Soybean planting date in 2000

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Abstract
Soybeans were planted in late March this year in several areas of southeastern Iowa. Producers made the decision to plant in March based on past experiences of fields being too wet to plant in April. Past planting delays have resulted in soybeans being planted in late May or early June. Experience also has shown producers that planting soybeans in June usually results in lower yields than desired. However, planting soybeans in late March or early April increases the chance of plant damage by a late spring frost, which may cause stand reduction and the need to replant.

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Air temperatures of below 28°F usually cause injury or death of the young soybean seedlings that have emerged above the soil surface. Seed and seedlings below the soil surface are more protected from the cold temperatures and are more likely to survive these temperatures. Leaf tissue is the first tissue to be damaged by the cold temperatures. Stem tissue also is damaged if the water in the stem freezes. Not all seedlings react the same and air temperatures may vary throughout the soybean field. These variable conditions usually result in uneven stand loss within the row and across the field. If the soybean stand is reduced, a producer must decide if the surviving stand is sufficient to save, or if replanting is necessary. Stands of 75,000 plants per acre or more are worth saving, but weed management may be more difficult than with higher plant populations.

The first concern about when to plant soybeans is appropriate soil conditions. If the press wheels on the planter do not pick up moist soil, the conditions are probably dry enough to plant. Planting into wet soil may result in excessive soil compaction and the crop may suffer from restricted root development throughout the growing season. Wet soil also may prevent closure of the furrow when planting. Closure of the furrow after dropping seed into the furrow is important to protect the seed from drying out and to have good soil-seed contact necessary for rapid emergence.

Research is underway to determine if ultra-early planting (planting before April 15) of soybeans is recommended, but results are not yet available to support ultra-early planting. However, producers have had positive experiences with ultra-early planting of soybeans in several areas of Iowa during the past few years. Some producers have reported that their ultra-early plantings produced their highest soybean yields, especially if cool, wet weather interfered with late-April or early-May plantings.

Soybean seed begins emerging if sufficient moisture is available and if the soil temperature is 45-50°F at the seeding depth. Over the past 50 years, the average last 28°F freeze date in Iowa occurs during April.

Soil and air temperatures were above normal for early April this year, but frequently soil
temperatures are cool enough that soybean seed planted in early April would not germinate for 3 or 4 weeks. Warmer temperatures result in earlier germination of ultra-early planted seed. Early emergence places the young seedlings in danger of damage or death from an April frost. Disease pathogens also may damage the seed and seedlings planted into cool soils. Therefore, treatment with a seed fungicide is recommended with early planting.

Studies have shown that the best soybean yield results usually occur when soybeans are planted between late April and mid-May. Planting after mid-May often results in decreasing yields as shown in the figure.

Similar results have been found in other Midwest states. For best yield results, plant soybeans early enough to allow sufficient time for the plants to develop most of their vegetative growth before flowering occurs in late June and early July. Early planting may increase the risk of frost damage in April. Late planting of soybeans after mid-May increases the risk of lower yields due to a shorter growing season and possibly limited moisture in August.

**Average dates of last 28°F freeze in the spring**

<table>
<thead>
<tr>
<th>Southeastern Iowa</th>
<th>Before April 10</th>
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</thead>
<tbody>
<tr>
<td>Southwestern, central, and eastern Iowa</td>
<td>April 10-15</td>
</tr>
<tr>
<td>West, northern, and east central Iowa</td>
<td>April 15-20</td>
</tr>
<tr>
<td>Northwestern and northeastern Iowa</td>
<td>After April 20</td>
</tr>
</tbody>
</table>

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