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DEVELOPMENT OF VESICULAR ARBUSCULAR MYCORRHIZAL (VAM) FUNGI IN CULTIVARS OF MULBERRY

ALOK TRIPATHI[a1], HARISHANKAR RAI[b] AND M Z BEG[c]

[abc]Department of Botany, Shibli National (P.G.) College Azamgarh, U.P., India

ABSTRACT

In the present study different cultivars of mulberry, namely, Berhampore, Berhampore local, Channapatna local, Jakkur local, Kosen, Mysore local, Popua, S-41 and Tsugasaguwa were taken. In this study vesicles formed varied in shape and size. The mycelia of VAM fungi were noticed in all the cultivars from early stages of plant growth, but at later stage mycelia started degenerating, colonization of VAM fungi varied with plant age.

KEYWORDS : Vesicular, Arbuscular, Mycorrhizal , Arbuscules

Vesicular arbuscular mycorrhizal (VAM) fungi are an important group of soil microorganisms which form symbiotic association with plant roots. The importance of VAM fungal association in fruit crops such as citrus, apple, straw berry and avocado is well documented (Plenchette et. al., 1981; Hughes et. al., 1978 and Menge at al., 1980). The association of vesicular arbuscular mycorrhizal (VAM) fungi with plant roots has been shown to be beneficial to plants by several workers (Mosse, 1981). Mulberry is the sole source of food for silkworm, Bombyxmori L, and is an economically important crop. The occurrence of VAM fungi in mulberry roots has only been recently demonstrated. However, there is no research information on the development of VAM fungi in different cultivars of mulberry. The objective of this study was to monitor the development of VAM fungi in cultivar of mulberry.

MATERIALS AND METHODS

The cuttings of different cultivars of mulberry, namely, Berhampore, Berhampore local, channapatna local, Jakkar local, Kosen, Mysore local, Popua, S-41 and Tsugasaguwa were obtained from the germplasm bank of Bangalore university and Planted in experimental post of the Department of Botany, Shibli National P.G. College, Azamgarh. The roots were examined periodically from 30 days after planting to 240 days. Roots were collected at 30 days intervals and roots samples were cleared and stained by following the method of (Phillips and Hayman, 1870).

RESULTS AND DISCUSSION

The roots samples of all cultivars of mulberry showed the presence of arbuscules and vesicles (Table). The colonization of roots by VAM fungi was observed on the 30th day after planting in Berhampore local, Channapatna local, Jakkur local, Mysore local, S-41 and Tsugasaguwa where as in Berhampore, Kosen and Popua it was noticed on the 60th day after planting.

The number of arbuscules varied with plant age and maximum number of arbuscules were noticed between 60 and 150 days. Among the cultivars of mulberry studied, maximum number of arbuscules were noticed in the cultivar Berhampore at 120 days. The number of arbuscules decreased with plant age and at 240 days degeneration of arbuscules were noticed.

The number of vesicles also increased with age and they appeared after 90 days of planting. In the early phase of plant growth (30 days) no vesicles were seen. At 60 days, a few vesicles were noticed in some cultivars, and in others they were totally absent (Table-1). The highest number of vesicules was observed in the cultivar Popua at 210 days. In the cultivars Berhampore local, Mysore local and Tsugasaguwa One peak was observed in vesicule formation, and in Berhampore, Channapatna local, Jakkur local vesicles were absent up to 90 days and at 120 days a sudden increase in their number was noticed which gradually declined after 150 days. In Tsugasaguwa gradual increase and decrease in the number of vesicles was noticed from 30 days to 240 days. The type of vesicles formed varied in shape and size. The mycelia of VAM fungi were noticed in all the cultivars from early stage of plant growth,

[1]**Corresponding author**

Table 1 : Occurrence of VAM Fungi in Cultivars of Mulberry

Cultivars		Age of the Plants in days							
		30	60	90	120	150	180	210	240
Berhampore local	V	-	1	1	4	2	1	1	0
	A	3	39	84	66	44	32	12	7
Berhampore	V	-	-	1	1	2	3	2	1
	A	-	43	65	107	35	46	24	4
Channapatna local	V	-	-	0	1	1	2	1	12
	A	15	61	66	42	37	29	24	5
Jakkur local	V	-	-	1	4	3	2	2	1
	A	2	10	10	58	40	34	30	15
Kosen	V	-	1	-	5	1	1	3	1
	A	-	61	66	39	34	45	30	5
Mysore local	V	-	-	-	29	20	12	6	3
	A	44	59	77	55	75	12	10	7
Popua	V	-	2	1	1	2	4	38	10
	A	-	28	37	47	60	14	9	6
S-41	V	-	2	4	4	4	6	3	1
	A	24	52	23	47	30	21	13	7
Tsugasaguwa	V	-	2	1	1	1	1	1	0
	A	1	34	14	26	52	23	19	6

V-Vesicle, A-Arbuscule

but at later stages mycelia started degenerating. The degree of colonization by VAM fungi varied with plant age.

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