



Agronomic Spotlight



Considering Changing Corn Relative Maturities?

Many growers in Northern Illinois are concerned about planting full season corn products in late April and early May. Due to slow growing degree unit (GDU) accumulation early in the growing season and corn's ability to adapt the GDUs required for flowering and maturity when planted late, switching to an earlier relative maturity (RM) is not recommended at this time.

GDU Accumulation

Corn requires approximately 1250-1360 GDUs to reach mid-pollination and 2550-2800 GDUs to reach black layer, depending on the product. During planting, accumulation of GDUs is minimal compared to flowering and drydown (Table 1). A delay in planting of five days means a loss of 45 GDUs. That means it would take approximately 2 more days for the corn to reach maturity in the fall as GDU accumulation in July and August is approximately 21 per day.

Changes in GDU Requirements

As planting occurs after May 1st, corn requires approximately 1.6 fewer GDUs per day of delayed planting to reach flowering. GDUs required to reach physiological maturity, or black layer, decreases approximately 6.8 GDUs per day of delayed planting after May 1st. Table 2 provides an example of the

Table 2. An example of GDUs required by corn when planted on different planting dates.

Planting Date	GDUs to Mid-pollination	GDUs to Black Layer
April 15	1320	2800
May 15	1298	2705

GDU requirements of a typical full season corn product planted in April compared to May 15th. These adjustments are important to consider when contemplating switching to a different relative maturity.

In 2008, a field trial comparing planting dates in Rochelle, IL (Ogle county) was established. The "normal" planting date of April 27th averaged 187 bu/acre, while the "late" planting on June 2nd yielded 149 bu/acre. In general, the highest yielding hybrids in the normal-planted trials were also the highest yielding in the late-planted trial. Despite the 5 week difference in planting date, the late-planted trial flowered just 1 week later than the normal-planted trial. These results illustrate a corn plant's ability to develop with fewer GDUs available; however, depending on planting date, yield may be compensated. Economically, the 3 hybrids that had the smallest reduction in gross income due to late planting were also full season (109 to 113 RM). This result indicates that staying the course with a full season hybrid, despite late planting, can pay off.

Since the accumulation of GDUs early in the growing season is low and corn requires fewer GDUs to reach maturity when planted after May 1st, it is not recommended to switch relative maturities at this time. Watch for updated recommendations if the current wet weather pattern continues past May 15th.

Sources: S. Brouder et al. 2007. *Corn & Soybean Field Guide*. Purdue University. <http://www.agry.purdue.edu> (verified 4/28/09).

2009. *Midwestern Regional Climate Center (MRCC)*. Online location: <http://mrc.sns.uiuc.edu/> (verified 4/28/09).

Table 1. Average accumulation of GDUs per day in Rochelle, IL, from 2001-2008 at key times during the growing season.

Dates	Average accumulation of GDUs per day
Planting April 15—May 15	9
Flowering July 1—July 31	22
Drydown Aug. 15—Sept. 15	19

Source: *Midwestern Regional Climate Center*

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