

AGRONOMIC ALERT



Late Corn Planting Recommendations in Minnesota

With wet soils and planting just around the corner in Minnesota, many farmers may be thinking about switching to earlier maturity corn hybrids to offset late planting. Yield potential can decrease with delayed planting because of a number of factors, including a shorter growing season, insect and disease pressure, and moisture stress during pollination. However, switching to earlier maturity corn products for late-planting situations should not always be automatic.

Corn Maturity

Recommendations from your local agronomist regarding full-season corn relative maturity (RM) groups and RM switch dates for Minnesota are listed in Table 1. Careful consideration should be given prior to switching to an earlier corn hybrid. Full-season corn products for a given area typically have the highest yield potential, which can help offset an increase in drying costs. As planting is delayed, corn product maturities will come closer together. Growing degree unit (GDU) accumulation increases as the growing season progresses. As a result, corn generally requires 1.6 GDUs less each day to reach flowering and 6.8 GDUs less each day to reach physiological maturity (black layer) as planting is delayed beyond about May 1. This means that late-planted hybrids mature in fewer than expected GDUs. Therefore, corn planted in late May compared to an optimum date may actually take 125 to 200 GDUs less to reach black layer.

When to Switch Corn Maturity

The yield for late-planted corn will vary greatly depending on the rest of the growing season. The decision to switch maturity with delayed corn planting is difficult because of variations in growing seasons relative to available GDUs, first frost date, and fall drying conditions.

Switching to earlier maturity corn products for late-planting situations should not always be automatic.

Table 2 (page 2) lists accumulated GDUs, at several locations over several weeks, based on an April 28th planting date. It can help with the decision of when to switch to an earlier maturity by determining the potential GDUs remaining from a given planting date to typical maturity or killing frost in a given area. Table 3 (page 2) shows average first frost dates for some cities in Minnesota.

For an example, consider if planting was delayed until the week of May 15 in the Lamberton area. In that time, 140 GDUs would have been lost from April 28. If the first killing frost date is October 7, the maximum potential GDUs remaining for Lamberton is 2565 (2705 - 140). Therefore, a hybrid with a GDU to black layer rating of 2500 GDUs can still be planted because its rating is below the 2565 estimated GDU potential that may occur before the first killing frost. If the reduced GDU requirement after May 1st is also taken into consideration, the hybrid is even less likely to encounter a killing frost before physiological maturity:

$$2500 \text{ GDU requirement} - (6.8 \text{ less GDUs/ day} \times 15 \text{ days}) = 2398 \text{ GDUs}$$

The numbers given are based on averages and should only be used as a reference. Growers must decide what is best for their operation. Remember that the main reason for switching corn product maturity is not so much for yield, but to reduce the risk of immature and wet grain in the fall.

Table 1. Local Monsanto agronomist recommendations for switching corn maturities in Minnesota.

Minnesota Region	Full-Season RM	"Switch to" Dates	
		May 15	May 25
		_____days_____	
Southern¹	106-111	100-105	94-99
Central²	100-104	94-99	89-93
Northern³	98-102	94-96	85-89

¹ Southern Zone - East to west line SOUTH of U.S. Highway 212
² Central Zone - East to west line NORTH of U.S. Highway 212
³ Northern Zone - Line from Morris to St. Cloud, MN and north

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Product Considerations

With insect protection and crop safety becoming more important with later planting, corn with Genuity® traits that offer insect protection and herbicide tolerance, such as Genuity® SmartStax® or Genuity® VT Triple PRO™ traits, should be considered. Additionally, even with delayed planting, it is still important to try and minimize the risk of adverse weather during critical growth stages by planting a package of hybrids that range in GDU requirements to flowering as well as maturity. Several new hybrids flower early, which can help to lower the risk of an early frost.

Sources:

¹University of Minnesota Climatology Working Group. Agriculture Climate Information. Create Custom Growing Degree Day Summaries. University of Minnesota. <http://climate.umn.edu> (verified 4/18/11).

²University of Minnesota Climatology Working Group. Agriculture Climate Information. Median Frost Dates. <http://climate.umn.edu> (verified 4/18/11).

Additional references used in developing publication:

North Dakota Agricultural Weather Network. <http://www.ndawn.ndsu.nodak.edu/> (verified 4/13/11).

S. Brouder et al. 2008. Corn & Soybean Field Guide. ID-179. Purdue University. <http://www.agry.purdue.edu> (verified 3/23/10).

R.L. Nielsen. April 28, 2009. Late Planting & Relative Hybrid Maturity Decisions. Purdue University Extension. Corny News Network Articles.

Table 2. Average GDU accumulation from six locations in Minnesota, based on an April 28th planting date.

Date	Montevideo	Morris	Lamberton	St. Cloud	Waseca	Rochester
May 8	82	64	83	75	88	89
May 15	134	111	139	130	143	144
May 22	218	194	226	212	228	227
May 29	324	297	338	321	344	340
June 5	430	403	458	426	464	454
June 12	524	489	560	515	564	558
Sept. 25	2388	2336	2556	2388	2537	2503
Oct. 2	2456	2400	2632	2448	2608	2571
Oct. 9	2520	2457	2705	2506	2677	2639
Oct. 16	2547	2481	2739	2532	2712	2675
Oct. 23	2569	2497	2764	2551	2738	2702

Source: Adapted from the University of Minnesota Climatology Working Group¹.

Table 3. Median first frost dates in Minnesota from 1948-2005.

Region	City	Median First Killing Frost Date
		28° F
West Central	Morris	10/6
	Montevideo	10/7
	Fergus Falls	10/8
Central	Hutchinson	10/13
	St. Cloud	10/5
	Willmar	10/15
Southwest	Lamberton	10/7
Southeast	Rochester	10/12

Source: Adapted from the University of Minnesota Climatology Working Group². Median first frost dates in MN from 1948-2005, 60 percent available data for the period.

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