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Delayed Planting & Hybrid Maturity Decisions

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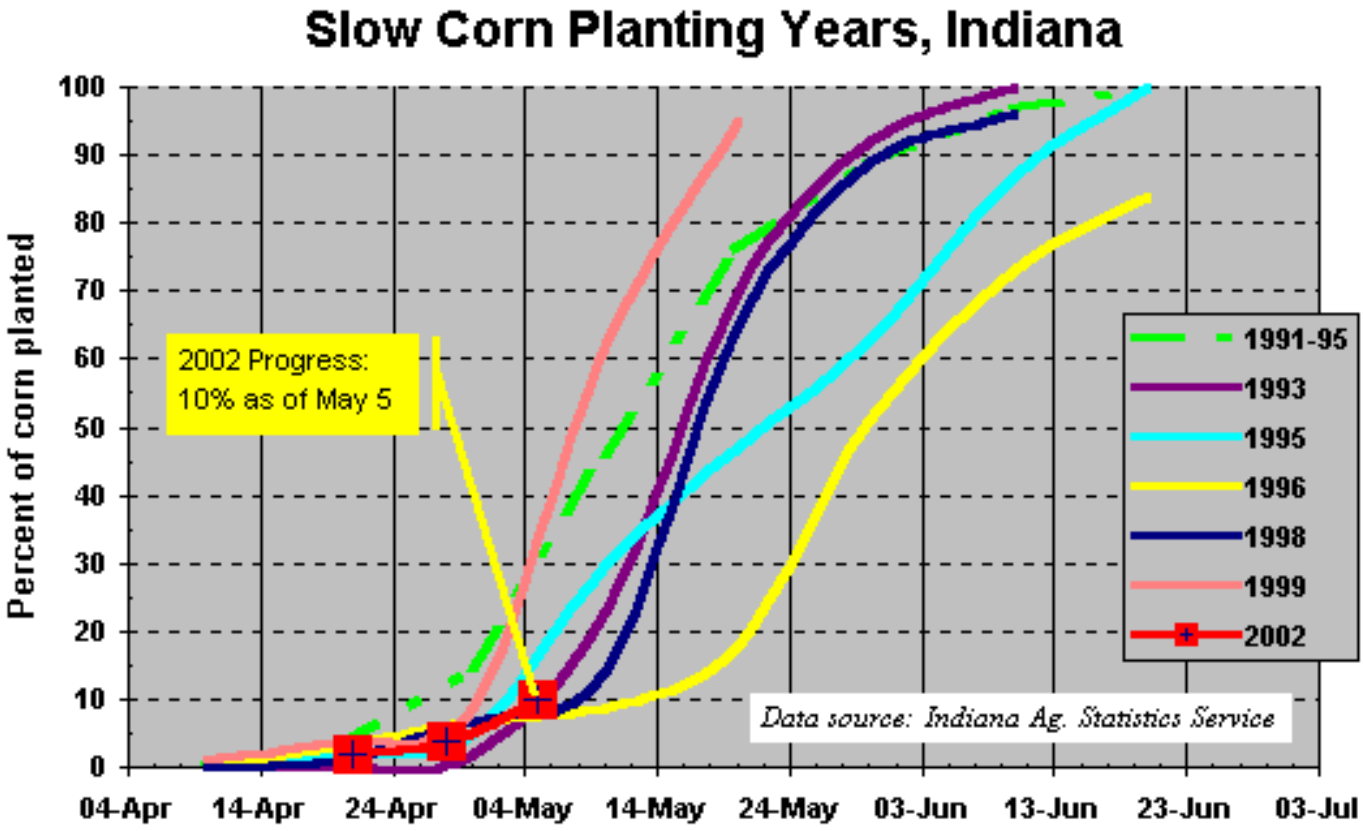
- Delayed planting shortens the available growing season for corn.
- Fortunately, corn hybrids adjust to shortened growing seasons.
- Adapted hybrid maturities can be planted in Indiana until late May.

After a weekend of wonderful drying weather, the rainfall that began again Monday morning threatens to delay corn planting throughout the state even further. One of the obvious decisions that farmers need to be considering as planting is further delayed is whether or when to switch from their normal "full season" hybrid maturities to earlier maturity ones in response to the ever-shortening growing season.

That decision is somewhat murky because the definitions for "full season" maturity vary from one farmer to the next. The definitions that I use are listed in Table 1 on the geographic basis of USDA Crop Reporting Districts. The hybrid maturities are described both in terms of comparative relative maturity (CRM) and growing degree days (GDDs). As a reference point, the CRM values and associated GDDs correspond most closely with those used with Pioneer™ brand hybrids.

Some will look at the hybrid maturity values in Table 1 and wonder where on earth I come up with some of the definitions for "full season" maturities for parts of the state. In particular, growers in

the northern and east central areas of Indiana often plant hybrids with later maturities than those listed in Table 1 in an attempt to capture higher yields with fuller season hybrids. Such later maturities, though, 'push the envelope' in terms of their riskiness for maturing safely before a typically-occurring first fall frost. The values listed in the table more closely address a goal with normal planting dates for grain maturation to occur about two to three weeks prior to the average first fall frost (32F).



By contrast, some growers in southern Indiana may wonder why the hybrid maturities listed in Table 1 are so 'early'. Indeed, the available GDDs in southern Indiana would allow the use of hybrid maturities that are five to ten days CRM later than what are listed in the table. Over the years, though, growers have discovered that the earlier maturity hybrids will yield as well as the true "full-season" hybrids, but will dry down earlier in the season.

Given the "full season" maturities listed in Table 1 for normal late April – early May plantings, when should earlier maturities be substituted as planting is delayed? Some years ago, Peter Thomison (Ohio State Univ.) and I collaborated on field research that investigated the effects of delayed planting on the GDD needs of different hybrid maturities.

That research, conducted by former graduate students Greg Brown and Tony Halter, indicated that delayed planting decreases hybrid GDD requirements from planting to maturity. In fact, as planting is delayed beyond about May 1, the number of GDDs from planting to kernel black layer

(physiological maturity) decreases by about 6.8 GDDs per day of delayed planting. The consequence of this research is that adapted "full season" maturities can be planted much later than previously thought and still mature safely prior to the average date of a killing freeze in the fall.

Based on our research, we can more accurately determine when to “pull the trigger” for switching from fuller season to earlier season hybrid maturities with delayed plantings. The good news is that hybrid maturities adapted for Indiana (Table 1) will mature safely when planted throughout most of the month of May. Once planting is delayed further, the ever-shortening growing season (measured by estimated available GDD) finally exceeds the fuller-season hybrids' abilities to adjust their developmental GDD needs.

Table 1. Normal "full season" hybrid maturities for geographic areas of Indiana and their corresponding approximate GDD ratings from planting to kernel black layer.

Area of Indiana	"Normal" adapted CRM	Approximate GDDs to black layer
NW	109	2632
NC	109	2632
NE	109	2632
WC	112	2707
C	112	2707
EC	109	2632
SW	116	2807
SC	113	2732
SE	113	2732

Hybrid CRM (comparative relative maturity) values and GDD ratings correspond closely with those used by Pioneer Hi-Bred International, Inc.

Table 2 lists the hybrid relative maturity values that should safely mature prior to a fall frost (32F) when planted from late May through early June in Indiana. These ‘safe’ hybrid maturities were estimated for the various Crop Reporting Districts according to the available length of growing season for each planting period, the average date of the first fall frost (32F), and adjustments based on the hybrid GDD response to delayed planting.

BEAR IN MIND that these estimates of safe hybrid maturities are aimed at achieving grain

maturation no later than the average (50% probability) date of the first light freeze (32F) in the fall. Such frost events normally injure corn leaves, but do not kill the corn plant. These dates generally range from the first through the third weeks of October from northern to southern Indiana. Also recognize that northern Indiana farmers who already ‘push the envelope’ by planting 113-day CRM maturities or greater should begin switching to more adapted maturities of about 109-day CRM maturities by about May 20.

Table 2. Approximate ‘safe’ hybrid relative maturities for delayed plantings throughout Indiana. Shaded values indicate hybrid maturities that are earlier than what is considered normal "full season" for that area of the state (Table 1).

	CRM appropriate for plantings no later than:		
Area of Indiana	**May 27**	**June 3**	**June 10**
NW	109	106	103
NC	107	104	101
NE	107	104	101
WC	112	112	111
C	112	112	109
EC	108	105	102
SW	116	116	116
SC	113	113	113
SE	113	113	113

Hybrid CRM (comparative relative maturity) values correspond closely with those used by Pioneer Hi-Bred International, Inc.

KingCorn.org The Corn Growers' Guidebook

For other information about corn, take a look at the Corn Growers Guidebook on the World Wide Web at

http://www.kingcorn.org

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