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## Weather Forecast Delays Corn Planting, but Late Planting Does Not Foretell Lower Yields

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# Weather Forecast Delays Corn Planting, but Late Planting Does Not Foretell Lower Yields

## **Abstract**

Average recommended planting dates for corn in Iowa lie between April 12 and May 18 in order to achieve 98-100 percent yield potential, but this varies a bit on the specific location (Abendroth and Elmore, 2010). Currently, Iowa soil temperatures range from approximately 57-63°F (Iowa Environmental Mesonet, 2013). While these temperatures are often considered good for planting because 50°F is the temperature necessary for corn seed germination, the weather forecasted is not ideal for a corn seed to germinate and begin emergence. According to NOAA, Story County highs May 2 and 3, 2013, will be in the low 40s°F with lows in the mid 30s with potential rain, sleet and snow. Last year, on April 26, Iowa soil temperatures ranged from 58-64°F; however, by April 29 soil temperatures dropped to 49-53°F across the state. This swing in temperatures, coupled with rain at that time, resulted in many reports of lower relative yields for corn planted between April 22-26 than corn planted later. Fluctuations in soil temperatures are related to deformed mesocotyl growth, which can result in “corkscrewed corn” (Nielsen, 2012).

## **Keywords**

Agronomy

## **Disciplines**

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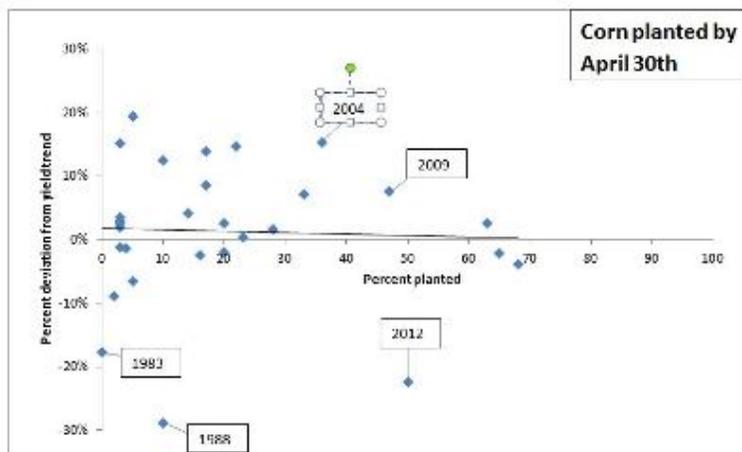
## Weather Forecast Delays Corn Planting, but Late Planting Does Not Foretell Lower Yields

By Warren Pierson and Roger Elmore, Department of Agronomy

Average recommended planting dates for corn in Iowa lie between April 12 and May 18 in order to achieve 98-100 percent yield potential, but this varies a bit on the specific location ([Abendroth and Elmore, 2010](#)). Currently, Iowa soil temperatures range from approximately 57-63°F ([Iowa Environmental Mesonet](#), 2013). While these temperatures are often considered good for planting because 50°F is the temperature necessary for corn seed germination, the weather forecasted is not ideal for a corn seed to germinate and begin emergence. According to [NOAA](#), Story County highs May 2 and 3, 2013, will be in the low 40s°F with lows in the mid 30s with potential rain, sleet and snow. Last year, on April 26, Iowa soil temperatures ranged from [58-64°F](#); however, by April 29 soil temperatures dropped to [49-53°F](#) across the state. This swing in temperatures, coupled with rain at that time, resulted in many reports of lower relative yields for corn planted between April 22-26 than corn planted later. Fluctuations in soil temperatures are related to deformed mesocotyl growth, which can result in “corkscrewed corn” ([Nielsen, 2012](#)).

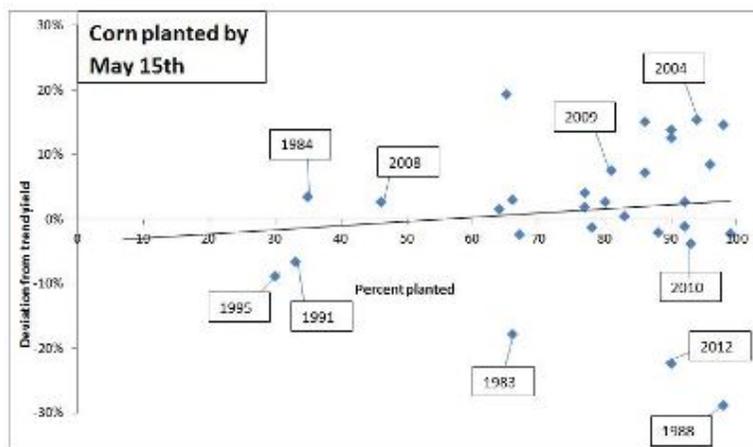
According to [USDA-NASS](#) as of April 28, 2013, approximately 2 percent of Iowa corn acres was planted. This is somewhat similar to 2011: by April 24, only 3 percent was planted and, by May 1, only 8 percent was planted. Within two weeks after that though, approximately 84 percent of Iowa’s corn acres (11.9 million acres) was planted, bringing the total planted to 92 percent. Even with this later than usual planting corn yield was only 1 percent above trend line in 2011.

One way to look at yields at different planting dates is to compare state average yields – as reported in deviations from the trend line - to the percent of the crop planted at different times during the spring. This is the way Bob Nielsen - [The Planting Date Conundrum for Corn](#) - and Emerson Nafziger - [Planting Delays and Corn Prospects](#) - looked at corn yield in their recent articles. For example, in Iowa the trend line for acres planted by April 30, compared to yield relative to trend line, is actually negative (Figure 1). This suggests that delayed planting tends to increase yield potential - although the trend is a weak one. The negative trend for acres planted by April 30 is likely due to the negative effect of 2012 and the three years of near trend line yields with 60-70 percent of corn acres planted. What is clear is that earlier planting does not always guarantee high yields, and late planting does not always foretell low yields.



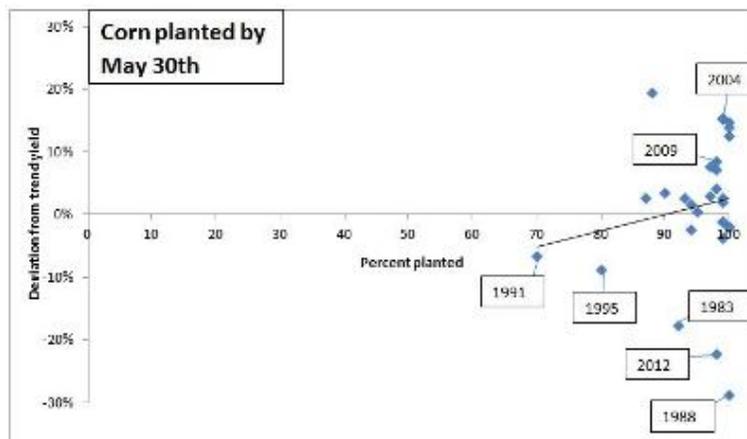
**Figure 1. Deviation from Iowa corn 30-year yield trend compared to percent of corn acres planted by April 30. 1993 was removed as an outlier with 0 percent of acres planted by April 30 and a yield deviating from trend line by -39 percent. Data adapted from [USDA-NASS](#). The trend line in this figure relates the percent of corn acres planted in Iowa by April 30 to the deviation from trend yield. The trend line in this figure shows that having more acres planted by April 30 does not necessarily relate to high yields, and perhaps even slightly lower yield. ([larger image](#))**

Although the trend line of corn planted by May 15 was positive, two years were behind and still yielded above trend line. In 1984 and 2008, only 35 and 46 percent of the crop was planted by May 15, respectively; yields were above trend line both years by 3 percent (Figure 2). However, in 1991 and 1995, only 33 and 30 percent of the crop was planted by May 15, respectively. In these two years in which planting proceeded slowly, yields deviated from trend by -6 percent and -9 percent (Figure 2).



**Figure 2. Deviation from Iowa corn 30-year yield trend compared to percent of corn acres planted by May 15. 1993 was removed as an outlier with 7 percent of acres planted by April 30 and a yield deviating from trend line by -39 percent. Data adapted from [USDA-NASS](#). The trend line in this figure relates the percent of corn acres planted in Iowa by May 15 to the deviation from trend yield. The trend line in this figure shows that more acres planted by May 15 is related to slightly higher yield. ([larger image](#))**

The relationship between acres planted by May 30 and yield is positive; with more acres planted by May 30 we see better yield. However, in 1991 and 1995, only 70 and 80 percent of corn was planted by May 30 and yields were below trend line by only -6 percent and -9 percent (Figure 3).



**Figure 3. Deviation from Iowa corn 30-year yield trend compared to percent of corn acres planted by May 15. The yield of 1993 was removed as an outlier with 65 percent of acres planted by April 30 and a yield deviating from trend line by -39 percent. Data adapted from [USDA-NASS](#). The trend line in this figure relates the percent of corn acres planted in Iowa by May 30 to the deviation from trend yield. The trend line in this figure shows that more acres planted by May 30 is related to higher yields. ([larger image](#))**

[Nielsen](#) found similar trends in Indiana and suggested that farmers be patient and not “mud in” corn. The effects of “mudding in” corn are likely more negative than the effects of a late planting date for corn. Elmore also recommended patience in an Iowa Farmer Today [Crop Watch Blog](#) posted on April 29, 2013.

Having planted [1.2 million acres per day](#) in critical windows of recent years, Iowa farmers are now equipped to plant many acres per day than ever before. Waiting for soil temperatures to rise above 50°F and warmer weather in the forecast is most favorable for corn growth, development and yield ([Elmore, 2013](#)). Delaying planting until conditions improve will encourage more uniform and faster emergence, greater emergence percentage and more rapid growth and development. Planting date is only one of many yield factors; weather conditions the rest of the season, management and genetics will likely be more substantial yield factors.

While our normal recommendation – based on multiple years and locations of data - is to plant early to maximize yield potential, keep in mind that soil conditions and forecasted weather affect planting recommendations. Early planting does not ensure high yields just as planting late does not foretell low yields.

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