

Research
Paper

Effect of sowing dates on growth and yield of French bean (*Phaseolus vulgaris* L.) varieties during *Kharif* season

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ABSTRACT

An experiment was conducted during *Kharif* season at Department of Agronomy, Marathwada Agricultural university, Parbhani to study the effect of sowing dates on growth and yield of French bean (*Phaseolus vulgaris* L.). The experiment was conducted in split plot design with 3 replications. Each replication consisted of 16 (sixteen) treatment combinations comprising 04 (four) sowing dates *i.e.* 10 days interval after first sowing on onset of monsoon and four varieties *i.e.* Varun, Waghya, Arka komal and Contender. Sowing date treatment were allotted to the main blocks randomly and varieties were allotted randomly in each sub-block. Results showed, sowing date M_1 (onset of monsoon) and M_2 (10 days after first sowing) were at par with each other and both sowing dates recorded significantly higher seed yield (kg/ha) over M_3 (20 days after first sowing) and M_4 (30 days after first sowing). Sowing date M_3 (20 days after first sowing) was significantly superior over M_4 (30 days after first sowing) which recorded, significantly lowest seed yield (kg/ha). Variety V_1 (Varun) recorded significantly higher grain yield (820kg/ha) over remaining three varieties. However varieties V_4 (contender), V_3 (Arka komal) and V_2 (Waghya) were at par with each other. Variety V_2 (Waghya) recorded significantly lowest seed yield (365kg/ha).

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KEY WORDS : Sowing dates, Varieties, Yield attributes, Yield, French bean

French bean (*Phaseolus vulgaris* L.) is an important pulse vegetative crop of the world. Brazil, China and United States are the important countries which are producing more than half of the world's supply (Anonymous, 1995). It is probably a native of Southern and central America (Parthasarthy, 1986). But in India it can be grown during *Rabi* season. Time of sowing is a non-monetary input which influences grain yield to a great extent. Optimum time of sowing may vary with the location. Variety may also vary in growth and maturity and thus influence grain yield. Further more, the optimum time of sowing may vary with different varieties of French bean. Therefore, field experiments were conducted to study the performance of varieties of French bean under different dates of sowing.

RESEARCH PROCEDURE

A field experiment was conducted at Department of Agronomy, Marathwada Agricultural university Parbhani, to study the effects of sowing dates on growth and yield of French bean varieties during *Kharif* season of 2005-06. The soil of the experimental field was clayey,

fairly rich in available potassium, low in available nitrogen and medium in phosphorus.

The experiment was laid out in split plot design with three replications. Each replication consisted of 16 treatment combinations comprising 4 sowing dates *i.e.* M_1 - onset of monsoon, M_2 - 10 days after first sowing, M_3 - 20 days after first sowing, M_4 - 30 days after first sowing and four varieties *i.e.* V_1 - Varun, V_2 - Waghya, V_3 - Arka Komal and V_4 - contender. Each replication was divided into four main blocks and each block was divided into sub-blocks. The gross and net plot size was 4.5m x 3.6m and 3.6m x 2.7m, respectively. Sowing date treatments were allotted to the main blocks randomly and varieties were allotted randomly in each sub-block.

RESEARCH ANALYSIS AND REASONING

The results obtained from the present investigation have been discussed below:

Sowing dates:

It was observed from Table 1 that the sowing date M_1 was significantly superior over sowing date M_3 ,

Days of sowing	Grain yield (kg/ha)	Plant height (cm)	Days to 50% flowering	Pods/plant	Seeds/pod	100 seed weight (g)	Biological yield (kg/ha)
M ₁ (0 days after onset of monsoon)	722	37.0	111	5.37	3.67	37.7	1577
M ₂ (10 days after onset of monsoon)	698	29.96	108	5.28	3.18	30.92	1579
M ₃ (20 days after onset of monsoon)	337	25.88	138.2	1.36	1.80	23.29	773
M ₄ (30 days after onset of monsoon)	212	22.11	171.8	1.15	1.58	18.7	576
C.D. (P 0.05)	30	0.88	0.21	0.08	1.18	0.22	60
Varieties							
V ₁ (Varun)	820	27.35	111	6.71	3.23	30.92	1807
V ₂ (Waghya)	365	23.16	138.9	1.71	2.31	23.79	871
V ₃ (Arka Komal)	397	29.16	111	3.99	2.23	22.22	869
V ₄ (Contender)	111	30.07	105	1.30	2.70	27.70	908
C.D. (P 0.05)	93	1.28	0.21	0.27	0.35	2.21	185

M₄. The highest grain yield (722kg/ha) was recorded in sowing date M₁, which was at par with sowing date M₂. The sowing date M₄ recorded significantly lowest seed yield (242kg/ha) with delayed sowing, grain yield of French bean was decreased considerably. Teteny and Szejtli (1980) reported similar results.

The sowing of French bean at sowing date (M₁) showed highest plant height, branch/plant, pods/plant, seeds/pod, 100 seed weight (g) and biological yield over all other sowing dates i.e. M₂, M₃ and M₄. Under delayed sowings, there was reduction in number of pods/plant, 100 seed weight, grain yield, biological yield which was responsible for lower yields.

Varieties:

Variety V₁ (Varun) produced maximum grain yield, biological yield over remaining three varieties. However varieties V₄ (Contender), V₃ (Arka komal) and V₂ (Waghya) were at par with each other. Variety V₂ (Waghya) recorded significantly lowest seed yield (Ghodake *et al.*, 2004). Reduction in number of pods/plants, seeds/pod, and 100 seed weight and delay in flowering and maturity resulted in low grain yield in other three varieties. Contender was the tallest whereas varun was the shortest in height. Varun was large seeded whereas Contender, Waghya, Arka komal were small seeded. Varieties do differ in plants height, pods/plant and 100 seed weight (Singh and Faroda, 1982). Variety V₁ (Varun) was earlier in flowering as well as maturity than the other varieties under different dates of sowing. This shows that, this variety not only produced higher grain yield over other varieties but was also of short duration during *Kharif* season.

It was concluded that in Marathwada region, sowing of French bean during M₁ (onset of monsoon) and M₂ (10 days after first sowing) produced maximum seed yield (kg/ha) during *Kharif* season and variety varun V₁ produced highest seed yield as compared to other three varieties. As the yield level of French bean during *Kharif* season was found low, the result are not encouraging for cultivation of French bean during *Kharif* season.

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