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Hybrids adjust to delayed planting dates

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Abstract
Producers are delayed again in regard to planting due to the recent rainfall across all of Iowa. The optimum planting window for corn generally falls from April 15 to May 15 with yields quickly declining after that; see Corn Planting: Consider soil temperature and date for more information. Although producers are currently still within this optimum window, some are questioning whether longer season maturity hybrids should be swapped for shorter season hybrids. The quick answer is no.

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Hybrids adjust to delayed planting dates

by Lori Abendroth and Roger Elmore, Department of Agronomy

Producers are delayed again in regard to planting due to the recent rainfall across all of Iowa. The optimum planting window for corn generally falls from April 15 to May 15 with yields quickly declining after that; see Corn Planting: Consider soil temperature and date for more information. Although producers are currently still within this optimum window, some are questioning whether longer season maturity hybrids should be swapped for shorter season hybrids. The quick answer is no.

Hybrids can respond to delayed planting dates. The time spent in vegetative and reproductive development will be greater or less depending on planting date and relative maturity of the hybrid. Two ways exist to examine hybrid response to planting dates, either by calendar date or growing degree day (GDD) accumulation; here calendar dates are discussed only.

Researchers studied the response of three hybrids with relative maturity ratings of 106, 111, and 115 across three planting dates. The research was published in 2002 by colleagues at Purdue University and The Ohio State University. Planting dates were defined as Early (generally April 25-May 10), Mid (generally May 20-June 1), and Late (generally June 10-15). Researchers measured the time required to reach a number of key developmental stages; here we will look at three primary times: (1) the total number of days from planting to silking (R1), (2) the total number of days from silking to physiological maturity (R6), and (3) the total number of days from planting to physiological maturity. The number of days within these categories provides clarity on how hybrids vary in their (1) vegetative (V stages), (2) reproductive (R stages), and (3) complete development based on planting date.

A few interesting points were identified from the research. **First, as planting date was delayed, all hybrids shortened the time between planting and silking**; in other words, the time allotted to vegetative growth was reduced. Across the three hybrids, days from planting to silking were 75, 66, and 61, respectively, for Early, Mid, and Late planting dates. Although the exact number of days will differ based on the relative maturity of a hybrid (greater for longer season maturity, less for shorter season maturity), the downward trend was consistent for all three hybrids.

Second, the number of days between silking and physiological maturity varied by hybrid and planting date. But **all hybrids, when planted late, increased the number of days**

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between silking and physiological maturity. Across the three hybrids, days from silking to physiological maturity were 63, 66, and 68, respectively, for Early, Mid, and Late planting dates. Some hybrids, though, responded more than others. By looking at the individual hybrid response to each planting date, the researchers found that the longer season (115 RM) hybrid was more consistent in the time needed to go from R1 to R6; whereas the 106 and 111 RM hybrids responded to planting date with greater variation. The 115 RM hybrid only fluctuated by 1-2 days across all planting dates. Yet, as planting was delayed, the 106 and 111 RM hybrids took up to 5 days longer to go from R1 to R6 compared to the Early planting. Therefore, the 115 RM hybrid was fairly consistent in the time needed to go from R1 to R6 and independent of planting date. The 106 and 111 RM hybrids, however, fluctuated more relative to planting date.

Third, hybrids change the length of time from planting to silking more than the time from silking to physiological maturity. In general, the reduction in time spent in vegetative growth outweighs the increased time spent in reproductive growth. Note the above data for hybrid response to Late versus Early plantings; time in vegetative growth was reduced by 14 days (75 - 61 = 14-day reduction for Late) whereas time in reproductive growth was increased by 5 days (68 - 63 = 5-day increase for Late). The summation of these values shows that the hybrids adjusted to the shorter growing season by a reduction of 9 days total (-14 + 5 = -9 days). It is clear that hybrids compensate mostly by shortening the time necessary to reach silking when planting is delayed.

Although Iowa corn acres will be planted later than previous years, switching hybrids at this point is not needed. Hybrids can compensate for these later planting dates. Producers will obviously want to plant longer season hybrids as soon as they can to allow for the longest growing season. Development and final yield of these hybrids will not be largely affected unless frost occurs especially early this fall.

Find other corn production information at the Iowa State University Extension Corn Production Web site. Submit comments and questions to isucorn@iastate.edu.

For the full research paper: Nielsen, R.L., P.R. Thomison, G.A. Brown, A.L. Halter, J. Wells, and K.L.Wuethrich. 2002. Delayed planting effects on flowering and grain maturation of dent corn. *Agron*. J. 94:549-558.

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