

Effect of agronomic practices on grain quality and N-uptake of french bean (*Phaseolus vulgaris* L.)

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French bean is a non-nodule forming leguminous crop. Thus, it requires heavy amount of fertilizer nitrogen to exploit its yield potential (Ali and Kushwaha, 1987). As it is a new introduction to northern plains, its agronomy could not be standardise so far. The present experiment was, therefore, carried out on agronomic needs of French bean at Vegetable Research Farm of C.S. Azad University of Agriculture and Technology, Kanpur during winter seasons of 1992-93 and 1993-94. In this experiment, 9 combinations of 3 row spacings (20, 30, 40 cm) and 3 seed rates (100, 125, 150 kg/ha) were assigned to main

of 60 kg P₂O₅ and 60 kg K₂O/ha was applied to all treatments. French bean variety PDR-14 was sown on November 2 and 8 during two seasons. Harvesting was done on full maturity of grains during fourth week of March.

The row spacing of 30 cm being at par with 20 cm spacing recorded significantly higher N-uptake in grain compared to 40 cm row spacing during both years. Grain size or grain proteins content were not influenced significantly by different row spacings or seed rates during either year of study. The seed rates of 150 and 125 kg/ha

Table 1 : Quality characters of french bean as influenced by agronomic practices

Treatments	100-Seed wt. (g)		Grain protein (%)		Nitrogen uptake in grain (kg/ha)	
	1992-93	1993-94	1993-94	1992-94	1993-94	1992-94
Row Spacing						
20 cm	47.04	47.85	23.78	23.72	97.96	94.86
30 cm	47.70	48.65	23.85	23.86	100.66	95.96
40 cm	48.26	49.19	23.54	23.30	94.78	91.61
S.E.±	0.55	0.58	0.33	0.38	1.47	1.34
C.D. (P=0.05)	N.S.	N.S.	N.S.	N.S.	3.12	2.84
Seed Rates (kg/ha)						
100	48.09	48.90	23.76	23.46	93.71	89.63
125	47.71	48.57	23.87	23.78	99.40	95.23
150	47.21	48.23	23.54	23.64	100.24	97.37
S.E.±	0.55	0.58	0.33	0.38	1.47	1.34
C.D. (P=0.05)	N.S.	N.S.	N.S.	N.S.	3.12	2.84
Nitrogen (kg/ha)						
80	44.58	45.46	22.67	22.41	74.16	70.44
150	48.58	49.58	24.09	24.16	105.14	102.28
160	49.84	50.65	24.41	24.32	115.46	111.53
S.E.±	0.80	0.78	0.50	0.51	2.19	2.26
C.D. (P=0.05)	1.62	1.57	1.03	1.03	4.42	4.57

NS-Non significance

plots, and 3 N levels (0,80, 160 kg/ha) were allotted to sub plots of a split plot design replicated thrice. Experimental soil as silty loam, poor in available N and medium in available P and K contents. An uniform dose

being at par with each other attained significantly higher N-uptake compared to lowest seed rate of 100 kg/ha during both years. Ali and Lal (1991) also recommended the seed rate of 120-140 kg/ha for winter French bean.

Increasing levels of nitrogen increased N-uptake significantly up to highest tested dose of 160 kg N/ha during both years. At this dose, 9.44 and 56.98 per cent increase in N-uptake over 80 kg N and control, respectively

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were obtained on mean basis over year.

It supports the findings of Ram Gopal *et al.* (2005). Seed size and grain protein content increased with increasing N-levels upto 160 kg/ha but increase beyond

80 Kg N/ha was not found significant. Increase in grain protein content with increasing N-levels might be due to more availability and increased uptake of N by the crop.

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