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Short Communication

Effect of Sowing Date and Variety of French Bean on Seed Yield and Quality

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French bean (*Phaseolus vulgaris* L.) is an important winter season leguminous vegetable crop of India. Contender and Arka Komal varieties are recommended for their commercial cultivation as vegetable crop. Seed production of this crop can bring rich devidends to the farmers of Terai zone of West Bengal. Standardization of seed production agronomy is one of the aspect which requires special attention. Sequential planting has been used to determine the relationship between environmental factors and the response to plant growth and ultimately seed productivity.

The experiments were conducted at Regional Research Station, Terai Zone, West Bengal (26°19'86"N, 89°23'53"E and 43m altitude) during rabi seasons from 1998-99 to 2000-01. The results of the soil analysis showed 0.91 to 1.27% organic carbon, 0.10 to 0.90% N, 23.86 to 36.30 kg available P_2O_5, 90.20 to 123.40 kg available K_2O per hectare with 5.9 to 6.1 pH value for three experimental years. Fourteen treatments consisting of two varieties (Contender and Arka Komal) and seven sowing dates (Oct. 30, Nov. 15, Nov. 30, Dec. 15, Dec. 30, Jan. 15 and Jan. 30) were tested in randomised block design with three replications. Plant spacing of 50cm x 15cm was maintained. The entire dose of phosphorus (100kg P_2O_5/ha) and potassium (50 kg K_2O/ha) along half dose of nitrogen (30 kg N/ha) was applied before sowing. The remaining half dose of nitrogen (30 kg N/ha) was applied as top dressing at one month old stage of the crop. All other cultural practices were uniform for all the sowing dates. Observations were recorded on days to seed harvesting, pods per plant, seeds per pod, seed yield per plant, seed yield per hectare, 100-seed weight and germination percentage of produced seeds. The germination test was carried out as per ISTA procedure [1].

Of the two varieties, Contender was early to seed harvesting and recorded significantly higher pods per plant, seed yield and 100-seed weight. Number of seeds per pod and germination percentage were not significantly influenced by variety. Contender variety significantly produced higher seed yield (Table 1) due to superiority in main yield attributing characters. Similar superiority of varieties due to genetic contribution has been reported [2].

Days of harvesting was maximum in 15 November sown crop. There was a gradual decrease in days to harvesting with delay in sowing. Similarly, number of pods per plant and seeds per pod were highest in 15 November sown crop. There was significant reduction in the seed yield in early and delayed sowing (Table 1).

The various yield attributes showed their additive effect in influencing the seed yield per plant as well as per hectare distinctly and maximum values of both characters were obtained at 15 November sowing. Each successive delay in sowing resulted in corresponding decrease in seed yield. Sowing dates also exerted significant influence on 100-seed weight and germination percentage of the produced seeds. Highest value of 100-seed weight was obtained in 15 November sowing. 100-seed weight and germination percentage decreased significantly with delay in seed sowing. Prevalence of high temperature caused low yield of very early and late sown crops. Higher yield in early sown crop might be due to the

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Table 1. Effect of sowing date and variety on seed yield and quality of french bean.

Treatment	Days to harvest	Pods per plant	Seeds per pod	Seed yield per plant (g)	Seed yield (t/ha)	100 seed weight (g)	Germination percentage
Variety							
Contender	88.6	16.5	4.8	25.4	2.32	39.18	87.0
Arka Komal	91.0	13.6	4.9	18.5	1.70	31.39	86.9
S.Em±	0.20	0.30	0.04	0.76	0.06	0.67	1.08
C.D. (P=0.05)	0.41	0.62	NS	1.56	0.12	1.38	NS
Sowing Date							
October 30	90.3	13.1	5.3	21.0	1.78	32.97	94.0
November 15	97.0	17.1	5.2	31.5	2.82	39.77	94.8
November 30	94.5	17.5	5.1	28.7	2.80	39.47	96.2
December 15	92.2	14.9	4.9	24.0	2.27	38.03	95.7
December 30	89.8	14.1	4.9	21.7	2.17	36.77	92.5
January 15	83.8	11.3	4.7	16.2	1.37	33.52	86.3
January 30	80.7	10.5	3.8	10.5	0.85	26.47	49.0
S.Em±	0.37	0.56	0.08	1.42	0.11	1.26	2.02
C.D. (P=0.05)	0.76	1.15	0.16	2.92	0.23	2.59	4.15

NS- Not Significant

Table 2. Economics of french bean seed production.

Treatment Combination	Seed yield (t/ha)	Gross return (Rs.)	Net return (Rs.)	Benefit : cost ratio
Contender				
October 30	2.13	63900	43860	2.19
November 15	3.21	96300	76260	3.80
November 30	3.10	93000	72960	3.64
December 15	2.57	77100	57060	2.85
December 30	2.37	71000	51060	2.55
January 15	1.40	42000	21960	1.10
January 30	1.17	35100	15060	0.75
Arka Komal				
October 30	1.43	42900	22860	1.14
November 15	2.10	63000	42960	2.14
November 30	2.53	75900	55860	2.79
December 15	1.97	59100	39060	1.95
December 30	1.97	59100	39060	1.95
January 15	1.33	39900	19860	0.99
January 30	0.53	15900	-4140	-0.21

Sale rate of French bean seeds @Rs. 30/- per kg.

fact that they remained in the field for longer period and thereby accumulated more photosynthates for higher production. The trend of present result is in conformity with the findings of other workers [3-4].

The interaction effect between sowing dates and varieties were found to be significant with regard to seed yield. The variety Contender gave maximum seed yield of 3.53 t/ha and cost : benefit ratio (3.80) at 15 November sowing, (Table 2) while the variety Arka Komal recorded highest seed yield of 2.53 t/ha and cost : benefit ratio (2.79) at November 30 sowing.

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