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Has the best time to plant corn changed?

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Has the best time to plant corn changed?

Abstract
With planting season fast approaching, we should again consider how planting dates impact final yield. The importance of planting date is covered in the 2001 Iowa State University Extension publication, Corn Planting Guide, PM 1885. Several years of research have been conducted at both the Iowa State University Northeast Research and Demonstration Farm (Nashua) and the Iowa State University Southeast Research and Demonstration Farm (Crawfordsville) since that was printed. Each location has three years of data that we will review.

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Disciplines
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Has the best time to plant corn changed?

by Lori Abendroth and Roger Elmore, Department of Agronomy

With planting season fast approaching, we should again consider how planting dates impact final yield. The importance of planting date is covered in the 2001 Iowa State University Extension publication, Corn Planting Guide, PM 1885. Several years of research have been conducted at both the Iowa State University Northeast Research and Demonstration Farm (Nashua) and the Iowa State University Southeast Research and Demonstration Farm (Crawfordsville) since that was printed. Each location has three years of data that we will review.

Historically, corn planting dates have moved earlier and earlier, as hybrids and technology improve. Planting too early is discouraged due to wet or cold (below 50° F) soils. The condition of the seedbed is always an important consideration for proper seed germination and seedling establishment, regardless of what date is on the calendar. An advantage that corn has compared to soybean with earlier planting dates is that its growing point is below ground until the sixth leaf. With the growing point under ground, the plant is able to sustain cold temperatures with minimal freeze damage.

Three years (1998-2000) of planting date research at Lewis, Ames, and Nashua were summarized in the Corn Planting Guide. Planting between April 20 and May 5 resulted in 100 percent yield potential, although a 99 percent yield potential could still be achieved with a planting date up to May 20. A significant yield reduction occurred only once when the planting date was extended to late May or June.

An earlier planting window was used in the more recent research, with dates beginning as early as March. At Crawfordsville, four planting dates were used (Table 1). Corn planted between March 15 and April 15 yielded similarly. A significant yield loss did not occur until corn was planted on May 1 (183 bu/acre). Data from the Nashua location show the optimum planting window shifted a bit later (Table 2). The highest yields were achieved with planting dates between April 5 and May 5. A planting date that was too early (between March 20 and April 5) or too late (between May 5 and May 20) yielded significantly less.

### Table 1. Southeast Research and Demonstration Farm (Crawfordsville) planting date research conducted by Kevin Van Dee and Jim Jensen, 2002-2004.

<table>
<thead>
<tr>
<th>Planting Date (+ / - 3 days)</th>
<th>Yield (Bu/Acre)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 15</td>
<td>208 a</td>
</tr>
<tr>
<td>April 1</td>
<td>210 a</td>
</tr>
</tbody>
</table>
Table 2. Northeast Research and Demonstration Farm (Nashua) planting date research conducted by Ken Pecinovsky, 2003-2005.

<table>
<thead>
<tr>
<th>Planting Date Window</th>
<th>Yield (Bu/Acre)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 20-April 5</td>
<td>186 b</td>
</tr>
<tr>
<td>April 5-April 20</td>
<td>198 a</td>
</tr>
<tr>
<td>April 20-May 5</td>
<td>196 a</td>
</tr>
<tr>
<td>May 5-May 20</td>
<td>183 b</td>
</tr>
</tbody>
</table>

*Yield values with any letter in common are not significantly different from one another.

Overall, research has shown a small yield loss with very early planting dates and a larger yield loss with late planting dates. This late planting yield loss is again confirmed by the research at Nashua and Crawfordsville. Although a yield loss is still possible if corn is planted too early, the optimum planting window may be earlier than previously recommended. Based on this newest research, corn can be planted prior to April 20 (as previously recommended in the Corn Planting Guide) and still reach its maximum yield potential in all parts of the state. Demographically, producers in southern counties can begin planting about two weeks before northern counties. Of course, embedded within this planting date recommendation is the assumption that soil conditions are favorable and that good hybrids have been selected. Planting date is simply one criterion among many that will help a producer reach maximum yield potential.

So why have planting date recommendations shifted?

The difference in yield responses among the years cited here and previous recommendations may be due to location or weather differences. For example, in some years, planting early versus late may help to avoid moisture stress around pollination. Or a cold spell in the spring could hamper early plantings one year while the next year it might not be a factor. Therefore, it is important to remember that planting date recommendations can change significantly depending on which years are compared. We intend to continue these planting studies at both the Northeast and Southeast Research and Demonstration Farms, as well as initiating similar studies at several other Iowa State University research farms in 2006. Look for research from these studies in the future; although it appears that producers can plant earlier and still achieve maximum yield potential than previously thought, it is only through more research that this can be verified to reduce any year variability that may be impacting the overall recommendation.

Please refer to the article, Do polymer coatings help with early corn plantings?, for information concerning coated seed.

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