Response of Soybean to Dates of Sowing and Seed Rates on Yield and Quality

K. P. Jasani, M. P. Patel and H. S. Patel

Agronomy Deptt., N. M. College of Agriculture, GAU, Navsari-396 450

Sowing date and seed rate play an important role in quantitative and qualitative production of field crops. In view of this an experiment on soybean was laid out in *kharif* season of 1989-90 at the college farm of N. M. College of Agriculture, Gujarat Agricultural University, Navsari.

The soil of experimental plot was clay in texture, low in total nitrogen (0.049 per cent), medium in available phosphorus (28.10 kg/ha) and high in available potassium (320 kg/ha). Treatments involved were four sowing dates and four seed rates (Tabel-1). Crop was sown at spacing of 45 cm between two rows.

A split plot design was adopted with four replications. The seed was sown by applying *Rhizobium* bacterial *(Rhizobium japonicum)* treatment and was fertilized with 30 kg N and 60 kg P_2O_5/ha. The data on yield, yield attributing and quality characters are given in Table-1.

TABLE 1

Effect of various treatments on yield, yield attributing characters and quality of soybean (1989-90).

Treatment	*Number of pods/plant*	*100-Seed weight (g)*	*Seed yield (q/ha)*	*Protein*		*Oil*	
				per cent	*yield (kg/ha)*	*per cent*	*yield (kg/ha)*
Date of Sowing							
D_1 = June, 23	39.88	10.48	39.54	41.63	799.43	19.53	376.16
D_2 = July, 8	38.40	10.42	37.00	40.43	757.72	19.48	366.29
D_3 = July, 23	33.29	9.48	29.75	38.54	569.39	18.00	267.15
D_4 = August, 7	23.46	8.52	23.02	37.25	439.25	17.61	207.96
S. Em. ±	1.12	0.23	1.21	0.41	23.50	0.18	12.65
C. D. at 5%	3.60	0.74	3.86	1.32	75.17	0.56	40.47

1.	2.	3.	4	5.	6.	7.	8.
Seed rate (kg/ha)							
S_1 = 40	37.59	10.17	27.40	40.16	540.67	18.61	253.84
S_2 = 50	34.37	9.94	31.73	39.85	632.05	18.66	296.09
S_3 = 60	32.13	9.57	33.85	39.18	696.36	18.71	332.93
S_4 = 70	30.96	9.23	36.33	38.66	691.10	18.65	334.70
S. Em. ±	1.08	0.17	1.05	0.10	20.86	0.04	10.33
C. D. at 5%	3.09	N.S.	3.00	0.29	59.87	N.S.	29.65

The data presented showed that the number of pods per plant and test weight decreased remarkably as sowing was delayed. Higher values of yield attributes were noticed under earlier sowings. Whereas, only test weight and oil per cent were not affected significantly due to various seeding rates. The results corroborate with those of Subbaiah *et al.* (1977).

The seed yield of soybean was significanlty influenced by sowing dates and seed rates. The yield of seeds was maximum at earlier sowing with higher seed rates, i.e. 39.54 and 36.33 q/ha, respectively. Thus increase in yield was mainly due to higher number of pods/plant and seed weight registered under these treatments. It was mainly due to more favourable growth conditions received during earlier planting. Number of pods/plant and 100 seed weight were also positively associated with grain yield. Deshmukh *et al.* (1977) and Ramani (1988) also reported similar results.

In respect of protein content and its output, the values were higher under earlier sowing (23rd June), thenafter it was decreased significantly. Higher protein content recorded in earlier planting may be due to more translocation of nitrogen towards grains. In case of seed rates, the maximum (40.16 per cent) protein content was observed under the lowest seed rate but yield was statistically higher at higher seed rates (60 and 70 kg/ha). These findings are in agreement with those reported by Deshmukh *et al.* (1977) and Ramani (1988).

Significant reduction was noticed in oil content and its yield as the sowing was delayed from 23rd June. It may be due to poor utilization of resources under unfavourable environmental situations. Whereas it was not affected significantly due to various seed rates but significanlty higher oil yield was noticed under higher seed rates (60 and 70 kg/ha).

Thus, from the view point of yields of soybean seed, protein and oil sowing on 23rd June with 60 kg seed rates/ha, was found to be the optimum.

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