

## Deciding When to Change to Earlier RM Corn Products - MO-KS East

Many growers in Missouri and eastern Kansas are concerned about planting full season corn products as the calendar date passes mid-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. Staying with originally planned maturity corn products through the first week of June is recommended<sup>1</sup>.

### GDU Accumulation

Corn requires approximately 1250-1360 GDUs to reach mid-pollination and 2550-2800 GDUs to reach physiological maturity or 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 approximately 60 GDUs. That means it would take approximately 2.5 more days for the corn to reach maturity in the fall as GDU accumulation in July and August is approximately 25 per day.

**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

**Table 1. Average accumulation of GDUs per day by city, from 2000-2009, at key times during the growing season.**

City & State	Average accumulation of GDUs per day		
	Planting April 15—May 15	Flowering July 1—July 31	Drydown Aug. 15—Sept. 15
Ottawa, KS	13.8	26.7	23.4
Topeka, KS	13.2	26.7	23.2
Butler, MO	13.5	26.5	23.1
St. Joseph, MO	11.9	25.0	20.6
Chillicothe, MO	12.4	25.6	22.0
Columbia, MO	13.5	26.5	23.4
Kirksville, MO	10.6	24.1	20.5
Hannibal, MO	11.6	24.5	21.6
Troy, MO	12.5	24.6	21.7

Source: *Midwestern Regional Climate Center*

### Changes in GDU Requirements

As planting occurs after May 1, corn requires approximately 1.6 fewer GDUs per day of delayed planting to reach flowering. GDUs required to reach black layer decreases approximately 6.8 GDUs per day of delayed planting after May 1. Table 2 provides an example of the GDU requirements of a typical full season corn product planted on April 15 compared to May 15. These adjustments are important to consider when contemplating switching to a different RM product.

Since the accumulation of GDUs early in the growing season is low and corn requires fewer GDUs to reach maturity when planted after May 1, it is not recommended to switch relative maturities at this time.

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Table 3 shows relative yield potential for various planting dates throughout Missouri. In Missouri and eastern Kansas, corn usually matures well before the first frost. Dr. Bill Wiebold, professor at the University of Missouri recommends late planting decisions be based on yield potential. “Producers might have other concerns such as wheat planting or drying costs. Individual producers can then factor in their specific needs.”

Sources: <sup>1</sup>B. Wiebold. University of Missouri. Personal communication, May 18, 2010.  
 S. Brouder et al. 2007. Corn & Soybean Field Guide. Purdue University. <http://www.agry.purdue.edu> (verified 5/12/2010).  
 2010. Midwestern Regional Climate Center (MRCC). <http://mrcc.sws.uiuc.edu/> (verified 5/12/2010).

<b>Table 3. Effect of planting date on corn yield in Missouri. Yield as a percent of normal.</b>			
<b>Planting Date</b>	<b>Central and North MO</b>	<b>Planting Date</b>	<b>Southeast and Southwest MO</b>
<b>May 11</b>	<b>100</b>	<b>April 1</b>	<b>100</b>
<b>May 16</b>	<b>99</b>	<b>April 10</b>	<b>99</b>
<b>May 21</b>	<b>97</b>	<b>April 30</b>	<b>92</b>
<b>May 26</b>	<b>94</b>	<b>May 10</b>	<b>87</b>
<b>May 31</b>	<b>90</b>	<b>May 20</b>	<b>83</b>
<b>June 5</b>	<b>85</b>	<b>May 30</b>	<b>79</b>
<b>June 10</b>	<b>80</b>	<b>June 10</b>	<b>72</b>
<b>June 15</b>	<b>75</b>	<b>June 20</b>	<b>59</b>

Source: W. Wiebold. May 1999. Corn and Soybean Replant Decisions. University of Missouri. G4091.

**Individual results may vary**, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. Technology Development by Monsanto and Design (SM) is a servicemark of Monsanto Technology LLC. All other trademarks are the property of their respective owners. ©2010 Monsanto Company. 05142010ABT