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G84-687 Soybean Planting Date: When and Why

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Soybean Planting Date
When and Why

Soybeans differ from corn and sorghum in their response to planting date. This NebGuide provides guidelines that are helpful in making planting decisions for soybeans.

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Soybean response to planting date is important not only in years when planting is delayed by inclement weather, but also when weather does not disrupt the normal planting season. When planting is delayed, and in doublecrop situations, correct crop and variety planting decisions are necessary to obtain maximum yields. Early season freezes, hail storms, flooding, and other situations can reduce crop stands to a point where late planting is necessary. When planting is not delayed by weather, the response of various crops to planting date is useful information for deciding which crop to plant first.

The Photoperiod Effect

The concept of planting shorter season corn and sorghum hybrids as planting date is delayed is a proven practice in most management systems. However, this concept needs modifying when applied to soybeans.

Soybean varieties respond much differently to delayed planting than either corn or sorghum hybrids. This is because soybean flowering is more closely related to photoperiod (the length of the daily light and dark periods) than either corn or sorghum. The shift from the vegetative to the flowering stage in soybeans is caused mostly by changes in the length of darkness. Adapted varieties flower soon after the dark period begins to lengthen in late June.

Soybean flowering is also influenced to some extent by temperature. High temperatures hasten flowering. Given a very warm vegetative period, flowering can start before the dark period begins to lengthen. Since flowering response of corn and sorghum is more temperature dependent than that of soybeans, accumulated growing degree days are reliable for estimating corn and sorghum growth stages

but not for estimating soybean growth stages.

Planting Date Considerations

Soil temperature is an important aspect. The optimum temperature for soybean germination is 86°F. Seed planted into soil that is 50°F germinates slowly, and emergence will probably be reduced. Planting into seedbeds that are in the low fifties is not advisable unless soil temperatures are rising rapidly. Sixty degrees Fahrenheit is a good target at which to begin planting.

Soybeans have a unique ability to yield well when planted over an extended time period. This permits them to complement other crops in Nebraska's cropping system. The data in *Table I*, which are averages of six indeterminate varieties, illustrate this well. (Indeterminate varieties are those in which flowering begins at the lower nodes and progresses upward on the plant; determinate varieties are those in which flowering begins at all nodes simultaneously.*) Soybeans planted in May were the most productive. Yields were considerably lower after mid-June. Plant heights were greatest from mid-May to mid-June and were shorter with earlier and later planting dates. Podding height dropped off considerably in July.

Details on three of the varieties tested are shown in *Table II*. Wells [Maturity Group (M.G.) II] is about 7 days earlier, and Cutler 71 (M.G. IV) is about 6 days later than Woodworth (M.G. III). Cutler 71 is generally too late for Nebraska. Days to maturity decreased with all varieties as planting date was delayed; maturities were very similar in the July plantings. Flowering is triggered at about the same time when soybean varieties of different maturities are planted late. Yield for all varieties was reduced with delayed plantings. Yield of Cutler 71 decreased fastest.

Table I. Effect of planting date on soybean yield, plant height, and lowest pod height. Mead, NE. 1976-1978. (Essa, 1979; Johnson, 1979)

Planting date	*Yield*	*Plant height*	*Lowest pod height*
	(Bu/A)	*(In.)*	*(In.)*
Early-mid May	37	34.4	3.5
Mid-late May	35	38.8	4.7
Early-mid June	32	38.5	3.8
Mid-late June	26	34.7	4.2
Early-mid July	16	27.9	3.0

Determinate (semi-dwarf) varieties respond to planting date like indeterminate varieties. Late-planted soybeans, however, are often subjected to extreme environmental stresses. Because of their short stature and flowering habit, determinate varieties are not recommended for planting after mid-June in Nebraska.

Both determinate and indeterminate adapted varieties will perform well when planted between the second week in May and mid-June if soil temperatures are 60°F or higher. Earlier planting may reduce stands because of the inability of emerged beans to tolerate freezing temperatures. If you intend to plant soybeans after mid-June, your best variety choice is an early to mid-season, adapted, indeterminate variety. Non-adapted varieties do not have the yield potential given a later than average freeze date, and later varieties might not fully mature. Indeterminate varieties are much more suited to the stressful conditions associated with late plantings and have greater yield potentials than determinate varieties for

these late plantings. These recommendations apply to doublecrop situations as well.

Late-April to early-May planting dates are more beneficial to corn than to soybeans. Likewise, late-May to early-June planting dates are more beneficial to sorghum than to soybeans. Planting soybeans in mid-May after corn and before sorghum provide the best results for all three crops.

Late Planting Cultural Practices

When soybeans are planted later than mid-June, vegetative growth is reduced. Without changes in planting patterns a large portion of the available light energy is lost, evaporative water losses are greater, and weeds are more competitive. Row widths less than 20 inches, combined with plant populations 20 to 25 percent higher than normal will provide a more rapid canopy closure and will maximize yields.

Late-planted soybeans are shorter and sometimes have lower podding heights. Narrow rows and slightly higher planting rates provide a better chance of maximizing yields.

Table II. Yield and days from planting to maturity of specific soybean varieties at different planting dates. Mead, NE. 1976-1978. (Essa, 1979; Johnson, 1979).

	Yield			*Days to maturity*		
Planting date	*Wells*	*Woodworth*	*Cutler 71*	*Wells*	*Woodworth*	*Cutler 71*
	--------Bu/A--------					
Early-mid May	36	40	36	124	136	141
Mid-late May	39	35	32	117	118	130
Early-mid June	37	32	27	105	111	118
Mid-late June	31	28	23	99	104	109
Early-mid July	19	18	14	91	93	93

*For more information on variety growth types and maturity groups. see NebGuide *G79-445, Soybean Variety Selection*.

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