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2012 Outlook Report:
La Niña and the 2012 Spring Planting Period

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Executive Summary

Latest forecasts show La Niña conditions are likely to persist through the spring of 2012, with potential impacts on the spring planting period in the United States. Growers in the eastern corn belt, particularly Ohio and Indiana, should expect increased likelihood of planting delays and associated potential crop losses.

Highlights

- In 2012, growers in Ohio and eastern Indiana face nearly twice the likelihood of corn planting delays when compared to an average year,[1] if La Niña conditions continue through spring.
- Growers in many parts of Kansas, Illinois, Iowa, Nebraska, North Dakota, and South Dakota face a significant decrease in the likelihood of corn planting delays when compared to an average year, if La Niña conditions continue through spring.
- Combined expected losses for corn in Ohio and Indiana due to La Niña-induced delayed planting are 40 million bushels, or $230 million

La Niña is a condition defined by cooler than normal sea surface temperatures in the central and eastern tropical Pacific Ocean.[2] La Niña conditions generally occur every 3-5 years, and impact both precipitation and temperature patterns across the United States (See *Figure 1* for a graph of historical La Niña events). The latest forecasts from National Oceanic and Atmospheric Administration's (NOAA's) Climate Prediction Center show that La Niña conditions are likely to continue

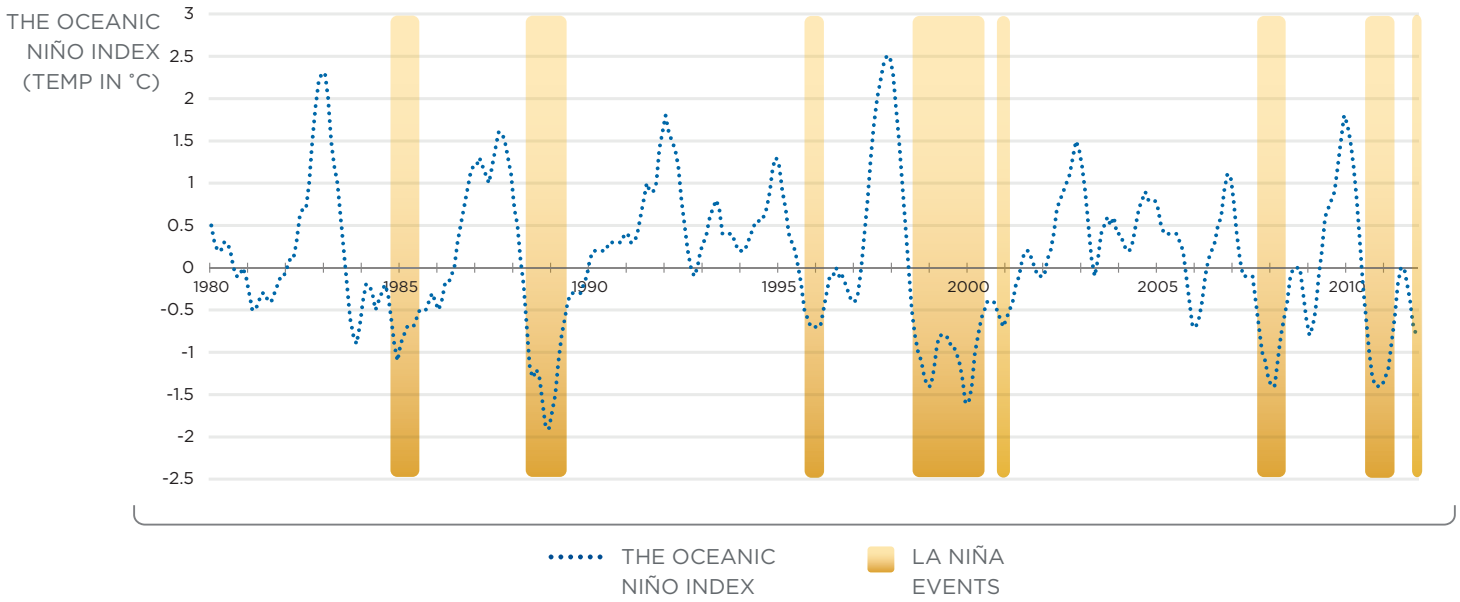


Figure 1 Historical La Niña events based on the Oceanic Niño Index (ONI)[3]

[1] An average year is defined as the average of all years analyzed (1989-2011), including La Niña years.

[2] http://www.elnino.noaa.gov/lanina_new_faq.html

[3] A La Niña event occurs when the ONI (as calculated by NOAA) drops below -0.5 for more than 5 months in a row. http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ensoyears.shtml

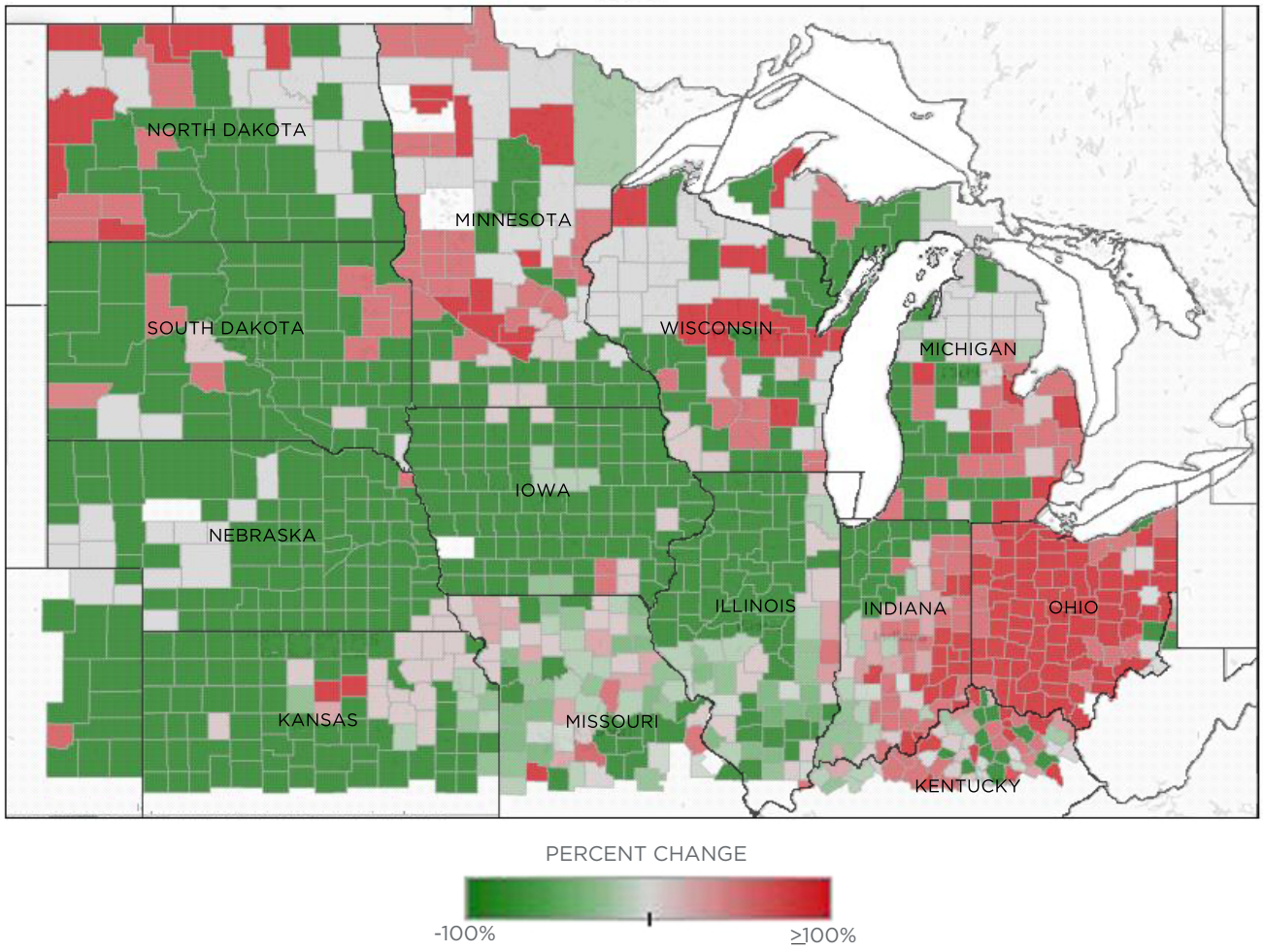


Figure 2 Percent increase (in red) or decrease (in green) in the likelihood of a planting delay[4] in a La Niña year when compared to an average year (1989-2011)

through late spring, before giving way to more neutral conditions or even switching to El Niño conditions by early fall (See *Appendix I*).

The Climate Corporation incorporates ENSO (El Niño Southern Oscillation) forecasts – in addition to other long-term climate trends, current weather conditions, short range forecasts, and historical weather observations – into its proprietary global weather simulation model. By using this model to understand potential weather outcomes, and then correlating those potential outcomes to agronomic and crop yield impact, The Climate Corporation is able to assess growers' weather risk and price customizable weather insurance policies that protect growers from the financial impact of weather-related production shortfalls.

This report leverages the power of The Climate Corporation's weather data platform to quantify the potential impact of La Niña conditions this spring on the 2012 corn planting period. Specifically, this report analyzes La Niña's impact on the likelihood and potential severity of delayed planting. Further, where increased likelihood of delayed planting exists, this report analyzes the potential impact of a delay in terms of both bushels and dollars.

La Niña is generally associated with above average precipitation across the north-central United States, Ohio Valley, upper Southeast, and Pacific Northwest, and below average precipitation in the Southwest, central and southern Rockies and Great Plains, and Florida.[5] As one might expect from the altered precipitation patterns caused by La Niña, certain regions of the country have an increased likelihood of planting delay during La Niña years,[6] where other regions show a decreased likelihood of planting delay during La Niña years.

This report focuses on La Niña's impact on the planting period across the Corn Belt (See *Figure 2* for a map that shows the increased/decreased likelihood of planting delays across the

[4] Historical planting date data sourced from RMA

[5] http://earthobservatory.nasa.gov/Features/LaNina/la_nina_2.php

[6] In this study a La Niña year is defined as one in which La Niña conditions exist through at least the end of March

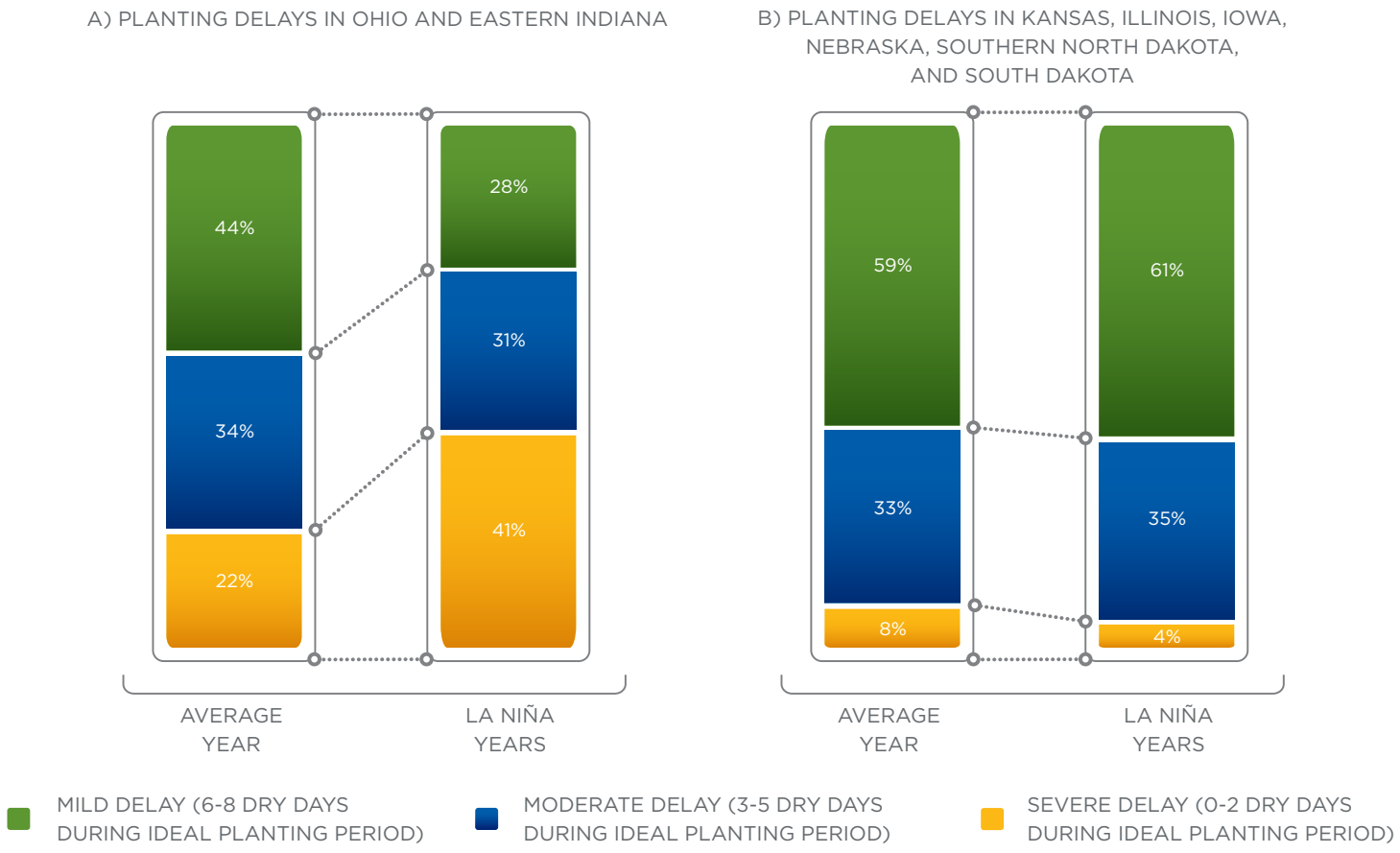


Figure 3 Comparison of planting delays in average year (1980-2011) versus La Niña years[7]

Corn Belt in a La Niña year, when compared to an average year). As Figure 2 shows, corn farmers in Ohio and eastern Indiana are, on average, nearly twice as likely (from 18% to 36%) to experience a planting delay in a La Niña year than in an average year. Corn growers in this region should incorporate the increased likelihood of a planting delay in 2012 into their planning for the upcoming corn planting period.

Demonstrating the opposite effect, large swaths of Kansas, Illinois, Iowa, Nebraska, southern North Dakota, and South Dakota show a decreased likelihood of a planting delay in a La Niña year than in an average year. Specifically, our research indicates that the likelihood of a planting delay is reduced in a La Niña year, on average, by 88% in Nebraska (from 5.7% to 0.7%), 81% in Iowa (from 11.3% to 2.1%), 68% in South Dakota (from 6.5% to 2.1%), 43% in Kansas (from 9.9% to 5.6%), and 49% in Illinois (from 17.8% to 9.1%).

For those growers in Ohio and eastern Indiana who are facing an increased likelihood of planting delay in 2012 due to La Niña, The Climate Corporation's platform can also analyze the likely severity of the potential delay. To determine the potential severity of the planting delay that would be expected in a given year, we analyzed of the number of 'dry days' that occurred during the optimal planting period for the region, where a 'dry day' was one which passed specific tests of rainfall frequency and severity for the day in question as well as the preceding 9-day period. The severity of the delay was then categorized based on the number of dry days the region experienced during the optimal planting period for corn – with fewer dry days corresponding to greater planting delays. Figure 3 compares the likelihood of a planting delay in Ohio and eastern Indiana being severe, moderate, or mild during an average year, with the likelihood of a planting delay in the region being severe, moderate, or mild during a La Niña year. It turns out that, in addition to an increased likelihood of delayed planting in a La Niña year in Ohio and eastern Indiana, the planting delay is likely to be more severe when it occurs during a La Niña year than when it occurs during an average year.[8] In fact, the likelihood of a planting delay being severe – 2 or fewer dry days during the ideal planting period – nearly doubles in a La Niña year.

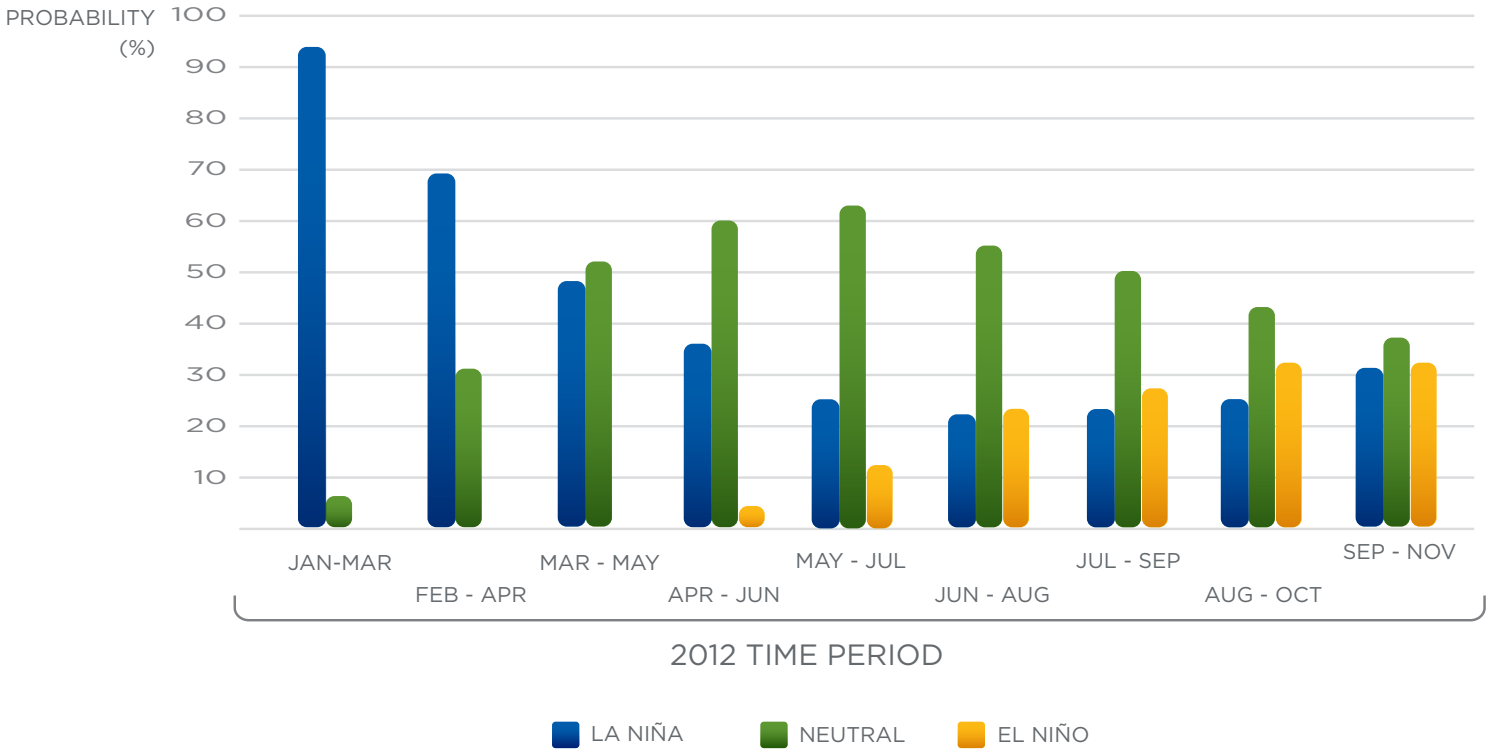
[7] Calculated from The Climate Corporation's index for Planting Rain.

[8] An average year is defined as the average of all years analyzed (1980-2011), including La Niña years.

In contrast, The Climate Corporation's platform shows that there is essentially no change in the likelihood of a severe vs. moderate vs. mild planting delay during a La Niña year in Kansas, Illinois, Iowa, Nebraska, southern North Dakota, and South Dakota. This means that these areas are less likely to experience a delay in a La Niña year versus an average year, and the likely severity of a delay, if one does occur during a La Niña year, is more or less unchanged when compared to an average year.

Finally, The Climate Corporation is able to estimate the corn crop yield impact – and thus financial impact – of potential planting delays caused by La Niña conditions in eastern Indiana and Ohio.[9] Through an evaluation of corn planting progress seen across Ohio and Indiana in historical spring seasons in which La Niña conditions existed, The Climate Corporation has calculated that these states could see combined corn yield losses in excess of 40 million bushels if La Niña conditions continue through the spring. At current crop prices, this crop yield loss translates to a potential gross revenue loss of more than $230 million for Ohio and Indiana corn growers.

APPENDIX I



Appendix 1 CPC/IRI 2012 Forecast for Climate State - Early February Forecast[10]

[9] The Climate Corporation's platform shows that the three largest annual corn yield losses due to delayed planting in Ohio over the last 30 years all occurred in La Niña years (1989, 1996, and 2011).

[10] http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf