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OCCURRENCE AND DISTRIBUTION OF ARBUSCULAR MYCORRHIZAL FUNGI FROM RHIZOSPHERE AND NON– RHIZOSPHERE SOIL OF SELECTED LOCALITIES OF PARNER TEHSIL

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Abstract:
ArbuscularMychorrhizal (AM) species diversity and their root colonization patterns may vary in a plant species is influenced by environmental and biological factors. In the present study Rhizospheric and Non – Rhizospheric soils were collected from five localities of Parner Tehsil. Soli mycoflora was studied at vegetative stages of growth. Occurrence and distribution of Rhizosphere mycoflora was dominant over Non – Rhizosphere. The most Mycorrhizal fungi like ***Acaulosporaelegans, A.foveata, A. laevis, Glomus aibidium, G. fasciculatum, G. globiferum, G. mosseae, G. versiformae*** etc.
Keywords: ArbuscularMycorrhizal, Rhizosphere and Non – Rhizosphere, Mycorrhizal root colonization, Parner.

Introduction

Frank (1885) first gave the name Mycorrhiza to describe the essential structure and functioning of the peculiar associations between the roots and ectomycorrhizal fungi. ArbuscularMychorrhiza are considered as obligate biotrophic symbionts and are associated with the fine roots of over 80% terrestrial plant species.(Smith &Read 1997). In this plant fungus association, fungus depends upon host plant for nutrition and reproduction, and in return provides phosphates and essential mineral nutrients from soil to the host plant. Colonization by ArbuscularMycorrhizal fungi assures good survival and growth of plants. (Vijaykumar and Abraham, 2001; Lakshaman&Patil, 2004)AM belongs to Zygomycete order Glomales.

The main function of AM fungi is of phosphorous transportation. Extra radical mycelium of AM fungi easily access P from soil and deliver to root cortical cells as polyphosphate which finally translocate to host plant after solubilization and it is estimated that external hyphae deliver up to 80% of P requirement of the plant(Matamoros et.al 1999) .Other than P translocation ,AM fungi provides protection to the host plant roots from soil borne pathogenic attack they improve tolerance of plants to several abiotic stresses including drought , and saline stress condition by producing plant growth hormones (Evelin et.al,2009). In addition Mychorrhizal association also enhances nitrogen uptake as well as utilization of several micro nutrients AM successfully colonize with a wide range of plant species and are considered as non-host specific (Evelin et.al 2009). Additionally different species of AM fungi differ in their tolerance to adverse physical and chemical condition in soil (Kumar and Ghose, 2008).

In present study the mycoflora of Rhizospheric and Non – Rhizospheric soil of some selected localities of Parner Tehsil was studied.

Materials and Methods:

The Rhizospheric and non-Rhizospheric soil samples were collected from five selected areas of Parner Tehsil, areas like TakaliDhokeshwar, Wasunde, Khadakwadi, Padali Terfe Kanhur Pathar, and Hiware Korda. All the ten soil samples were brought to laboratory in sealed polythene bags. Then these samples were air dried in the shade at laboratory temperature .Then these samples were analyzed to its chemical parameters from the Agricultural Institute to examine its pH, salinity, organic carbon, Phosphorous,Pottassium, Copper, Iron, Zink &mangenese.

One third part of each collected soil sample was used for AM spore extraction using the method described by Gerdemann& Nicolson (1963). In each case 50gm of sample was mixed with 500ml water followed by through stirring and then suspension was sieved through a series of sieves. Spores were collected on the filter paper and then counted using binocular compound microscope.

Results and Discussion:

AM isolated from Rhizosphere and Non-Rhizosphere soil of five different localities of Parner Tehsil are presented in Table No-1

In the Rhizospheric soil of 5 different localities 11-14 AM were isolated from vegetative stage.Non –Rhizospheric soil was also studied 7-8 AM were isolated from vegetative stage.

Total 20 species of ArbuscularMycorrhizal fungi were isolated and identified from Rhizosphere and non Rhizosphere soil of five different localities from Parner Tehsil. It was clearly seen that species belonging to the three genera (Acaulospora, Glomus, Scutellispora) of AMF. Glomus species was most dominated than others two.

Table 1- Occurrence and distribution of ArbuscularMycorrhizal fungi from Rhizosphere and non – Rhizosphere soil of selected localities of Parner Tehsil

AMF	Wasunde		TakaliDhokeshwar		Khadakwadi		PadalitarfeKanhurPathar		HiwareKorada	
	Rhizo soil	Non Rhizo	Rhizo soil	Non Rhizo	Rhizo soil	Non Rhizo	Rhizo soil	Non Rhizo	Rhizo soil	Non Rhizo
Acaulosporafoveata	+	--	+	-	+	-	+	-	+	-
Acaulosporalaevis	+	+	+	-	+	-	-	-	+	-
Acaulosporaelegans	-	-	-	+	+	-	+	+	+	+
Glomus aggregatum	+	+	+	+	+	+	+	-	+	-
Glomus albidium	-	+	-	+	-	+	-	+	-	+
Glomus constrictum	+	-	+	-	-	-	-	+	+	-
Glomus dimorphicum	-	-	+	-	+	-	+	-	+	-
Glomus etunicatum	+	-	-	+	+	-	-	-	+	+
Glomus fasciculatum	+	+	+	+	+	+	+	+	+	+
Glomus geosporum	+	+	+	-	+	+	+	-	+	+
Glomus globiferum	+	-	-	-	+	-	+	-	+	-
Glomus heterosporum	+	-	+	+	-	-	+	+	-	-
Glomus macrocarpum	+	+	+	+	+	+	+	-	+	+
Glomus monospermum	-	-	-	-	+	+	-	-	-	-
Glomus trimurales	+	-	+	-	+	-	+	-	+	-
Scutellisporadipurpurascens	-	-	+	-	-	+	-	-	+	-
Scutellisporagregaria	+	+	+	+	+	-	+	+	+	+
Scutellisporaheterogama	+	-	+	-	+	-	+	-	+	-
Scutellisporanigra	+	+	+	+	+	+	+	+	+	+

Conclusions:

From the above observation table it was concluded that the species of Glomus were more diverse than the Acaulospora, Scutellispora. Glomus macrocarpum, G.fasciculatum, G.gigasporum was more dominated in both Rhizo as well as Non –Rhizospheric soil.

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