Iowa Delayed Corn Planting Recommendations

KEY POINTS

- As planting time approaches and wet soils remain, many growers may consider switching to earlier maturity corn products to offset late planting.
- Yield potential can decrease with delayed planting due to a number of factors including a shorter growing season, insect and disease pressure, and moisture stress during pollination.
- For delayed planting, the risks and rewards of switching to earlier-maturity corn products vary with the specifics of each farming operation; it is not a decision to base only on calendar date.

Table 1. Local agronomist recommendations for switching corn maturities in Iowa

Iowa Region	Full-season RM	"Switch-to" Dates	
		May 20	May 30
	——————Days——————		
Southern[1]	114-117	111-112	108-111
Central[2]	110-115	109-112	107-110
Northern[3]	108-113	107-110	105-108

[1]Southern zone = South of Interstate 80
[2]Central zone = North of Interstate 80
[3]Northern zone = North of U.S. Highway 20

**In choosing the best corn product for your farm, maturity is only one criteria to consider. A corn product's overall adaptability to the field and planting date/maturity should be considered.*

Corn Maturity

Recommendations from your local agronomist regarding full-season corn relative maturity (RM) groups and RM switch dates for Iowa are listed in Table 1. Careful consideration should be given prior to switching to an earlier corn product. 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 6.8 GDUs less each day to reach physiological maturity (black layer) as planting is delayed beyond about May 1.[1] This means that late-planted products 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.

Table 2 (page 2) lists accumulated GDUs, at several locations over several weeks, based on a May 1 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 30-year average first frost dates for those same locations across Iowa.

For example, consider if planting was delayed until the week of May 15 in the Osceola area. In that time, 147 GDUs would have been lost from May 1. If the first killing frost date is October 18, the maximum potential GDUs remaining for Osceola is approximately 2816 (2963 - 147). Therefore, a product with a GDU to black layer rating of 2800 GDUs could still be planted because its rating is below the 2816 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 product is even less likely to encounter a killing frost before physiological maturity:

2800 GDU requirement - (6.8 less GDUs/day X 15 days) = 2698 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.

Product Considerations

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

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Table 2. Average GDU accumulation from nine locations in Iowa, derived from 30-year climatological temperature average (1981-2010), and based on May 1st planting date.

Date	Charles City	Le Mars	Fort Dodge	Osceola	Washington	Harlan	Decorah	Cedar Rapids	Mount Pleasant
May 8	56	66	62	66	70	68	55	64	72
May 15	125	145	138	147	155	150	120	142	157
May 22	205	237	226	237	246	244	194	227	252
May 29	288	330	317	330	344	341	274	318	352
June 5	387	438	422	438	458	451	367	423	468
June 12	501	563	546	566	588	581	475	548	602
September 25	2461	2646	2603	2752	2773	2734	2351	2612	2862
October 2	2531	2728	2682	2838	2857	2821	2415	2688	2949
October 9	2586	2790	2743	2907	2927	2888	2466	2751	3021
October 16	2629	2841	2791	2963	2984	2942	2507	2801	3079
October 23	2660	2878	2826	3006	3027	2983	2535	2838	3123

Source: Midwestern Regional Climate Center, http://mrcc.isws.illinois.edu/U2U/gdd/

Table 3. Median first frost (28°F) dates in Iowa derived from 1981-2010 averages.

Region	City	Date
Northwest	Le Mars	October 11
	Fort Dodge	October 14
Northeast	Charles City	October 14
	Decorah	October 12
East Central	Cedar Rapids	October 16
Southwest	Harlan	October 17
	Osceola	October 18
Southeast	Mount Pleasant	October 26
	Washington	October 22

Source: Midwestern Regional Climate Center. http://mrcc.isws.illinois.edu/U2U/gdd/

Summary

In choosing the best corn product for your farm, maturity is only one criteria to consider. The reason for switching corn products is to reduce the risk of immature and wet grain in the fall. Keep in mind, conditions during the growing season and at harvest are other important factors in corn maturation and kernel moisture at harvest.

Sources:
[1]Nielsen, R.L. 2017. Hybrid Maturities for Delayed Planting. Purdue University. http://www.agry.purdue.edu
Nielsen, R. L. 2009. Late planting & relative hybrid maturity decisions. Purdue University Extension. http://www.agry.purdue.edu
Web sources verified 4/19/18.