



How Much of the 2013 Corn Crop Will Be Planted Late?

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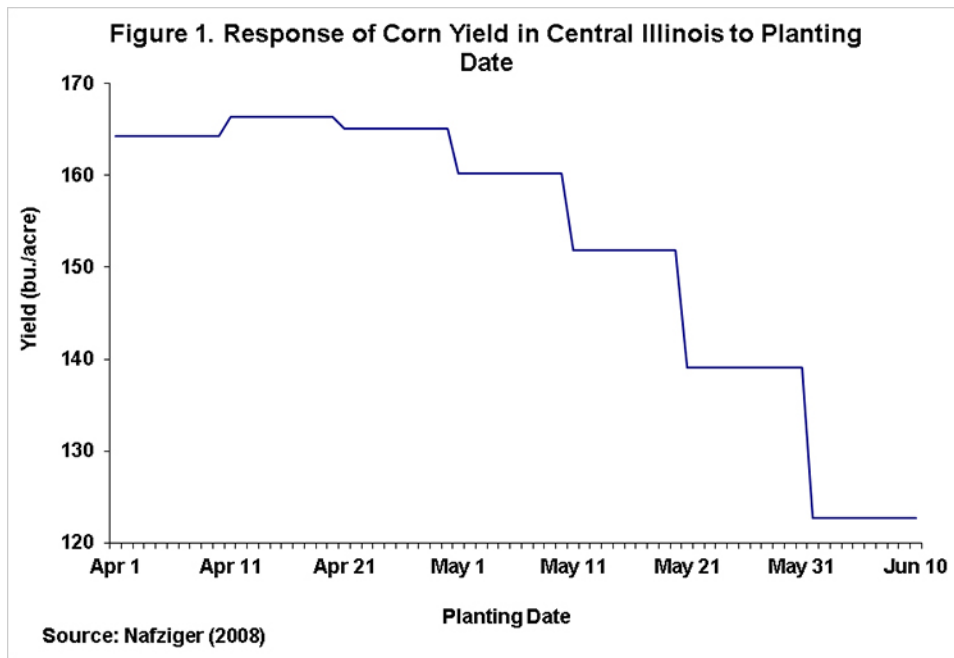
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The spring rains that have improved soil moisture conditions in many areas have been welcomed as favoring a return to more normal corn yields in 2013 following [the drought of a year ago](#). At the same time, persistent and heavy precipitation (including snow in northern areas) that has delayed the start to corn planting raise concerns that late planting will have a [negative impact on yield potential](#). Planting date, of course, is not the only factor and probably not the most important factor impacting corn yields. There are ample historical examples of late planted crops that yielded near or above trend value, early planted crops that yielded below trend value, and timely planted crops that yielded both above and below trend value. Still, timeliness of planting is an important consideration for yield potential at this stage of the season. Here, we address the likelihood that a larger than average percentage of the corn crop will be planted late this year.

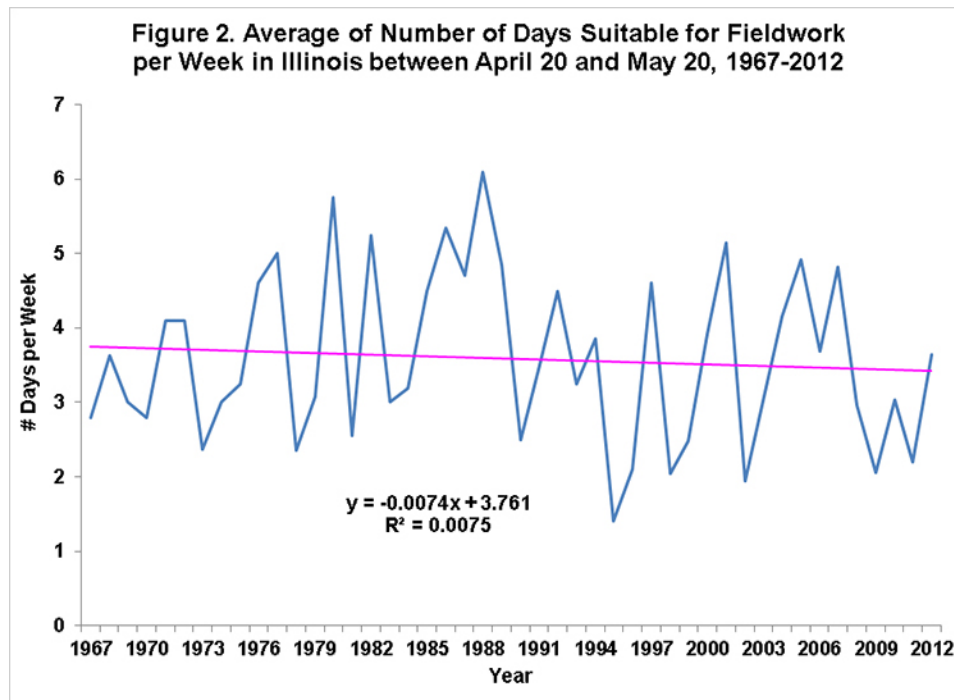
The first challenge in this analysis is to define late planting. The impact of planting date on potential corn yield has been clearly identified by agronomic research. That research generally shows, with all other conditions equal, that optimum yield potential is maintained over a fairly wide window of planting dates, but declines at an increasing rate for planting dates after the optimum window. For example, Figure 1 shows the [results from agronomic experiments](#) investigating the effect of planting date on corn yield in central Illinois. This research finds that, all else equal, average corn yields are not found to be substantially different for planting dates ranging from early April to mid-May. Yields generally decline at an accelerating rate for planting dates after mid-May. However, since planting dates have generally become earlier over time, yield response to planting date is non-linear, and planting occurs at different times in different regions, defining late planting over time for the U.S. is not straight-forward. In [previous analysis](#) we have quantified late planting as the percentage of the U.S. crop planted after May 30 in years prior to 1986 and after May 20 since 1986. That quantification balances the results of agronomic research and regional considerations and is used here.

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Based on planting progress data as reported in the USDA's weekly *Crop Progress* report for the major corn producing states and the previous definitions of late planting, we calculate that an average of 15 percent of the U.S. crop was planted late in the 42 years from 1971 through 2012. The percentage of the crop planted late ranged from one percent in 1977 to 47 percent in 1995. Other years with more than 25 percent of the crop planted late included 1993, 1996, 2002, and 2009. Other years with less than five percent of the crop planted late included 1971, 1980, 1985, 2000, and 2012.

For the current year, the USDA reported four percent of the crop had been planted as of April 21. That leaves 29 days to plant the crop before late planting begins (May 20). For late plantings this year to equal the long term average of 15 percent, 81 percent of the crop needs to be planted in that 29 day period. Reaching 85 percent planted by May 20 depends on how many days are suitable for planting and how much of the crop can be planted in each suitable day. The likely number of suitable days for planting through May 20 can be projected based on the average number of suitable days during that period in the past. We have not assembled that data for the U.S., but the data have been calculated for Illinois for the period 1967 through 2012. Based on estimates of days suitable for fieldwork reported in the Illinois Weather and Crops report and shown in Figure 2, about 50 percent of the days from the last 10 days of April through the first three weeks of May were suitable for fieldwork. Assuming those estimates are also reasonable for other corn producing states, history suggests there will be about 14.5 days suitable for field work from April 22 through May 20, 2013.



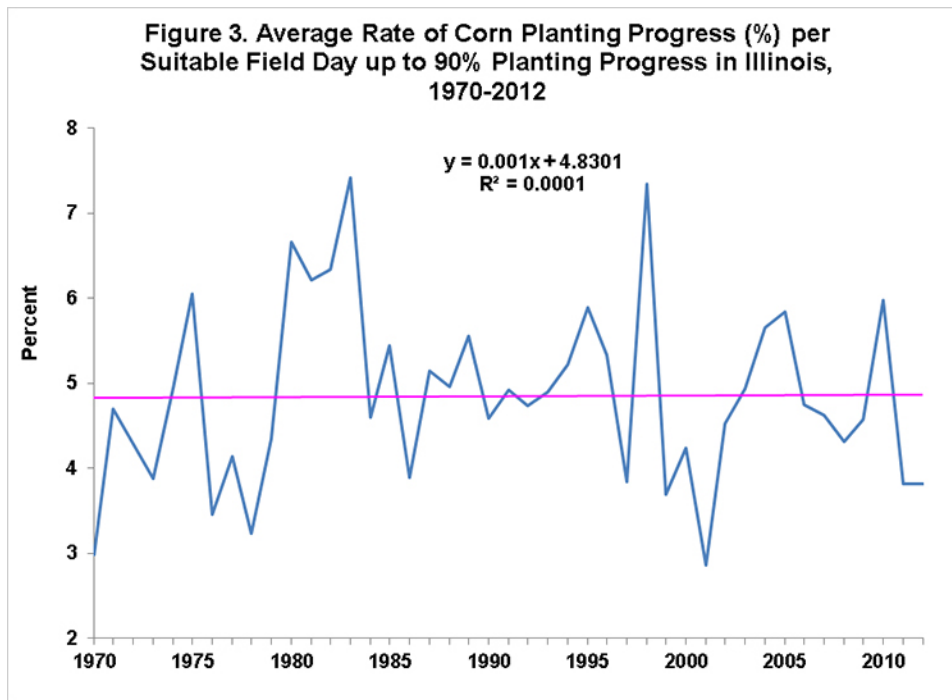
How much of the corn crop can be planted per day suitable for fieldwork? There is a general perception that modern planting equipment has resulted in a much faster planting pace over time and now allows for a very large percentage of the crop to be planted per day. That perception, however, is somewhat misleading. More acres can certainly be planted per day with a 36 row planter and modern seed handling equipment and guidance technology than with an 8 row planter of several years ago. The question is whether fewer, but larger planters can plant more acres per day

in total

than smaller, but more numerous planters of 20, 30, and 40 years ago. We examined that question in a post on [June 3, 2011](#) by calculating both the number of acres and percentage of the corn acres planted per day suitable for field work from 1970 through 2011 in Illinois. The conclusion was that Illinois farmers are now planting 15 to 20 percent more acres per day than in the 1970s. However, in terms of percentage of the crop planted per suitable field day, we found only a very small trend increase over time.

Our previous analysis was based on planting progress only for the peak week of planting each year. Here, we focus on the average planting progress per suitable field day up to the point where approximately 90 percent of the Illinois corn crop is planted, as this variable is the most relevant for assessing prospects for what is almost the entire 2013 planting season. That variable is plotted in Figure 3 for 1970-2012. Similar to our earlier analysis of progress in peak planting weeks, the average percentage planting progress per suitable field day shows remarkably little trend over time. The average was 4.2 percent in the 1970s, while it was an average of 4.8 percent for 2003-2012. There may be a slight increase in our ability to plant the corn crop now, but it is by no means a large difference.

Assuming that the average daily planting progress of 4.8 percent in Illinois is representative of the rest of the country and that 14.5 days will be suitable for fieldwork through May 20, an additional 70 percent of the corn crop would be planted by May 20, bringing the total to 74 percent planted. As a result, 26 percent of the crop would be planted late by our definition, about equal to that in 2009. Of course there is no way to know the actual daily planting progress over the next four weeks or how many days will be suitable for field work. In order to reach the average late planting of 15 percent at the average planting progress of 4.8 percent per suitable day, 17 days would be needed. Conversely, if average daily planting progress was at the recent peak rate (2010) of 6 percent and 14.5 days are suitable for fieldwork, only 9 percent of the crop would be planted late.



Implications

To avoid having more than the long-term average of 15 percent of the corn crop planted late in 2013 will require some combination of more than the average number of days suitable for fieldwork between now and May 20 and an above average planting rate per day. While the near term weather forecast is for more favorable planting conditions to develop, additional precipitation is expected in the Corn Belt next week. In combination with a lack of sustained seasonal temperatures, the additional precipitation may keep planting progress well behind average a while longer.

To date, the corn market has not reflected substantial concern about the impact of late planting on 2013 average yield potential. December 2013 corn futures have declined by \$0.40 over the past month and are at the lowest level since June 2012. Perhaps the corn market has not shown much concern because prices are already at relatively high levels following the short crop of 2012 or because farmers reported intentions to plant more corn acres than needed if yields are at trend level. Alternatively, the lack of response may reflect some overweighting of the 2009 experience. Twenty-nine percent of the corn crop was planted late in 2009, yet the U.S. average yield was above trend value at a record 164.7 bushels. The late planting of 2009, however, was followed by a relatively rare cool, wet summer and an extended growing season that was very favorable for corn yields.