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Effect of Organic Manures and Bio Fertilizers on Vase Life of Spike in Tuberose (*Polyanthus tuberosa*) var. Shringar

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ABSTRACT

The present investigation on response of organic manures and bio fertilizers on floral characters in tuberose was conducted at Model Floriculture Centre, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, during 2010 to 2012. The experiment was laid out in Randomized Block Design with four replications. The treatment was comprised of Organic Manures and Bio Fertilizers (Poultry manure, vermicompost, Trichoderma harzianum and Pseudomonas fluoroscens). Maximum (27.35) number of open florets per plant in vase life studies was observed in treatment Trichoderma harzianum (40 g/ m^2) whereas, least (22.52) number of open florets per plant in vase life studies was recorded in treatment Trichoderma harzianum (20 g/ m^2) in the pooled data over two years.The pooled data for both the years for yield of unopened florets per plant in vase was minimum in treatment Pseudomonas fluoroscens (40 g/ m^2) (8.04) and maximum in control (12.40).The pooled value of the vase life showed maximum value in treatment Pseudomonas fluoroscens(40 g/ m^2) (13.87 days) while it was minimum in treatment vermicompost (2 kg/ m^2) (10.60 days).

Key words: *Pseudomonas fluoroscens, Vermicompost, Trichoderma*

INTRODUCTION

Growing of flowers in India has been a time honored and traditional activity, largely for religious purpose, perfume industry and landscape. Now, it is poised for a transformation owing to increase in demand, innovative technology, policy, environment and above all growing consciousness and demand for quality flowers[4].

Due to energy crisis, high cost of chemical fertilizers and poor purchasing power of marginal and small farmers, it is imperative to develop strategies for using organic manures, bio-fertilizers and wastes to their maximum potential with proper technology to meet the shortage of fertilizers and improving soil fertility. The use of organic manures and bio-fertilizers has an advantage of converting, unusual surplus or waste into useful product, for use in floriculture.

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The organic manures that are in use are FYM, compost of farm waste, crop residue, cattle dung, poultry manure, green manures, cakes, sewage sludge, municipal city compost, vermicompost and bio-fertilizers which include VAM, *Pseudonomas sp.*, Phospobacteria, *Trichoderma*, P-solubizer, *Azolla*, *Azospirillum*and *Rhizobium*. The use of organic manures and biofertilizers as a source of nutrient along with or without inorganic fertilizers seems to have great possibilities in avoiding or substituting the heavy use of chemical fertilizers. Organic manures and biofertilizers supply the nutrient to the plants from sources which these plants cannot tap themselves. So, keeping the urgency of new age farming system in mind, the present investigation was carried out on tuberose.

MATERIAL AND METHODS

The present study was conducted at Model Floriculture Centre, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, during 2010 and 2012. Pantnagar to evaluate the Effect of organic manures and bio fertilizers on Vase life of spike in Tuberose (*Polyanthus tuberosa*) var. Shringar. The treatments comprising of Organic manures and bio fertilizers and their doubling of dose and common basal dose of FYM 2kg/m2/yr were tested in Ramdomized Block Design with four replications. Application of these organics was added at the time of planting. The Vermicompost (T_3 - 1 kg/ m^2 and T_7 -2 kg/ m^2), Poultry manure (T_2 - 0.5 kg/ m^2 and T_6- 1 kg/ m^2), Trichoderma (T_4 - 20 g/ m^2 and T_8 - 40 g/ m^2), Pseudomonas (T_4 - 20 g/ m^2 and T_9 - 40 g/m^2) were added. The tuberose bulbs were planted at 30 X 20 cm apart. Observations on vase life studies were done by harvesting the spike in the morning hours when 1-2 florets had opened. The lengths of spikes were made uniform by maintaining 25 cm length of the stem below the lowest floret. These spikes were kept in a bottle containing 200 ml distilled water and these were recorded from five randomly selected plants of each replication. Data of both the years were pooled and subjected to analysis of variance.

RESULTS AND DISCUSSION

The data presented in Table. 1 showed that there was a significant variation among different treatments**.**The study showed that maximum number of opened florets per spike was recorded in T_8 [*Trichoderma sp.* (40 g)] (27.35) and minimum number of opened florets per spike was observed in treatment T_4 [*Trichoderma sp.* (20 g)] (22.52).*Trichoderma* an effective fungal antagonist helps in better uptake of micronutrients and also give strength to combat diseases. The activity of fungus might have helped in retaining quality of flower for long time[3]. The above results were in accordance with Dalve *et al*.[2] who reported that *Trichoderma* and reduced doses of nitrogen improved the flowering and yield of gladiolus cv. Peter Pears. The flowering parameters like days required for emergence of spikes, days required for opening of first pair of florets, days required for 50 per cent flowering, yield attributing characters like number of florets per spike, number of spikes per plant, were positively influenced by the application of both the biofertilizers in combination with nitrogen + *Trichoderma virde +Azospirillum.*

It is evident from the data presented in Table. 1 that, there was significant variation in number of unopened florets per spike among different treatments of organic manures and biofertilizers during both the years. The minimum number of unopened florets per spike was recorded in treatment T_9 [*Pseudomonassp.* (40 g)] (8.04) and maximum number of unopened florets per spike was observed T_1 [control] (12.40).

The data presented in Fig. 1 revealed that there was significant effect of treatments on the vase life. It is evident from the data that cut spikes of treatment showed that maximum number vase life was observed in T_9 [*Pseudomonas sp.* (40 g)] (13.87 days) whereas, minimum was in T_7 [vermicompost (2kg)] (10.60 days).

It might be due to overall food and nutrient status of flowers under these treatments. Application of organic manures influenced flower longevity due to the increased nutrient uptake by plant and greater development of water conducting tissues. It might also be due to the presence of ethylene inhibitors or due to presence of cytokinin's which delay senescence of florets (Karthiresan and Venkatesha, 2002). Similar result was also reported by Bhalla *et al*. (2007) in carnation cv. Niva which recorded maximum vase life *Pseudomonas* @ 2.0 g per plant.

Table. 1: Effect of organic culture and biofertilizers on No. of opened Florets, No. of unopened florets in tuberose var. Shringar

Sl. No.	Treatments		No. of opened florets			No. of unopened florets		
			2010	2011	Pooled	2010	2011	Pooled
1.	T_1	Control	20.25	27.02	23.63	14.83	9.98	12.40
2.	T_2	Poultry manure (0.5 kg/ m^2)	22.25	26.52	24.38	8.33	9.29	8.81
3.	T_3	Vermicompost (1 kg/ m^2)	23.75	25.07	24.41	12.47	10.93	11.70
4.	T_4	*Trichoderma sp.* (20 g/ m^2)	22.00	23.04	22.52	8.75	8.33	8.54
5.	T_5	*Pseudomonas sp.* (20 g/ m^2)	25.25	26.83	26.04	8.91	8.75	8.83
6.	T_6	Poultry manure (1 kg/ m^2)	21.33	24.24	22.78	8.29	9.12	8.71
7.	T_7	Vermicompost (2 kg/ m^2)	24.83	26.50	25.66	11.58	9.68	10.63
8.	T_8	*Trichoderma sp.* (40 g/ m^2)	24.33	30.37	27.35	12.25	9.39	10.82
9.	T_9	*Pseudomonas sp.* (40 g/ m^2)	25.53	26.20	25.87	7.75	8.34	8.04
SEm±			0.81	0.75	0.56	0.60	0.74	0.46
CD at (5%)			2.37	2.20	1.63	1.77	ns	1.36

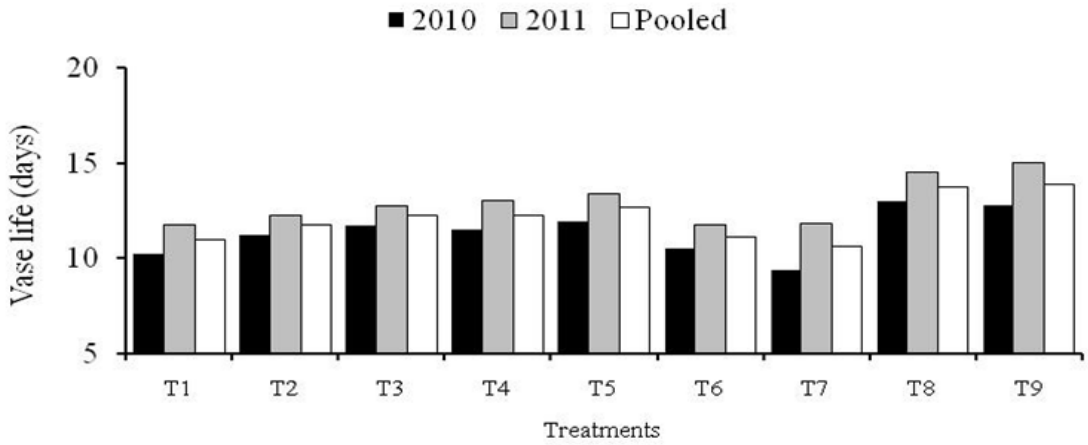

Fig. 1: Effect of organics on vase life

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