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# 2012 Outlook Brief: Early Planting and Spring Freeze Risks

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## Executive Summary

March 2012 weather was significantly warmer than the historical average, with most parts of the Midwest breaking long-standing records. But based on an analysis of historical data done by the Midwestern Regional Climate Center, significant freeze risks still remain as we have not yet reached the median last date of freeze for most parts of the US corn belt.

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The unusually mild winter of 2011 to 2012 is being followed by an equally mild spring in most parts of the country. Record high temperatures are resulting in soil temperatures that many growers don't usually see until late April or early May. As a result, growers across the Midwest are being tempted to plant corn and soybeans earlier than ever before. But just how warm has this spring been from a historical perspective and is it wise to start planting at this early date? We'll take a look at both of these issues.

First let's look at the weather that has happened across the heart of the corn and soybean belt this March. From an agricultural perspective, one of the most important measures of heat is Growing Degree Days (GDDs), which quantify the growth benefit that any given day provides in helping a crop reach maturity. When temperatures are between 50 and 86 degrees Fahrenheit, corn growth is essentially proportional to temperature, with higher temperatures resulting in faster growth. Temperatures below 50 or above 86 degrees, will have a zero or potentially negative impact on corn growth.

## Highlights

- More than 98% of weather stations across 12 key Midwestern corn states reported record Growing Degree Day (GDD) accumulations from March 1 to March 27, 2012.
- More than 93% of weather monitoring locations across 12 key Midwestern corn states reported sufficient GDDs to get corn through to emergence by March 27.
- Historical data shows that only small parts of MO, IL, IN, KY and KS have reached their median freeze date as of April 4. All other locations face a greater than 50% chance of more freezing weather this spring.

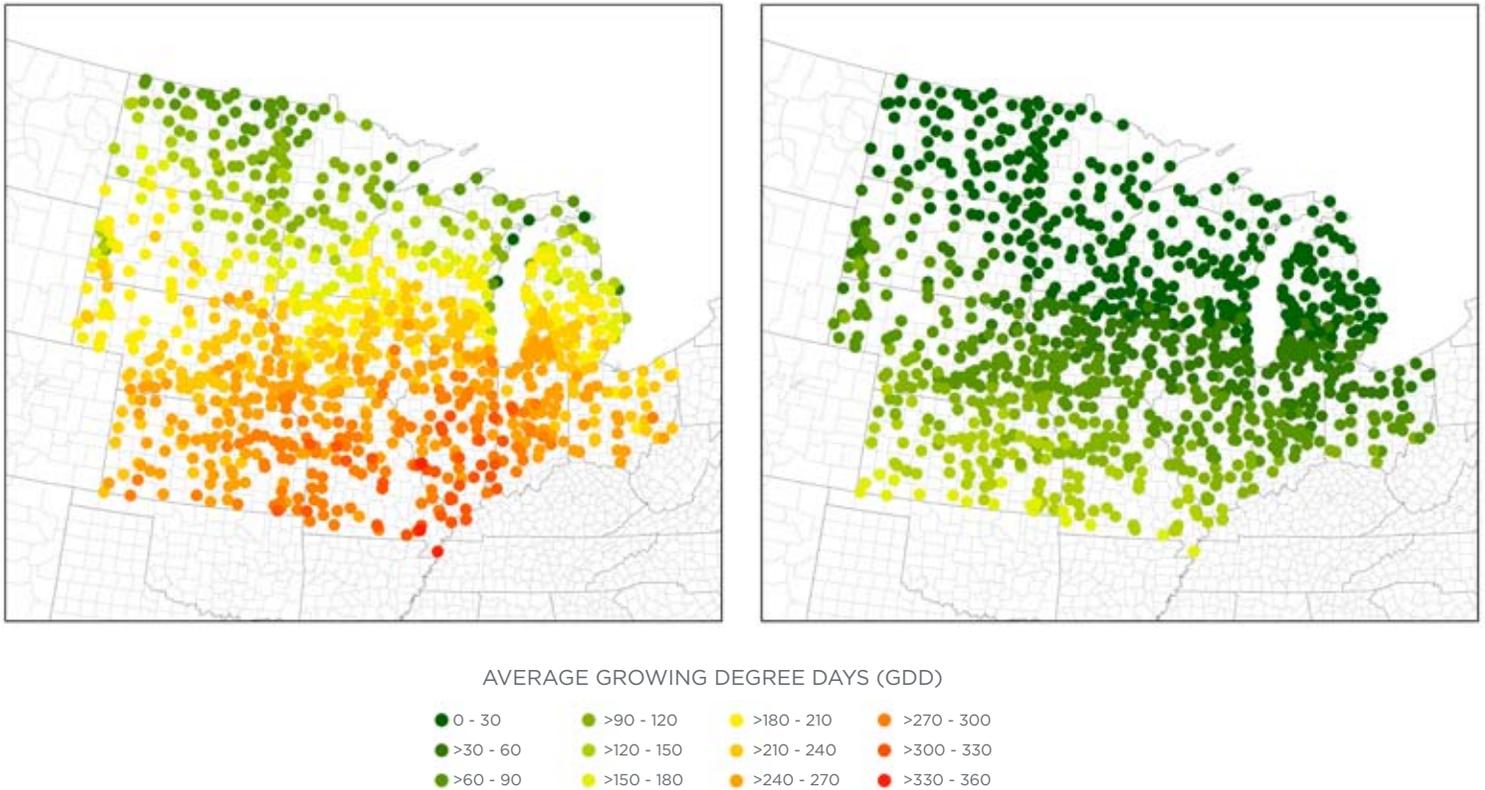
The maps below (see *Figure 1*) show average GDD accumulation from 1980-2011 for the period of March 1 to March 27 as compared to the GDD accumulation for this same time period in 2012. Using The Climate Corporation's compilation of many key weather databases, we looked at 936 weather stations across the 12 key Midwestern corn growing states. Our analysis shows:

1. All 936 weather stations have seen greater GDD accumulation in 2012 than their 1980 to 2011 average.
2. Looking as far back as 1980, 2012 ranks as the hottest year with respect to GDD accumulation for 919 of the 936 weather station locations.
3. 874 of the 936 weather stations have reported at least 100 GDDs.
4. 591 of the 936 weather stations have reported at least 200 GDDs.

Since the average corn hybrid needs about 100 GDDs to move from planting to emergence, there are large

A) GDD ACCUMULATION FOR MARCH 1 TO MARCH 27 (2012)

B) AVERAGE GDD ACCUMULATION BY WEATHER STATION FOR MARCH 1 TO MARCH 27 (1980-2011)



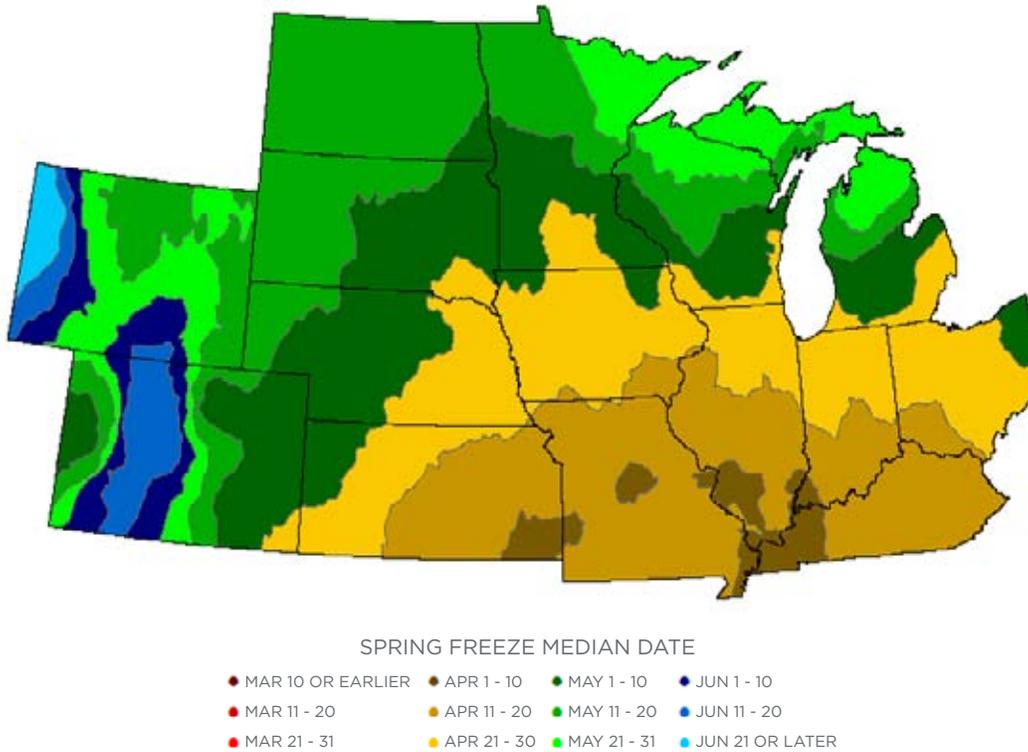
**Figure 1** Comparison of March 1 to March 27 GDD accumulation for 936 unique weather stations across 12 Midwestern states (2012 vs. the 1980 to 2011 average)

areas of the country where, theoretically, corn could have emerged and be quickly moving through the early phases of vegetative growth if it had been planted when the opportunity first presented itself this spring. And while some growers have taken advantage of this historically warm spring to get acres seeded earlier than ever before, many are holding off due to the risk of a return to freezing weather. The federal crop insurance program does not insure crops that are planted too early for replant, so growers who plant too early bear all replanting costs if that early planted crop needs to be replanted. So what is the probability that various parts of the Midwest will see a return to freezing weather this spring?

The Midwestern Regional Climate Center map (see *Figure 2*) shows the median date of the latest 32

degrees or colder freeze event for 15 Midwestern states, based on data from 1981 to 2010. It shows most of Iowa has a median last freeze date of April 21 to April 30 while most of North Dakota has a median last freeze date of May 11 to May 20. Median last freeze dates for other states and regions can be seen on the map. Based on historical weather patterns, growers face a 50% likelihood of freezing weather and corresponding replant if they plant before their area's median last freeze date.

So while the historically warm spring may tempt growers to get planted early, it is important for growers to consider three risks. First, crops planted before the first planting date allowed by federal crop insurance in a grower's county are not insured for replant risk, so the grower will have to pay replant costs out of pocket if a replant is required. However,



**Figure 2** Spring Freeze median date of last 32-degree freeze based on 1981 to 2010 average. Median date is determined such that half of all years fall before and half fall after the median date. Map from the Midwestern Regional Climate Center [http://mrcc.isws.illinois.edu/cliwatch/frz\\_maps\\_spring/DLY\\_FRZ\\_REGL\\_MAPS.htm](http://mrcc.isws.illinois.edu/cliwatch/frz_maps_spring/DLY_FRZ_REGL_MAPS.htm)

those early planted acres still receive full coverage for losses due to reduced yields and/or revenues.<sup>1</sup> Second, due to corn seed production problems around the country in 2011, many seed varieties are in short supply this year. Any grower who plants early and later has to replant may have to use a less desirable seed variety on replant, which could have a significant impact on yields.<sup>2</sup> And finally, growers should consider the median last freeze date: planting before this date means that, based on historical data, the grower faces a 50% likelihood of a subsequent freeze that could kill the crop and lead to a replant situation. While the blooms on the trees may suggest otherwise, the analyses referenced here suggest growers need to keep an eye on the data before deciding to plant early.

<sup>1</sup> [http://www.farmdocdaily.illinois.edu/2012/03/impacts\\_of\\_planting\\_before\\_cro.html](http://www.farmdocdaily.illinois.edu/2012/03/impacts_of_planting_before_cro.html)

<sup>2</sup> <http://www.purdue.edu/newsroom/general/2012/120330PatrickPlanting.html>