

RAJENDRA AGRICULTURAL UNIVERSITY  
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1) Evaluation of soybean germplasm.

Soybean has been called the miracle crop of the twentieth century. It is one of the most nutritious among beans and pulses, having 40% protein and 20% oil. In view of the chronic shortage of protein and oil in India, soybean is a welcome introduction to provide the much needed stability and boost to the production of these two essential items of food. Its high nutritive value makes it ideally suited for its versatile industrial uses. Its increasing industrial exploitation has also led to the manufacture of a large number of antibiotics in our country. Well drained upland soils of Chotanagpur have been found to be ideally suited for soybean cultivation.

Improvement work on soybean has been started only recently in the state of Bihar under I.C.A.R. scheme. Information on the various aspects of quantitative characters of germplasm lines are lacking in this crop.

A collection of 261 germplasm lines were obtained from various sources and were sown on 9 July 1977 in single rows. Twenty kg N, 80 kg P<sub>2</sub>O<sub>5</sub> and 40 kg K<sub>2</sub>O per hectare were applied at the time of sowing. The lines were harvested from 1 October to 3 November 1977. All the germplasm lines were studied and were found to breed true. Five plants were selected at random from each row and observations on days to maturity, plant height, 100-seed weight and seed yield/plant were recorded. The mean values for each quantitative character with respect to all the 261 germplasm lines were obtained. The range of variability with respect to 4 quantitative characters are as follows:

S. no.	Characters	Range of variability
1	Days to maturity	85-118
2	Plant height (cm)	15-100
3	100 seed weight (gm)	3.7-19.5
4	Seed yield/plant (gm)	4.1-73.0

The above table indicates a wide range of variability with respect to all the four quantitative characters studied in the 261 germplasm lines of soybean. Promising lines with respect to different quantitative characters are shown in the table on the following page.

This information will be useful for the plant breeders engaged in soybean breeding programs in India.

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Promising lines

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<u>Earliest</u> (85 days)	UPSM-558 and UPSM-665
<u>Latest</u> (118 days)	EC-14459, EC-85609, EC-34354, EC-1555 and EC-18676
<u>Dwarf</u> (15 cm)	UPSM-712 and PK-71-6
<u>Tall</u> (100 cm)	EC-18227, EC-3943, EC-13050 and EC-161171
<u>Bold-seeded</u> (17-19.50 gm per 100 seeds)	Plasso-43, EC-7042, EC-2575, UPSM-167 and UPSM-176
<u>High yielding</u>	EC-15976, IC-15965, EC-9990, EC-3943, EC-13004 and EC-18018

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1) Aneuploids and chromosome aberrations from irradiated soybeans.

Irradiation treatment of seeds, pollen, or sporocytes has been used successfully to produce aneuploids in a number of genera. When Dr. E. G. Hammond had finished selecting  $M_1$  plants from his neutron irradiation experiment, I had the opportunity to go through his radiated material to select off-type and semi-sterile plants and to determine the kinds of aneuploids produced by radiation of soybeans.

One- and two-seeded pods from remnant  $M_1$  plants were harvested, the  $M_2$  plants grown in the field, and the  $M_3$  progenies of  $M_2$  plants with more than 20% aborted pollen grains were checked for chromosome number and aberrations, using root tip squashes. The results of the pollen grain and cytological analyses are presented in Tables 1 and 2, respectively.