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INFLUENCE OF *GLOMUS FASCICULATUM* GERD. AND TRAPPE ON GROWTH OF TOMATO AND REPRODUCTION OF VAM

Over the years, it is becoming clear that inoculation of agricultural crops with mycorrhizal fungi stimulates their growth and development in nutritionally poor soils. In this study the influence of different levels of inoculum of Glomus fasciculatum Gerd. ml Trappe on growth parameters of tomato and reproduction of VAM at different time intervals was investigated.

The soil was collected from Dusty Acre Farm, J. N. Krishi Viswa Vidyalaya, Jabalpur, washed thoroughly in running tap water to make it almost free from organic matter and

Table 1. Influence of different levels of inocula of ***Glomus*** *fasciculatum* on the growtl) parameters of tomato (Pusa Ruby) and growth and development of the VAM as influenced by different time intervals[1]

Treatments	Plant height, cm			Fresh shoot weight, g per plant			*Dry* shoot weight, g per plant			Fresh root weight, g per plant		
	30 (1	45 d	60 d	30 d	45 d	60 d	30 d	45 d	60 d	30 d	45 d	60 d
Control (no G)	19.15	20.77	30.20	4.65	5.02	5.62	1.05	1.22	1.22	2.12	3.55	4.20
25 G	19.02	21.25	30.27	4.55	5.17	5.75	1.14	1.30	1.30	2.52	3.65	4.27
50 G	19.62	21.35	30.62	4.80	5.32	5.95	1.19	1.35	1.36	2.62	3.75	4.37
75 G	20.15	21.77	32.17	4.85	5.32	5.87	1.24	1.36	1.35	2.75	3.86	4.48
100 G	20.30	21.97	32.18	4.90	5.42	6.00	1.25	1.39	1.41	2.85	3.92	4.63
125 G	20.32	22.27	32.70	5.05	5.35	6.05	1.28	1.42	1.47	2.96	4.00	4.71
150 G	20.67	22.15	32.82	5.13	5.70	6.20	1.31	1.42	1.50	3.05	4.11	4.83
175 G	20.57	22.65	32.85	5.25	5.85	6.30	1.32	1.43	1.52	3.19	4.21	4.92
200 G	22.05	25.35	36.05	6.22	6.25	7.15	1.34	1.43	1.54	3.55	4.39	5.22
SEm±	0.189	0.231	0.446	0.070	0.066	0.088	0.053	0.089	0.034	0.069	0.051	0.051
CD (0.05)	1.010	0.478	0.921	0.143	0.137	0.182	0.109	0.081	0.071	0.143	0.112	0.110

Table 1 (contd.)

Treatment	Dry root weight, g per plant			Colonization, %			No. of chlamydospores		
	30 d	45 d	60 d	30 d	45 d	60 d	30 d	45 d	60 d
Control (no G)	0.375	0.532	0.572	-	-	-	-	-	-
25 G	0.385	0.565	0.587	23.50	63.50	28.50	158.00	163.75	181.50
50 G	0.395	0.582	0.607	25.75	67.00	32.75	164.25	169.00	186.75
75 G	0.462	0.607	0.675	27.50	71.00	35.25	168.00	174.50	193.00
100 G	0.492	0.610	0.682	29.00	74.00	37.50	172.25	178.75	203.00
125 G	0.502	0.665	0.707	30.00	75.00	39.75	177.75	181.75	208.25
150 G	0.520	0.677	0.752	32.50	78.25	43.25	182.75	186.75	218.00
175 G	0.332	0.692	0.787	35.75	80.50	45.50	185.75	190.75	223.00
200 G	0.577	0.737	0.912	37.00	82.25	56.25	190.00	198.50	232.50
SEm±	0.016	0.021	0.033	0.504	0.649	1.603	0.010	0.001	0.009
CD (0.05)	0.033	0.043	0.068	1.040	1.340	3.309	0.020	0.008.	0.019

1= Average of 4 **replications;** d = Days after inoculation; G - Chlamydospores of *G. fasciculatum*

was mixed with washed sand making soil-sand mixture (2:1) which was sterilised in autoclave at 1.05 kg cm^2 pressure. Seeds of tomato (var. Pusa Ruby) were surface sterilized with 1000 ppm mercuric chloride solution for 1 min, rinsed five times with sterilized water and sown in pots containing the above mixture of sterilized soil and sand (2:1). One seedling per pot (10 cm diameter) was transplanted a week before setting up the experiment.

Nine levels of inocula of G. *fasdculatum* viz., 0, 25, 50, 75, 100, 125, 150, 175 and 200 chlamydospores per plant were used. Each rea men was replica ed four imes. Inoculation of counted spores was done at the root zone of each plant (21 day old seedlings). The pots were suitably randomised on glass house bench and maintained at 27-32 C. Plant and soil samples were collected at an interval of 30, 45 and 60 days and the observations were recorded on plant height, fresh and dry weight of shoot and root, per cent colonization and number of chlamydospores. Assesment of colonization and counting of chlamydospores were done using root clearing and staining procedure (Philips and Hayman, 1970) and polyester cloth filter technique (Shukla and Vanjare, 1992).

The data presented in Table 1 indicate that there was corresponding increase in plant height with the increase in the level of inoculum of *G. fasdculatum.* Maximum plant height (22.05, 25.35 and 36.05 cm) was recorded at 30, 45 and 60 days respectively at the highest level (200 G) of inoculum which was significantly superior to 25 G and uninoculated control. Minimum plant heights viz., 19.15, 20.77 and 30.20 cm were recorded with uninoculated control at 30, 45 and 60 days respectively.

Maximum colonization (82.25%) was observed at 45 days with highest level (200 G) and was significantly superior to all other treatments except 175 G whereas minimum colonization (63.5%) was found at 45 days with minimum level of 25 G. Highest number of chlamydospores (232.5) was recorded at highest level of inoculum (200 G) after 60 days which showed significant difference over other treatments and remained at par with 175 G. Minimum number of chlamydospores (181.5) after 60 days was seen at 25 G which was significantly lower than all other treatments except 50 G. At all inoculum levels there was corresponding increase in the formation of chlamydospores with the time intervals.

The growth parameters of tomato plants and spore formation of the VAM were significantly promoted by the highest level (200 spores) of the VAM with maximum time interval (60 days). Similarly, maximum and significantly more root colonization occurred with the application of 200 spores per pot after 45 days of transplanting. All the levels of inocula seem to have influenced by the time intervals after inoculation.

It is concluded that there appears to have a definite impact of the increasing levels of the VAM on tomato plants.

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