Effect of Planting Date on Chemical Composition and Growth Characteristics of Soybeans

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Numerous investigations with soybeans and other crops have shown that variation in planting date may affect not only yield but other plant and seed characters as well. An understanding of varietal performance at various planting dates is important for making recommendations to growers and for the integration and interpretation of results obtained from experiments planted at different dates.

Varieties used in previous date of planting experiments in Illinois are no longer commonly grown, and no similar data are available on the comparative behavior of the higher yielding present-day varieties. Accordingly, a date of planting experiment, which included five commonly grown varieties, two new varieties, and one promising unnamed strain, was conducted at Urbana, Ill., in 1950-1952.

A comprehensive review of literature as related to date of planting soybeans was made by Weiss et al. (4). Burlison et al. (1) obtained the highest soybean yields from May 20 plantings at Urbana. Cartter and Hopper (2) reported that variation in seasonal environment was an important factor in modifying bean size, and that the oil iodine number appeared to be critically influenced by the temperatures prevailing during the period of bean development. Feaster (3) found that for maximum yields, short season varieties should be planted somewhat later than long season varieties. He also reported a significantly lower oil content at the last planting date than at earlier dates, and that protein content varied inversely with oil content while the iodine number increased as planting date was delayed.

Weiss et al. (4) reported that their earliest variety did not differ significantly at the various planting dates while yield of the latest variety decreased progressively with dates subsequent to May 1. They reported that maturity of genetically early varieties was retarded more by delay in planting than that of later varieties. Their results indicated no appreciable effect of planting date on lodging while maximum height was attained at the second date (May 12). Weiss et al. (4) also reported no effect of planting date on protein content, no consistent effect on iodine number, and only a slight decrease in oil content in one variety.

Materials and Methods

Seven varieties and one promising unnamed strain were included in these studies. In 1950 the experiment was planted May 24, and June 12. The 1951 and 1952 planted May 1, May 15, May 29 and June 12.

The experimental design was a split plot with dates having dates of planting as whole plots and varieties as subplots. Each subplot consisted of 3 rows, 1 rod long with 40 inches between rows. Data were collected on the center row only.

Information was obtained on the following attributes: days from 50% bloom to maturity, plant height, lodging score, bean yield, bean size, percentage of oil and protein in the bean on a moisture-free basis, and iodine number of the oil. Date of maturity was the date on which 95% of the pods were ripe. Height was the average from the ground to the tip of the stem at maturity rated on a scale of 1 (erect) to 5 (prostrate).

Results and Discussion

Since the 1950 planting dates were not comparable with those of the other two years, it was not possible to make an analysis of variance of all the data for the three seasons. However, the 1950 results were in general, similar to the 1951-1952 averages. The analysis of variance indicated that the varieties behaved differently with different dates of planting. The yields related to date of planting were similar for early varieties and different from, but similar among, late varieties. The earlier varieties, Blackhawk, Hawkeye, and...