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Performance of french bean (*Phaseolus vulgaris* L.) genotypes under different fertility levels

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ABSTRACT

A field experiment was carried out during *rabi* season of 2005-06 at Department of Agronomy farm, MAU, Parbhani to investigate the performance of french bean (*Phaseolus vulgaris* L.) genotypes under different fertility levels. The experiment was laid out in factorial 'Randomized Block Design' with three replications. Each replication consisted of twelve treatment combinations of four varieties *i.e.* Contender, Waghya, HPR-35, Varun and three fertility levels 90:45:45 NPK kg.ha^{-1}, 120:60:60 NPK kg.ha^{-1}, 150:75:75NPK kg.ha^{-1} Variety HPR 35 recorded significantly higher plant height, branches, total dry matter, seed and straw yield over rest of the varieties. Application of 120:60:60 NPK kg.ha^{-1} was at par with 150:75:75 NPK kg.ha^{-1} and recorded significantly higher number of pods per plant, 100 seed weight and seed yield over application of 90:45:45 NPK kg.ha^{-1}

Key words : Frenchbean, Varieties, Fertility level, Grain yield

INTRODUCTION

The ancestor of modern french bean were originated in south and central America. The green pods are mildly diuretic and contain a substance that reduces the blood sugar level. The dried mature pod is used in the treatment of diabetes. Though it is leguminous and short durational crop, it is unable to fix atmospheric nitrogen so nitrogen demand of this crop is much higher. The application of nitrogen induces the flower bud formation and ultimately the pod and finally yield. To increase the per hectare production of this crop, growing high yielding varieties and adopting intensive cultivation practices like use of fertilizers etc. can be adopted. Workers in India and abroad observed positive response of french bean from improved cultivars, major and minor plant nutrients, sowing time, irrigation and *Rhizobium* culture in number of field trials and pot culture experiments. Today, it is the need of the hour to make all possible efforts to utilize various sources for increasing nutrient levels in plant or soil in order to maintain the soil fertility and increase the production of this crop. Nitrogen, phosphorus, and potassium are major essential elements which are generally required in large quantities for growth and higher yields of this crop. Most of the research workers had concentrated their work on phosphorus and potash application. The positive response of nitrogen in combination with potash and phosphorus were reported by Lugo Lopez (1977). Particularly in Marathwada region identification of suitable varieties and optimum fertilizer dose is highly essential. The research work on nutrition and varietal aspects is, therefore, undertaken in consequently.

MATERIALS AND METHODS

The present investigation was carried out at department of Agronomy farm, Marathwada Agricultural University, Parbhani during *rabi* season of 2005-06. The topography of experimental plot was fairly leveled. The soil was about 100 cm deep and clayey loam in texture and moderately fertile being low in organic carbon (0.56 %), high in phosphorus (26.19 kg.ha^{-1}) and very high in potassium (391.12 kg.ha^{-1}). The experiment was laid out in factorial Randomized Block Design with three replications. Each replication consisted of twelve treatment combinations of four varities (Contender, Waghya, HPR 35 and Varun) and three fertility levels (90:45:45, 120:60:60 and 150:75:75 NPK kg.ha^{-1}). The complete dose of phosphorus and potassium along with half dose of nitrogen per treatment were applied 6 to 10 cm deep in line to side of crop row through fertilizer grade 10:26:26 and urea, remaining half dose of nitrogen was applied 30 days after sowing through urea only. The sowing of crop was done on 21/11/2005 by keeping 45 cm spacing between rows and 10 cm between plants. The harvesting of crop was done at different times *viz.* Varun: 27.2.2006, HPR-35: 2.3.2006, Contender : 2.3.2006 and Waghya : 8.3.2006. All statistical analysis were performed using MAU, STAT statistical package.

RESULTS AND DISCUSSION

Effect of varieties:

All varieties recorded significant response at all growth and yield contributing characters. Variety HPR

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