



Research Note

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Effect of organic manures on growth and seed yield of tomato

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ABSTRACT : An experiment with different organic sources viz., FYM, poultry manure, vermicompost were used separately and in combinations for tomato variety PKM 1. Among the six treatments, application of poultry manures @ 7 t/ha recorded the maximum plant height (58.3 cm), number of fruits / plant (30.7), fruit yield (1.1 kg/plant) and seed yield (0.68 g/ plant). The seed quality parameters such as germination percentage, seedling length, drymatter production and vigour index values were also maximum in the treatment poultry manure applied at the rate of 7 t/ha.

KEY WORDS : Organic manure, Growth, Fruit yield, Seed yield, Tomato

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Tomato (*Lycopersicon esculentum* Mill) is one of the most important protective foods both because of its special nutritive value and also because of its widespread production. It responds well to fertilizers application. It requires high dose of inorganic fertilizers for maximizing production. Application of inorganic nutrients plays an important direct role on the yield and its attributes as well as uptake of nutrients. The yield of tomato can be increased by the application of organic manures (Kumaran *et al.*, 1998). Organic manures not only increases the yield but also improves soil physical, chemical and biological properties with direct impact on moisture retention of soil, nutrient conservation etc which improves the fertility, productivity and water holding capacity of soil (Blane *et al.*, 1989). Organic nutrition for vegetables is especially important as they provide quality foods which are very important for providing health security to people. Since, the vegetables are mostly consumed as fresh or partially cooked they should be devoid of residual effect of chemical fertilizers. The adverse effect of using inorganic fertilizers is well known to all. Hence, to produce this crop organically an experiment was conducted to study the effect of organic manures on growth and seed yield of tomato.

Field experiments was conducted during *Kharif* 2011 in tomato variety PKM 1 with different organic sources at Horticultural College and Research Institute, Periyakulam in Randomized Block Design with five replications. The treatments were,

- T₁ - FYM @ 25 t/ha
 - T₂ - Poultry manure @ 7 t/ha
 - T₃ - Vermicompost @ 6 t/ha
 - T₄ - FYM (12.5 t) + poultry manure (3.5 t/ha)
 - T₅ - FYM (12.5 t) + vermicompost (3 t/ha)
 - T₆ - Poultry manure (3.5 t/ha) + vermicompost (3 t/ha)
- The plot size was 2.25 x 1.5 m.

The biometric observations on the plant height, days to 50% flowering, no. of fruits per plant, fruit and seed yield per plant were recorded. The seed quality parameters such as germination percentage, seedling length, drymatter production and vigour index values were also recorded. The observational data were subjected to statistical analysis.

The data (Table 1 and 2) indicated that the growth parameters of tomato such as plant height, number of fruits, fruit and seed yield differed significantly among the treatments. Application of poultry manures @ 7 t/ha recorded maximum plant height (58.3 cm). The earliness in this treatment could be attributed to the faster enhancement of vegetative growth and storing sufficient reserved food material for differentiation of buds into flower buds (Kuppuasmy *et al.*, 1992). Application of poultry manures @ 7 t/ha recorded the maximum number of fruits / plant (30.7), fruit yield (1.1 kg/plant) and seed yield (0.68 g/ plant). Poultry manure contains all the essential plant nutrients (Dosani *et al.*, 1999) increased the release of macro as well as micro nutrients in the soil resulting better extraction of nutrient uptake, increased fruit

Treatments	Plant height (cm)	Days to 50% flowering	No. of fruits / plant	Fruit yield / plant (kg)	Fruit yield / plot (kg)	Seed yield / plant (g)	Seed yield / plot (g)
T ₁	57.83	49.0	20.95	0.9	17.62	0.54	10.46
T ₂	58.30	47.0	30.67	1.1	20.44	0.68	12.11
T ₃	49.30	47.7	21.83	0.9	18.26	0.55	10.63
T ₄	57.73	46.0	28.80	1.0	19.45	0.61	11.53
T ₅	56.40	47.7	23.77	0.9	17.50	0.55	11.33
T ₆	55.87	46.7	22.80	0.9	17.24	0.52	10.27
S.E. +	1.959		0.775	0.029	0.512	0.032	0.344
C.D. (P=0.05)	4.366	NS	1.726	0.647	1.140	0.072	0.765

NS=Non-significant

Treatments	Germination (%)	Root length (cm)	Shoot length (cm)	DMP (mg/seedling)	Vigour index I	Vigour index II
T ₁	96.67	5.4	7.70	2.1	1283.0	203.0
T ₂	99.67	5.6	8.30	2.3	1385.3	229.3
T ₃	99.00	5.5	7.93	2.1	1332.7	204.7
T ₄	99.67	5.5	7.90	2.2	1335.3	216.0
T ₅	99.33	5.3	7.77	2.0	1301.0	195.3
T ₆	98.00	5.3	7.70	2.0	1285.3	192.7
S.E.±	0.627	0.068	0.134	0.059	16.535	6.241
C.D. (P=0.05)	1.390	0.152	0.298	0.131	36.843	13.906

maturity period which in turn increased the yield (Ramesh, 1997). The seed quality parameters such as germination percentage, seedling length, drymatter production and vigour index values recorded were maximum in the treatment poultry manure applied at the rate of 7 t/ha.

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