

Late Planting/Replanting & Relative Hybrid Maturity

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Even though Indiana's corn planting pace is essentially on par with the 5-year average (74% planted as of May 14 vs. 70% planted 5-yr average according to USDA-NASS¹), much of the remaining quarter of the state's corn crop will likely be planted later than desired due to the excessive rainfall that occurred throughout the state for most of a seven-day period. Additionally, some of the early-planted crop may require replanting if plant populations are reduced due to soggy soils and/or disease.

A large section of central and northern Indiana received 2 to 4 inches of rainfall over about 7 days, while much of southern Indiana received 0.5 to 2 inches (based on 7-day precipitation amounts ending 7am 5/16/06, NOAA-NWS Precipitation Analysis, online at http://www.srh.noaa.gov/rfcshare/precip_analysis_new.php). Because of wet and slowly drying fields, some corn planting may not resume until near the end of the month.

Some of the locals who frequent the Chat'n Chew Café are beginning to question whether they should consider replacing their remaining full-season corn hybrids with shorter-season versions. They are worried that full-season hybrids planted in late May or early June may not mature safely before the first killing fall frost.

Fortunately, previous research has indicated that delayed planting results in hybrids maturing in fewer than expected Growing Degree Days (GDDs) from planting (Nielsen et al., 2002). The number of GDDs required from planting to physiological maturity in corn decreases nearly 7 GDDs per day of delayed planting after May 1. An example would be that a hybrid planted June 1 will mature approximately 210 GDDs sooner than it would if planted May 1 (30 days times 7 GDDs/day).

The bottom line from this research is that a given hybrid maturity can be planted later than we once thought possible and still mature safely before a killing fall frost. Nevertheless, at some point on the calendar, growers need to consider switching to earlier maturity hybrids to minimize the risk of frost damage in the fall.

The tables that follow summarize the delayed planting effect on hybrid GDD requirements and present the results in terms of "safe" hybrid maturities for a range of

¹ USDA-NASS. 15 May 2006. Indiana Crop & Weather Report. Online at http://www.nass.usda.gov/Statistics_by_State/Indiana/Publications/Crop_Progress_&_Condition/2006/we2006.pdf [URL verified 5/16/06].

delayed planting dates (see Nielsen & Thomison, 2003, for more information). Both tables assume a fall frost date that is based on a 50% risk of frost occurring by a given date for individual crop reporting districts around the state.

Table 1 targets physiological maturity occurring the week that a killing frost is expected to occur. Table 2 targets physiological maturity occurring the week before a killing frost is expected to occur. The hybrid maturities listed in Table 1 are therefore a bit more risky than those listed in Table 2.

The hybrid maturities are described in terms of “CRM” or comparative relative maturity ratings as defined by Pioneer Hi-Bred International, partly because most growers can relate to those definitions. More importantly, Pioneer publishes hybrid data for both CRM ratings and GDDs from planting to physiological maturity that then allow us to estimate the “safe” hybrid maturities listed in these tables (<https://www.pioneer.com/growingpoint>).

The tables indicate that growers in the southern third of Indiana could continue to plant full-season hybrid maturities through at least June 10. Growers in the northern third of the state and eastcentral Indiana should consider switching to earlier maturing hybrids if planting is delayed into early June.

Related References

Nielsen, Robert L., Peter R. Thomison, Gregory A. Brown, Anthony L. Halter, Jason Wells, and Kirby L. Wuethrich. 2002. **Delayed Planting Effects on Flowering and Grain Maturation of Dent Corn.** *Agron. J.* 94:549–558.

Nielsen, R.L. (Bob) and Peter Thomison. 2003. **Delayed Planting & Hybrid Maturity Decisions.** Purdue Univ. Cooperative Extension Publication AY-312-W. Available online at <http://www.agry.purdue.edu/ext/pubs/AY-312-W.pdf> [URL verified 5/16/06].

Table 1. Approximate “safe” relative hybrid matuities for late planting dates in Indiana with the **assumption that the hybrid will mature the week of the expected first fall frost date.** The expected fall frost date is that based on a 50% risk of frost occurrence. The acronym “CRM” refers to Comparative Relative Maturity as defined by Pioneer Hi-Bred International.

Crop Rpt District	"Typical" CRM	Planting date...			
		Expected fall frost date	27-May	3-Jun	10-Jun
Approx. "safe" relative maturity					
NW	109	6-Oct	109	107	104
NC	109	6-Oct	109	107	104
NE	109	6-Oct	107	105	102
WC	112	13-Oct	119	117	113
C	112	13-Oct	117	114	111
EC	109	6-Oct	110	107	104
SW	116	20-Oct	118+	118+	118+
SC	113	13-Oct	118+	118+	118
SE	113	13-Oct	118+	118+	118+

Table 2. Approximate “safe” relative hybrid maturities for late planting dates in Indiana with the **assumption that the hybrid will mature one week before the expected first fall frost date.** The expected fall frost date is that based on a 50% risk of frost occurrence. The acronym “CRM” refers to Comparative Relative Maturity as defined by Pioneer Hi-Bred International.

<u>Crop Rpt</u>	<u>"Typical"</u>	<u>Planting date...</u>			
		<u>Expected</u>	<u>27-May</u>	<u>3-Jun</u>	<u>10-Jun</u>
<u>District</u>	<u>CRM</u>	<u>fall frost</u>	<u>Approx. "safe" relative maturity</u>		
NW	109	6-Oct	107	105	102
NC	109	6-Oct	106	104	101
NE	109	6-Oct	104	102	99
WC	112	13-Oct	117	114	111
C	112	13-Oct	114	112	109
EC	109	6-Oct	107	105	102
SW	116	20-Oct	118+	118+	118+
SC	113	13-Oct	118+	118	115
SE	113	13-Oct	118+	118+	116

Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the Web at <http://www.kingcorn.org/cafe>. For other information about corn, take a look at the Corn Growers' Guidebook on the Web at <http://www.kingcorn.org>.

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