

Note on Effect of Spacing on Yield and Quality of Soybean in Semi-rabi Season

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Plant population plays an important role in quantitative and qualitative production of field crops. In the experiments on soybean laid out in early *kharif* season of 1967-68, a row spacing of 50 cm was adopted with 10 cm distance between two dibbles as per recommendation of the Central Co-ordinated Programme Committee of I.C.A.R., New Delhi for soybean crop. The results of some of the experiments conducted at the Institute of Agriculture, Anand indicated the need of proper spacing for obtaining optimum yield of soybean.

The object of this experiment was to study the effect of different row spacing on the quantitative and qualitative performance of soybean variety bragg in Goradu soil. Treatments involved four spacings viz; 20, 30, 40 and 50 cm between rows with a common spacing of 5 cm between plants within a row.

Randomised block design was adopted with four replications. Bragg variety of soybean was used. The crop was sown on 13-9-67. Manuring was done at the rate of 20 kg N and 60 kg P_2O_5 /ha

in the form of ammonium sulphate and single superphosphate, respectively, prior to sowing and 20 kgN/ha as top-dressing in the form of urea four weeks after sowing. Five irrigations were given to the crop.

The data on average plant height, number of pods per plant, test weight, yield of beans per hectare, protein and oil contents and their yield per hectare are given in Table 1.

The data presented showed that spacing had no significant effect on plant height, average number of pods per plant and test weight. The plant height varied from 27.2 to 29.5 cm. The average number of pods per plant ranged from 10.8 to 13.9. Wider row spacing tended to induce more pod formation. However, the differences due to different spacings were not significant. The test weight (weight per 100 seeds) remained unaffected by spacing which indicated no adverse effect of spacing on grain size.

The yield of beans was significantly influenced by spacing. The yield of beans increased with reduction in row spacing. The narrow spacing of 20 cm $\times$ 5 cm gave maximum yield (1346 kg/ha) which was significantly higher than that obtained from the treatments involving the other spacings. The second best spacing in respect of yield was 30 cm $\times$ 5 cm which gave 973 kg beans per hectare. The spacing of 40 cm $\times$ 5 cm

TABLE 1

Average plant height, number of pods per plant, test weight, yield of beans per hectare, protein and oil content of seeds and yield of protein and oil per hectare of soybean as influenced by different row spacings.

Spacing between rows	Average plant height, cm	Average number of pods per plant	Test weight (weight of 100 seeds)	Yield of beans kg/ha	Protein		Oil	
					Percentage in seeds	Yield in kg/ha	Percentage in seeds	Yield in kg/ha
20 cm	29.4	11.3	10.3	1346	37.6	509	20.2	274
30 cm	27.2	10.8	10.2	973	40.6	395	20.3	198
40 cm	28.4	13.9	10.1	898	38.5	345	21.3	191
50 cm	29.5	13.7	10.4	774	38.1	295	21.2	164
S. Em.	1.60	3.13	—	24.9	—	—	—	—
C.D. 5%	N.S.	N.S.	—	74.7	—	—	—	—
C.V. %	12.5	17.7	—	20.8	—	—	—	—

Test weight, protein and oil data were not statistically analysed.

and 50 cm $\times$ 5 cm gave yields of 898 and 774 kg beans per hectare respectively.

In respect of protein content, the trend of the results was not consistent. The seed sample obtained from the plots having 30 cm row spacing gave the highest percentage of protein (40.5%) whereas that from the plots having 20 cm row spacing gave the lowest protein per cent (37.6%). The other two samples were intermediate in protein content.

Slight reduction (about 1%) in the oil content of the produce was observed in the treatments involving narrow row spacing of 20 and 30 cm as compared to wider row spacings of 30 and 40 cm.

The yields of protein as well as oil per hectare increased with reduction in spacing. The highest yield was obtained with 20 cm spacing and the lowest with 50 cm spacing between rows.

Thus from the view point of yields of bean, protein and oil, narrow spacing of 20 cm was found to be the best followed by 30 cm between rows.

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