

Effect of organic MANURES and inorganic fertilizers on FLOWERING AND FRUIT SET of brinjal (*Solanum melongena* L.) Cv. Puneri Kateri

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Abstract: The present investigation entitled “ Effect of organic manures and inorganic fertilizers on growth, yield and quality of brinjal (*Solanum melongena* L.) Cv. Puneri Kateri was undertaken at Vasanttrao Naik Marathwada Agricultural University, Parbhani (Maharashtra) in rabi season. The experiment was laid out in Randomised Block Design (RBD) with three replications and ten treatments. Puneri Kateri variety of brinjal was selected for present study. The material used in this experiment was three organic manures viz., poultry manure, sheep manure and F, sheep manure and FYM was incorporated in soil 15 days before sowing. Inorganic fertilizers used were urea, single super phosphate and muriate of potash. Recommended dose of fertilizer was 100:50:50 Kg NPK/ha.

From the findings, it is observed that the flowering parameters like days required for initiation and 50 per cent flowering, days to fruit set from flowering and days to harvest from fruit set were significantly influenced due to different treatments.

The number of days (72.40) for initiation of flowering and 50% flowering (80.37) were recorded with 75% RDF + 25% poultry manure while the minimum number of days were recorded in control (100% RDF). The highest days required for harvesting from fruit set was recorded in the treatment T₈ (75% RDF + 25% poultry manure) (14.10), while lowest was recorded in control (100% RDF).

Key words: Brinjal, fruit set, flowering, Fertilizer, RDF.

INTRODUCTION

Brinjal (*Solanum melongena* L.) is a plant of the family solanaceae (also known as the night shades). It is also known as eggplant or aubergine due to its fruit shape that look like an egg. It belongs to the genus solanum and order solanles.

Its fruits are commonly used as a vegetable in cooking. As a night shade, it is closely related to the tomato and potato and is native to India and Sri Lanka.

Among the various vegetables grown in India. Brinjal is most important, common and popular vegetable crop and it is cultivated in the tropical and sub tropical region of the world. It is a hardy vegetable crop with a wider adaptability. It is grown throughout the year because of its year round growing habit.

Area under vegetables in India is estimated around 6.2 million hectares with an annual production of about 71.66 million tones. In India area under brinjal cultivation is 566.1 thousand hectares i.e. 7.6 per cent of total vegetable area, with the production

of 9595.8 thousand metric tones i.e. 8.3 per cent of the total vegetable production and productivity of brinjal is 25 (MT/ha) (Anonymous, 2013).

According to Aykroyd (1963) chemical composition of brinjal (per 100 g of edible portion), consist of moisture (92.7 g), protein (1.4 g), fat (0.3 g), minerals (0.3 g), fibre (1.3 g), carbohydrate (4.0 g), calcium (18 mg), magnesium (16 mg), iron (0.9 mg), Vitamin A (124 I.U.), thiamine (0.04 mg) and Vitamin C (12.0 mg).

Brinjal crop demand good nutrition and respond well to fertilization. Among major nutrients, nitrogen is most important element which influence growth and productivity of brinjal. At present condition it is not possible to completely eliminate the use of chemical fertilizers. For this dose of chemical fertilizer need to be gradually reduced and be balanced by increasing the use of optimum quantity of organic manures particularly FYM (Farmyard manure), sheep manure and poultry manure, etc. Organic manures are the soil store house for nitrogen supply to plant.

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There is very little inorganic nitrogen in soil and much of it is obtained by the conversion of organic forms. Organic manures not only increase the yield but also improve physical, chemical and biological properties of soil that improves productivity of crop (Blane *et al.*, 1989).

The unripe fruit of brinjal primarily used as cooked vegetable for the preparation of various dishes. It has got much potential as raw material in pickles making and dehydration industry. It is supposed to contain certain medicinal properties and white brinjal is said to be good for diabetic patients (Choudhary, 1976). It can also cure toothache and liver complaints (Chouhan, 1981). It is also used for the treatment of bronchitis, asthma, dysentery, etc. It is also known for decreasing the level of blood cholesterol. An investigation was therefore conducted to find out the influence of organic and inorganic on flowering and fruit set of brinjal cv. Puneri Kateri.

MATERIALS AND METHODS

The experiment was conducted on experimental field at Vasant Rao Naik Marathwada Agricultural University, Parbhani, 431 402 (M.S.) during *rabi* season. The experiment was laid out in a randomized block design with ten treatments viz., T₁) 100% RDF (control) T₂) 75% RDF + 25% FYM T₃) 50% RDF + 50% FYM T₄) 25% RDF + 75% FYM T₅) 75% RDF + 25% sheep manure T₆) 50% RDF + 50% sheep manure T₇) 25% RDF + 75% sheep manure T₈) 75% RDF + 25% poultry manure T₉) 50% RDF + 50% poultry manure and T₁₀) 25% RDF + 75% poultry manure. The crop was raised at a spacing 60 cm x 60 cm with recommended dose of N, P and K viz., 100: 50: 50 kg/ha, respectively. Organic manures such as FYM, sheep manure and poultry manures were applied 10 days before transplanting. Nitrogen through urea was applied in two equal splits doses i.e. first at the time of transplanting and second 30 days after transplanting. Observations were recorded and statistically analyzed as per method given by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

The average number of days required for first flower initiation and 50% flowering as influenced by different levels of combination of organic manures and inorganic fertilizers were recorded and are presented in Table 1.

Effect on flowering

The data related to first flower initiation presented in Table 1 indicated that there were significant

differences in respect of first flower initiation. Early flower initiation was recorded in the treatment T₁ (control) (60.01), T₄ (62.34) and T₅ (64.83) which were statistically at par with each other. The maximum days required for first flower initiation was recorded in the treatments T₂ (65.57), T₃ (67.51), T₉ (69.60), T₆ (66.53) and T₁₀ (68.52) which were statistically at par with each other. The more days required for first flower initiation was recorded in the treatment T₈ (75% RDF + 25% poultry manure) (72.40) and followed by T₇ (70.05).

The minimum number of days required for 50% flowering was observed in treatment T₁ (control) (66.61 %), T₄ (50% RDF + 50% FYM) (68.51) and T₅ (75% RDF + 25% sheep manure) (71.51), which were significantly superior overall other treatments. Maximum days required for 50% flowering was recorded in the treatments T₉ (77.68), T₁₀ (76.50), T₃ (75.47), T₆ (74.65) and T₂ (73.42) which were statistically at par with each other. The statistically highest days required for 50% flowering in the treatment T₈ (80.37) as compared to other treatments under study.

The more number of days for flower initiation may be due to adequate availability of nutrients resulting to more time for vegetative growth. The nitrogen enhances the luxuriant vegetative growth which resulted in delayed flowering.

The results are in agreement with findings of Kumaran *et al.* (1998) which reported that tomato plant supplied inorganic form of fertilizer showed earliness in flowering. Darley *et al.* (1988) indicated that brinjal plants supplied with inorganic form of N showed early flowering, when compared to organic sources or their combination.

Effect on fruit set (%)

The data related to days fruit set from flowering in Table 1 indicated that there were significant differences in respect of days to fruit set from flowering. Early fruit set from flowering was recorded in treatment T₁ (control) (3.71) and T₄ (50% RDF + 50% FYM) (3.77), which were significantly superior over all other treatments. The maximum days required for fruit set from flowering was recorded in the treatments T₂ (4.06), T₃ (4.63), T₉ (4.66), T₅ (4.56), T₆ (4.26), T₇ (4.53) and T₁₀ (4.10) which were statistically at par with each other. The maximum days required for fruit set from flowering was observed in the treatment T₈ (75% RDF + 25% poultry manure) (4.94) as compared to other treatments under study.

Table 1
Effect of organic and inorganic fertilizers on flowering and fruit set of brinjal Cv. Puneri Kateri

Tr. No.	Treatments	Days to flower initiation	Days to 50% flowering	Days to fruit set from flowering	Days to harvesting from fruit set
T ₁	100% RDF (control)	60.10	66.61	3.71	8.10
T ₂	75% RDF + 25% FYM	65.57	73.42	4.06	10.56
T ₃	50% RDF + 50% FYM	67.51	75.47	4.63	11.55
T ₄	25% RDF + 75% FYM	62.34	68.51	3.77	9.84
T ₅	75% RDF + 25% sheep manure	64.83	71.51	4.56	10.24
T ₆	50% RDF + 50% sheep manure	66.53	74.65	4.26	11.05
T ₇	25% RDF + 75% sheep manure	70.05	78.87	4.53	12.95
T ₈	75% RDF + 25% poultry manure	72.40	80.37	4.94	14.01
T ₉	50% RDF + 50% poultry manure	69.60	77.68	4.66	12.28
T ₁₀	25% RDF + 75% poultry manure	68.52	76.50	4.10	12.04
	S.E. ±	0.089	0.101	0.055	0.016
	C.D. at 5%	0.264	0.209	0.166	0.050

The minimum number of days required for harvesting from fruit set was observed in the treatment T₁ (control) (8.10) and T₄ (50% RDF + 50% FYM) (9.84), which were significantly superior over all other treatments. The maximum number of days required for harvesting from fruit set was observed in the treatment T₉ (12.28), T₇ (12.95), T₁₀ (12.04), T₆ (11.06), T₃ (11.55), T₂ (10.56), T₅ (10.24), which were statistically at par with each other. The highest days required for harvesting from fruit set was recorded in the treatment T₈ (75% RDF + 25% poultry manure) (14.10) as compared to all other treatments.

This might be due to readily availability of nutrients might have enhanced growth attributes and fruit set. Whereas slow release of nitrogen from treatments receiving nutrients through integrated of organic with inorganic fertilizers prolonged the vegetative phase resulting in the late attainment of fruit set from flowering.

Similar results were reported by Naidu *et al.* (2002) in brinjal which conform present findings.

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