

Influence of organics, nutrients and plant growth regulators on growth, yield and yield components in french bean

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SUMMARY

Organics, nutrients, and plant growth regulators were used to assess the effect on growth, physiological traits and yield in French bean. Two organics-farm yard manure (FYM) and vermi-compost, two nutrients- potassium nitrate (KNO_3) and Iron Sulphate ($FeSO_4$), two plant growth regulators –Miraculan and Gibberellic Acid (GA) along with salicylic acid, β -naphthol and P- solubilizer were used. Significant variation in physiological traits and growth was evident due to the application of GA_3 (20ppm), P- solubiliser (2.5Kg/h) and vermicompost (2 t/ha). Similar trend was also observed with fresh pod yield (tender green pods). Use of GA_3 (20ppm) and P- solubiliser (2.5t/ha) were found to be cost effective compared to other treatments.

Key words : Farm yard manure, Vermicompost, French bean, Growth regulator

French bean a short duration leguminous vegetable crop is better known for its mature dry seeds as well as immature tender green pods. Being a most popular vegetable for its protein, carbohydrates, mineral content, crude fibre, vitamins A and C, it's becoming more popular and gaining lot of importance both in producers and consumers. Added to its short duration and high production potential it is also possesses some useful medicinal properties in diabetes and certain cardiac problems.

French bean is grown in different parts of world, occupying an area of 25.91 m.ha with total production of 18.84 m.tons. In India it is cultivated in an area of 9.72 m.ha with a production of 4.34 m.tons. The productivity in India is about 447 kg seeds per hectare as against world average productivity of 669 kg seeds per hectare. Hence, any attempt to increase the yield in French bean is a welcome note.

Organic manures apart from supplying macro and micro nutrients are also known to improve the physical, chemical and biological properties of soils. Frenchbean responds well to organic manures and results in improving quality and to sustain production. There is a need to integrate both the use of organics and chemicals for getting higher quality product which inturn is expected to substantially reduce the cost of cultivation through

minimizing the use of inorganic fertilizers. In recent days more importance has been given to suitable agriculture, since the modern agriculture over the last several years depended heavily on chemical fertilizers which are cost intensive and have adverse effect on soil fertility and the environment. Therefore, there is a need to popularize these environmental safe, ecofriendly and cost effective organic manures. Application of vermicompost to different field crops has been known to reduce the requirement of chemical fertilizers without affecting crop yields (Giraddi, 1998).

Nutrients also have important role in plant metabolism, growth and developmental processes and help in increasing the biomass production and yield. Biofertilizers have been designated as alternate sources of soil fertility as they are known to improve the supply of nutrients through renewable sources of energy. Among the biofertilizers, *Rhizobium* and phosphorus-solubilizing bacteria (PSB) play a significant role in pulses in providing plant nutrients (Sexena and Tilak, 2000). The use of biofertilizers has currently attained a special significance in crop production and tremendous success has been achieved in several crops. The idea of artificial regulation of physiological processes by means of chemicals is a corollary to the concept of phytohormones which involves in regulation of plant physiological processes. The plant growth regulators have been shown to be one of the quick means of increasing crop production.

Cultivation of frenchbean is limited and less work has been done on these aspects. Therefore, it is right time to give more emphases on the evaluation of organics and other chemicals for growth performance, yield potential and quality improvement. But, there is hardly any precise and conclusive information available on the effect of

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