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How early too early to plant soybeans?

Larry G. Heatherly | Feb 10, 2006

Ultra-early (mid-March through early April) planting of soybeans in the Mid-South is being used as a mechanism to avoid drought and ensure early harvest to take advantage of an early-delivery price bonus available in some years. The risks of planting in this timeframe are associated with temperature.

Many years of observations and experience have shown that soil temperature likely is not a factor when planting this early. High-quality seed that are treated with fungicide to control both seedborne and soilborne diseases will germinate and emerge.

Emergence time may be extended by cold soils, but emergence will occur as long as adequate soil moisture is available.

The greatest risk with ultra-early planting is perceived to be from low air temperature that occurs after soybean emergence. There are known cases of soybean seedlings surviving frost after emergence, but the severity and duration of these cold temperatures are not documented.

Presumably, there is a difference in how two hours at 36 degrees that may result in a light frost and eight hours at 33 degrees that may result in a heavy or “killing” frost will affect soybean seedlings.

Based on this discussion, knowledge of when the last date of a particular low temperature is estimated to occur is important. The accompanying table presents the 10 percent (one year in 10) and 50 percent (five years in 10) estimates for expected last spring frost (36 degrees) and last spring freeze (32 degrees) dates for selected locations in the Mid-South where ultra-early planting likely will occur. Go to <http://www5.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl> [1] for freeze/frost dates for other US locations.

From Sikeston, Mo., south, the 50 percent or average date for the last spring freeze is before early April. Since emergence likely will take 10 to 14 days when plantings are made this early, planting in late March at latitudes below Sikeston should not be impacted by a freeze in an average year. The 10 percent last freeze date indicates a higher risk from planting before early April.

From Memphis, Tenn., south, the 50 percent or average last spring frost is estimated to occur from mid-March to very early April. Thus, when considering that emergence of early plantings likely will take 10 to 14 days, planting in the late March to early April timeframe is not a high risk from the standpoint of average date of last spring frost south of Memphis.

From Memphis north to Sikeston, average date of last spring frost is estimated to occur from early to mid-April. Thus, plantings that emerge before mid-April north of Memphis have a 50 percent chance of being subjected to frost and are probably too risky. Early April plantings made from Memphis to Sikeston that

emerge 10 to 14 days after planting are not a high risk from the standpoint of average date of last spring frost.

Again, there is no documentation of just what level of frost is required to be detrimental to soybean seedlings. To be on the safe side, early plantings should be timed so that emergence will occur after the estimated 50 percent last spring frost date for a given location.

Larry G. Heatherly is a retired USDA-ARS research agronomist and current crop consultant. e-mail larryheatherly@bellsouth.net ^[2]

Mid-South locations, their latitudes, and estimated*
50% and 10% last spring frost (36°) and last spring freeze (32°) dates.

Location	Latitude	50% last frost	10% last frost	50% last freeze	10% last freeze
Alexandria, La.	31°18' N	March 16	April 8	Feb. 27	March 23
Vicksburg, Miss.	32°21' N	March 30	April 14	March 20	April 8
Shreveport, La.	32°30' N	March 30	April 17	March 10	March 31
Lake Providence, La.	32°48' N	March 19	April 6	March 4	March 27
Stoneville, Miss.	33°26' N	March 28	April 13	March 11	March 31
Paris, Texas	33°41' N	March 31	April 14	March 18	April 6
Dumas, Ark.	33°52' N	April 3	April 15	March 13	March 31
Clarksdale, Miss.	34°12' N	March 30	April 13	March 14	April 4
Marianna, Ark.	34°46' N	April 8	April 18	March 25	April 10
Memphis, Tenn.	35°09' N	April 1	April 14	March 22	April 9
Jackson, Tenn.	35°37' N	April 12	April 24	April 6	April 18
Jonesboro, Ark.	35°50' N	April 10	April 21	March 29	April 13
Union City, Tenn.	36°25' N	April 16	April 30	April 5	April 18
Sikeston, Mo.	36°52' N	April 12	April 25	April 2	April 19

*Probability of later date of occurrence. For 50% dates, there is a 50% chance (5 years in 10) of occurrence later than date shown. For 10% dates, there is a 10% chance (1 year in 10) of occurrence later than date shown.

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