



Texas Agricultural Extension Service
The Texas A&M University System

Result Demonstration Report

Effect of Planting Date and Maturity Group on Soybean Yield in the Texas Panhandle

Brent Bean, Professor and Extension Agronomist, Amarillo
Roger Cassens and Matt Rowland, Research and Extension Technicians, Amarillo

Introduction:

Interest in soybean production continues to grow as producers seek alternatives to conventional crops such as wheat, corn, sorghum, and cotton. Producers particularly like to plant Roundup Ready soybeans in order to clean up weeds that have become a problem in other crops. Typically soybeans are planted from early May to the first week of July. Planting dates vary depending on how soybeans are being utilized by the producer. Some producers are planting early with the hopes of producing high yield, while others are trying to produce a second crop after wheat harvest. A question that is often asked is which maturity group of soybeans should be planted on a given planting date? This study is the first year of a three year study to try to answer this question.

Methods and Materials:

Six soybean varieties of different maturity groups were selected for planting. Maturity groups represented were mid III, late III, early IV, mid IV, late IV, and mid V. Varieties from a single company (Pioneer Seed Company) were used in order to insure that the criteria for placing varieties in maturity groups would be consistent. Each variety was then planted at the Texas Agricultural Experiment Station near Bushland, TX on five planting dates: May 11, May 25, June 8, June 28, and July 7. Planting was accomplished with a John Deere MaxEmerge Plus Model 1700 planter calibrated to plant 120,000 seed/acre. Nitragin 2000 granular inoculant at a rate of 5 lbs/acre was applied in the seed furrow at planting. Soybeans planted on May 25 and June 8 did not emerge well and were slow to grow early in the season. This was attributed to unusually cool, wet weather that occurred immediately after planting. During the growing season 13.4 inches of rain was received. Plots were irrigated five times, on June 8, July 9, August 11, August 25, and September 10, with approximately 3 inches/acre of water applied with each irrigation. Roundup Ultra was applied three times during the season to control weeds. Plot size was three 30 inch rows by 100 feet in length. Each treatment was replicated three times. The study design was a randomized block and statistical analysis was performed using a two-factor (planting date and maturity group) analysis of variance. Plots were harvested with a small plot combine either on October 11 or on October 26 depending on the soybeans stage of maturity. Soybean moisture was approximately 10% at harvest.

Results:

Variety selection (maturity group) did not have a significant effect on yield, nor was there an interaction between variety and planting date. However, planting date had a significant effect on yield regardless of the variety planted (Table 1). There was only a 2.4 bushel difference in average yield between soybeans planted on May 11 and June 8. However, between June 8 and June 28 there was a 9.1 bu/acre drop in yield followed by another 6 bu/acre drop when planted on July 7. This data would suggest that no appreciable loss in yield would be expected as long as soybeans are planted prior to June 8. Although this was true in 1999, this conclusion may not hold true in other years. In 1999, May weather was unseasonably wet and cool. As a result soybeans did not grow well most of the month. If weather conditions would have been more normal soybeans would have likely benefitted from the earlier planting. In addition, there seemed to be some advantage in planting longer maturing soybeans (mid IV, late IV, and mid V) on May 11. This advantage may very well have been significant if better growing conditions had been present in May. There was no advantage in planting a short maturing variety late in the season. The mid IV soybean variety was the highest yielding variety when planted on June 8, June 28, and July 7.

Table 1. Planting date and maturity group effect on soybean yield.

Variety (Pioneer)	Maturity Group	Planting Date				
		May 11	May 25	June 8	June 28	July 7
		-----Yield, bu/acre-----				
93B51	Mid III	32.9	43.0	44.4	30.1	27.3
9396	Late III	37.9	35.4	45.1	30.6	28.3
94B01	Early IV	37.2	49.1	43.7	33.1	29.0
94B81	Mid IV	42.7	39.8	46.2	40.3	31.2
9492	Late IV	44.0	41.4	37.0	35.1	23.9
95B41	Mid V	47.2	42.1	40.1	32.1	25.6
<i>Average*</i>		<i>40.3 a</i>	<i>41.8 a</i>	<i>42.7 a</i>	<i>33.6 b</i>	<i>27.6 c</i>

*Average yields of each planting date followed by the same letter are not significantly different according to ANOVA at P=0.05.

Funding:

This study was funded by the Texas Soybean Producers Board. Seed provided by Pioneer Hi-Bred International, Inc.