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RHIZOSPHERE AND NON-RHIZOSPHERE MYCOFLORA OF CERTAIN FRUIT PLANTS IN WYNAD

A complex physiological and ecological relationship between plants and soil microorganisms is known to exist in the rhizosphere region. Factors like the age and type of the plants and environmental conditions are known to influence the nature and abundance of microorganisms in the rhizosphere. (Katznelson, 1965; Revira, 1965; Rangaswami, 1968; Balagopal and Oblisami, 1973). No information is available at present about the qualitative and quantitative nature of fungal flora present in the rhizosphere of fruit plants in Wynad. In the present investigation, however an attempt has been made to work out the rhizosphere and non-rhizosphere mycopopulation of 5 fruit plants of Wynad grown in the Horticultural Research Station, Ambalavayal, viz., Mangosteen (*Garcinea mangostena* L.), Sapota (*Achras sapota* L.), Litchi (*Litchi chinensis* S.), Avacado (*Persea americana* M.) and Orange (*Citrus reticulata* B.)

Rhizosphere and non-rhizosphere soil samples were transferred to sterile water blanks aseptically and platings by serial dilution technique was adopted. Three replications were maintained in each case. The enumeration of population of fungi was carried out on Martin's rose bengal streptomycin agar. The inoculated petridishes were incubated at 25°C. The number of colonies produced during 5 days of incubation was recorded. The experiments were repeated in two seasons and the average of observations were recorded. Statistical comparisons between the plants were not made as the different fruit plants were maintained in different soil conditions.

Table 1

**Population of fungi in the rhizosphere and non-rhizosphere
regions of different fruit plants**

(Population expressed as 10^3 /g oven dried sample)

	Rhizosphere	Non-rhizosphere	R. S. ratio
Mangosteen	38.33	5.86	6.54
Sapota	18.66	2.04	9.14
Litchi	16.66	5.30	3.14
Avacado	26.66	2.67	9.98
Orange	39.66	2.10	18.88

The population of fungi occurring in the rhizosphere and non-rhizosphere soils of the fruit plants studied are presented in Table 1. In all cases the fungal population in the rhizosphere was significantly greater than that in the non-rhizosphere. Qualitative nature of the fungi in the rhizosphere and non-rhizosphere regions are presented in Table 2.

Table 2
Qualitative nature of the fungi in the rhizosphere and Non-rhizosphere regions of different fruit plants

Fungus	M	N	S	N	L	N	A	N	O	N
<i>Aspergillus</i> Sp.	+	+	+	+	+	+	+	+	+	+
<i>Penicillium</i> Sp.	+	+	+	+	+	+	+	+	+	+
<i>Fusarium</i> Sp.	+	+	+	+	+	+	+	+	+	+
<i>Diplodia</i> Sp.	+	-	+	-	-	-	+	+	-	-
<i>Curvularia</i> Sp.	+	-	-	-	-	-	+	+	-	-
<i>Rhizopus</i> Sp.	+	+	+	+	+	+	+	+	+	+
<i>Trichoderma</i> Sp.	+	+	-	+	+	+	+	+	+	+
<i>Helminthosporium</i> Sp.	-	-	-	-	-	-	-	-	-	-

+ = Present

- = Absent

M = Mangosteen,

N = Non-rhizosphere,

S = Sapota,

L = Litchi,

A = Avacade

O = Orange.

Species of *Aspergillus*, *Penicillium*, *Fusarium*, *Rhizopus* and *Trichoderma* were the predominant groups of fungi present in the rhizosphere and non-rhizosphere soils.

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സംഗ്രഹം

വയനാട്ടിൽ സുലഭമായി വളരുന്ന മാങ്കോസ്റ്റിൻ, സപ്പോട്ട, ലിച്ചി, അവക്കാഡോ, റൈബ്ബി തുടങ്ങിയ പഴവർഗ്ഗങ്ങളുടെ വേർപടലങ്ങളിൽ അധിവസിക്കുന്ന ഫങ്കസ്സുകളെ കണ്ടെത്തുവാനുള്ള ഒരു ശ്രമം നടത്തുകയുണ്ടായി. സാധാരണ മണ്ണിനേക്കാൾ കൂടുതൽ ഫങ്കസ്സുകൾ വേർപടലങ്ങളിൽ നിവസിക്കുന്നതായി കണ്ടു. ആസ്റ്റർജില്ലസ്, പെനിസീലിയം, ഫ്യൂസേറിയം, റൈസോപ്പസ്, ട്രൈക്കോഡർമ തുടങ്ങിയവയായിരുന്നു പ്രധാനപ്പെട്ട ഫങ്കസ്സുകൾ.

REFERENCES

- Balagopal, C. and Oblisami, G. 1973. The rhizosphere microflora of *Phaseolus vulgaris* L. Infected with Common Bean Mosaic Virus. *Ind. Jour. Microbiol.* **12**: 243-247.
- Katznelson, H. 1965. Nature and importance of rhizosphere. In: Ecology of soil-borne plant pathogens, (Ed) K. E. Baker and W. C. Snyder, Univ. Calif. Press, Berkeley, PP: 188-209.
- Rangaswami, G. 1968. The factors influencing rhizosphere microflora of crop plants and their significance in plant disease control *Indian Phytopath. Soc. Bull.* **4**, 241-266.
- Rovira, A. D. 1965. Interaction between plant roots and soil microorganisms. *Ann. Rev. Microbiol.* **19**, 241-266

Agricultural
Research Station
Ambalavayal

S. BHAVANI DEVI
C. BALAGOPAL†
G. INDRASENAN
P. VARADARAJAN NAIR

(M. S. received: 10-11-1973)