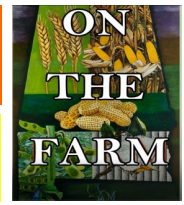


# On The Farm in Alabama

AN ALABAMA EXTENSION NEWSLETTER FOR  
ALABAMA ROW CROP FARMERS AND AGRIBUSINESS



## In This Issue:

### Risks and Rewards of Ultra-Early and Early Planted Soybeans in Alabama



*Early-planted soybeans in Alabama have tremendous yield potential but growers need to understand the risks as well as the rewards.*

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### Risks and Rewards of Ultra-Early and Early Planted Soybeans in Alabama

Growers are planning to get every bushel out of their 2022 soybean crop as the current November soybean futures hover around \$14.50 per bushel. Soybeans, a legume, also look attractive as farmers focus on cutting their fertilizer bills with nitrogen prices at record highs. Growers looking at increase yield potential with early-planted soybeans should be aware of the risks as well as the rewards.

Most farmers would probably say that corn benefits more from early planting than soybeans. Research from the Mid-West and field experience from the Southeast recognize that soybeans may actually benefit more by increasing yields from 10-20% over traditional May planted soybeans.

Three factors that play a critical role in high soybean yields are adequate moisture/irrigation; planting date; and solar radiation (sunlight) during pod fill. The earlier growers can plant in Alabama, the more likely they can take advantage of all three factors. I would consider soybeans planted in mid-April through May 1 as early planted soybeans and ultra-early planted soybeans would be planted in very late March through mid-April in Alabama. The soil and weather conditions may not always allow farmers to plant this early in Alabama, especially in North Alabama, but some years there will be a window of opportunity to plant ultra-early soybeans.

Lets look at what research shows is the most optimal planting dates for high soybean yields in states far to the north of us before we summarily dismiss the notion of ultra-early planted soybeans in Alabama. University of Illinois research showed near maximum soybean yields when planted in mid-April to early May.

The mention of trade names in this newsletter does not imply endorsement by Alabama Extension, nor criticism of similar ones not mentioned.

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Iowa State University research recommends the optimum time to plant soybeans in the southern two-thirds of the state, if soil conditions are suitable, is April 25. Twenty years of data in Indiana has shown the ideal soybean planting window is between April 16 and April 30. The early soybean production system (ESPS) is well defined in the Mid-South with Arkansas and Mississippi doing most of the research. Their ideal planting date is April 10-20.

The ideal soil temperature for rapid soybean germination and emergence is 77 to 86 degrees F but despite cold soil temperatures and slow plant growth during the seedling stage, there is a yield advantage from early planting. The soybean varieties today have better seedling vigor and cold tolerance than in the past. Also seed treatments and in-row fungicides allow for earlier planting. Although soybean germination has been reported in soil temperatures as low as 36-39 degrees F, the soil planting depth temperature should be 55 degrees F or above with a warming trend forecast for the next 5-7 days to plant ultra-early soybeans.

There is concern that a late frost may mean replanting ultra-early soybeans, but the risks aren't as great as growers suspect. Temperatures at or below 28-30 degrees F for several hours are usually needed to kill soybean tissue. Air temperatures at 28-30 degrees F doesn't mean freeze damage; it means the temperature surrounding the soybean seedling needs to be this low for freeze damage to occur. The temperature surrounding the soybean seedling are usually buffered by heat being radiated from the soil. However, older soybean are less freeze tolerant than seedlings. Last year April 5 planted soybeans in Limestone County sustained two nights in the low 30s with little damage to the seedlings or impact on yield.

Growers usually plant corn first because it is at lower risk from freeze damage since the growing point is below the ground until V5-6, but soybeans are able to compensate for a partial stand unlike corn. In planting date studies at the University of Minnesota since the 1980s, stands planted in April and later have rarely been injured by frost. Fortunately, injured stands were not reduced to a level needed to replant and yielded just as well as later, unfrosted planting dates. A non-irrigated April 23, 2019 planted soybean field near Cherokee County was hit by mid-30 degree temperatures in late April and sustained enough cold injury that the grower was considering replanting them. He left them and averaged 88 bushels per acre over the entire field.

The benefits of planting ultra-early soybeans in Alabama are:

- Higher potential yields and profitability
- Shorter plants and less lodging
- Non-irrigated soybeans may benefit from better moisture early for planting and early growth
- Flowering and pod set occurs during longest days
- Longer reproductive period and greater seed filling rate
- Potential for earlier harvest and more positive basis
- Less chance of some diseases such as soybean rust
- If planted in nematode infested fields, earlier plantings give the soybean plant time to get established before nematode populations fully explode

The primary risk of early planted soybeans is they are at more risk to seed decay and poor seed quality, especially the indeterminate varieties, because seed maturity occurs during warmer temperatures and more chance of rainfall. We saw this in 2021 as two periods of continuous rainfall and cloudy weather for five or more days in September severely impacted the quality of most soybeans planted before mid-May in Alabama. Indeterminate varieties seed quality is in more jeopardy the further south they are planted and if those soybeans are non-irrigated. The risks of poor seed quality in indeterminate varieties is so high in non-irrigated fields in South Alabama that it would be wise not to plant them unless irrigation is available.

Other risks of planting ultra-early soybeans in Alabama are:

- Late spring frost and risk of replanting
- Risk of more seedling disease and Sudden Death Syndrome (SDS)
- Weather pattern may not always benefit ultra-early planted soybeans
- They need to be planted at the same time we are planting corn and harvested when we are harvesting corn

The longest day of the year is June 21 and days become shorter after June 21. Indeterminate soybean varieties planted earlier will begin pod fill during the longest days of the year and take advantage of the highest amount of solar radiation (sunlight). This allows maximum photosynthesis where the plant converts sunlight into sugars. These sugars are the energy source for the soybean plant and seed production. Indeterminate varieties are not as photoperiod sensitive as determinate varieties allowing them to be planted earlier.

Growers will need to weigh the risks against the benefits before deciding if ultra-early soybeans will fit into their production schedule. Here are a few suggestions if a grower is going to try the ultra-early or early soybean production system:

- Try it on a limited number of acres until you develop a management system for your farm.
- Uniform stand establishment can be expected after soil temperatures reach 50 degrees F but wait until they reach 55 degrees F and a warming trend is forecasted for the next 5-7 days.
- A soybean seed treatment for seedling diseases should be used.
- An in-furrow fungicide and seed treatment for SDS is encouraged.
- When planting in less than ideal conditions, seeding rates of 120,000+ seed per acre are advisable.
- There is not much data on the effect of variety selection and the potential for poorer seed quality but there was significant differences in our Group IV variety trial in 2021 (see results below).
- Fungicide applications delayed harvest of early-planted soybeans in 2021 due to a “greening effect”. This delayed harvest cost growers by reducing yields and seed quality. The strobilurin fungicides are more likely to cause a “greening effect” and growers need to consider this when selecting a fungicide’s mode of action.
- Growers need to put more management into soybean production regardless of planting date. One production practice that has the potential of returning huge dividends is weekly scouting for pests. Late-season stinkbug pressure has contributed to lower yields and poorer seed quality. Some growers in North Alabama had complete defoliation due to velvetbean caterpillars (a infrequent pest but rapid defoliator) in 2019.
- Timely harvest is critical and a harvest aid is prudent.

#### 2021 Marshall County Group IV Soybean Variety Trial (Non-irrigated)

Variety	Test Weight (lbs/bushel)	Yield (bushels/acre)	Total Damage %	Splits %
Asgrow 48XF2	52.1	87.83	13.9	50.0
<b>Dyna-Gro 46XF31</b>	<b>52.9</b>	<b>85.82</b>	<b>9.8</b>	
Armor 48F22	50.3	85.81	11.3	
<b>Asgrow 47XF2</b>	<b>52.1</b>	<b>83.76</b>	<b>5.8</b>	
Asgrow 48XFO	51.2	81.90	5.0	
<b>Dyna-Gro 49XT70</b>	<b>52.2</b>	<b>81.51</b>	<b>2.0</b>	
Pioneer 47A64X	50.9	81.45	6.3	
<b>Armor 48D25</b>	<b>52.9</b>	<b>80.61</b>	<b>1.5</b>	
AgriGold 4995RX	53.0	79.81	1.6	
<b>AgriGold 4820RX</b>	<b>52.5</b>	<b>78.96</b>	<b>4.0</b>	
Dyna-Gro 48FX61	50.0	77.55	10.8	43.0
<b>Pioneer 42A96X</b>	<b>52.3</b>	<b>74.57</b>	<b>13.8</b>	
Dyna-Gro 48XT90	50.6	73.50	6.5	
<b>Pioneer 46A86X</b>	<b>51.3</b>	<b>72.70</b>	<b>8.0</b>	
Dyna-Gro 43XS70	51.1	71.22	8.0	
<b>AgriGold 4615XF</b>	<b>52.5</b>	<b>69.85</b>	<b>6.5</b>	
Average	51.7	78.97	7.2	

Grower: John Bevel  
Seeding Rate: 145.000 per acre

Planting Date: May 8, 2021  
Row Spacing: 15”

Harvest Date: October 27, 2021  
Tillage: No-till