Plant soybeans before mid-May

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Abstract
Research results from five stations in Iowa show that producers must plant soybeans by mid-May to achieve maximum yields. Soil conditions must be ready for planting or compaction will affect plant growth throughout the season. Delayed planting may result in additional penalties due to weather interference and serious yield potential may be lost.

Keywords
Agronomy

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences

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Research results from five stations in Iowa show that producers must plant soybeans by mid-May to achieve maximum yields. Soil conditions must be ready for planting or compaction will affect plant growth throughout the season. Delayed planting may result in additional penalties due to weather interference and serious yield potential may be lost.

From 1994-1996 similar studies were conducted in central Iowa and also near each of the four corners of the state. Table 1 and 2 show the results of these studies for northern and southern Iowa, respectively. In each area there was no significant difference in yield if planting occurred between late April and mid-May. However, in both areas, delayed planting until early June demonstrated the potential for a significant yield loss. Additional studies have shown that delaying planting beyond early June will result in even greater potential losses.

These results are averaged over three years and two sites each year. Weather conditions varied between sites and years, so averages over both years and locations give a better idea of future response. The central Iowa location was similar to the other areas of the state. The maximum yield was produced when soybeans were planted between May 2-5 in central Iowa. Yields from late April and mid-May plantings were not significantly different, but May 31-June 7 plantings only yielded 92 percent of maximum.

There are risks associated with early planting of soybeans, but the risks are usually rewarded with higher yields. If the soybean seed is planted into cool soil, with temperatures less than 50° F, germination and emergence of the seedling will be delayed. Delays in emergence may result in damage or death of some seedlings, but the percentage of stand loss is minimal if good-quality seed is planted. If the field has a history of seedling diseases and planting is anticipated to be into cool soil, treating the seed with a fungicide should help protect the seed and seedling from serious disease damage. Some producers will increase their seeding rate by 10 percent to compensate for the seedling loss when planting into cool soils.

Frost damage to early-emerging seedlings is also a risk but seldom results in stand reductions that require replanting. The soybean seedling is very hardy and usually recovers from light frost without serious damage. Another risk is soil compaction resulting from field activities that occur when the soil is too wet. Plant early but do not plant until the soil conditions are appropriate for planting. Otherwise, soil compaction will affect crop growth throughout the season. Compaction may restrict the ability of roots to penetrate the soil to obtain water and nutrients for growth.

Soybeans planted in April will not develop as much vegetative growth or reach the same plant height as the same variety planted in late May. This is because of the cool temperatures and less elongation of plant internodes. The number of nodes per plant will be
similar, but the early-planted plants will be shorter. This may be an advantage if lodging is reduced, and the shorter plants will seldom be a disadvantage to yield. The tallest plants will occur when the same variety is planted close to June 1 and a normal season follows.

The timing of soybean planting is very important to obtain maximum grain yield. Early planting is one of the most important factors to achieve high yield. Other factors include the use of high-quality seed, proper adjustment of the planting equipment, appropriate seeding rate, weed management, and soil nutrients. The number of acres to be planted and the size of equipment also affects the decision of when to plant. If the weather cooperates and the above factors are in place, producers should expect yields that they can be proud of at harvest time.

Table 1. Effect of planting date on soybean yield in northern Iowa 1994-1996.

<table>
<thead>
<tr>
<th>Planting date</th>
<th>Percentage of maximum yield</th>
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</thead>
<tbody>
<tr>
<td>April 19-28</td>
<td>100</td>
</tr>
<tr>
<td>May 12-17</td>
<td>96</td>
</tr>
<tr>
<td>May 22-25</td>
<td>99</td>
</tr>
<tr>
<td>May 31-June 5</td>
<td>81</td>
</tr>
</tbody>
</table>

Table 2. Effect of planting date on soybean yield in southern Iowa 1994-1996.

<table>
<thead>
<tr>
<th>Planting date</th>
<th>Percentage of maximum yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 18-25</td>
<td>98</td>
</tr>
<tr>
<td>May 4-7</td>
<td>100</td>
</tr>
<tr>
<td>May 15-20</td>
<td>98</td>
</tr>
<tr>
<td>May 30-June 7</td>
<td>89</td>
</tr>
</tbody>
</table>

This article originally appeared on pages 46-47 of the IC-480 (6) -- April 20, 1998 issue.

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