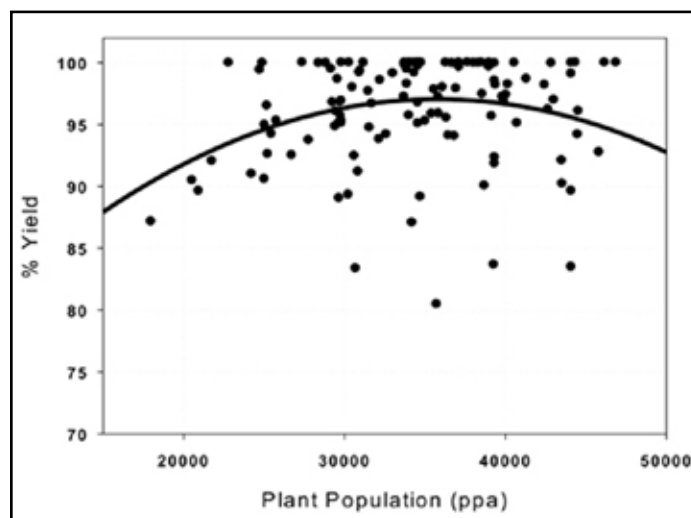
The report also lists the average GDUs available during the growing season for each month and can be used to calculate the remaining growing season on any possible planting schedule. (see the report at Wyffels.com under Agronomic Information, then Agronomic Updates Archives.)

Replant Considerations

Early planted fields that may have been affected by conditions that have reduced stands may need evaluation for possible replant. Hybrids usually require about 125 GDU for emergence to occur. If less than that has been accumulated, stand evaluation may be premature. Any replant decision should

be based on the current stand and crop condition or health, and the estimated yield potential of that stand from the initial planting date. This should be compared to the potential yield possible from a given replanted stand at the new planting date. The high cost of inputs (seed, fuel, machinery, fertilizer, herbicide, and labor) and the potential crop revenue create an important economic decision. Don't make a final assessment too quickly. The decision should be based on strong evidence that replanting will not only cover replant costs, but also net enough to make it worth the effort.

A new replant chart, shown below, published by Iowa State University, takes into account recent yield data, planting trends, and modern ranges in plant populations. The chart reflects the high population planted by many growers and demonstrates where the optimum plant population range is, based on performance testing at numerous locations. In addition to the replant chart, the data is presented in a graph that reports 3 years of data that identifies maximum grain yield occurring between 34,500 and 37,000 plants per acre.



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Table 1. Relative yield potential of corn by planting date and population					
	Planting Date				
	April 20– May 5	May 5– 15	May 15–25	May 25– June 5	June 5–15
Population (Plants/Acre)	Percent Maximum Yield				
45,000	97	93	85	68	52
40,000	99	95	86	69	53
35,000	100	96	87	70	54
30,000	99	95	86	69	53
25,000	95	91	83	67	51
20,000	89	85	77	63	48
15,000	81	78	71	57	44
10,000	71	68	62	50	38

Note: Values based on preliminary Iowa research and modeling; 100% yield potential is estimated to occur with 35,000 plant population and early planting. From: Iowa State University Extension, Corn Field Guide, CSI 001. 2009. In Press.

Replanting is not without some risk. There is no guarantee you will achieve the desired stand. Untimely rains or other factors could reduce the performance of the replanted stand compared to the yields indicated on the replant chart. Hybrid maturity may need adjusted because of the planting date and higher drying cost may also occur. The replanting chart can only be a guideline for making the replant decision; it may not apply to all situations. Each replant evaluation needs separate consideration.

