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Studies on occurrence of Rhizospheremycoflora of Jatrophacurcas L.

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I. Introduction

Jatrophacurcas L is the most important biofuel plant belonging to Euphorbiaceae family. Among plant evaluated for the extraction of biodiesel from its seeds, Jatrophacurcas has been found to be most promising. Several parts of Jatropha plant have medicinal and cosmetic uses also. In India, Jatrophacurcas is gaining importance commercially as biodiesel plant. It was found that performance of Jatrophaseed oil based biodiesel was superior among the other biodiesel derived from different vegetable oils (Lutz, 1992; Pak and Allexi, 1994). Jatropha seeds contain 30-35% viscous non edible oil that has attracted the attention of the world as an alternate fuel (Takeda, 1982; Banerjiet. al, 1985; Martin and Mayenx, 1985; Openshaw, 2000).

The original definition of the rhizosphere means the zone of soil in which the microflora is influenced by plant roots (Rovira, 1965). A series of reports have suggested that microbial community structure in the rhizosphere are dependent upon the type of plant species (Germidaet. al, 1998) including the genotypes within a species.

II. Materials & Methods

The rhizospheremycoflora of Jatrophacurcas was studied during March 07 to Feb 08. The rhizosphere soil samples were collected from the Jatrophaplantation site monthly for a year during March 2007 to February 2008. Soil particles adhering to the roots of Jatrophacurcaswere used as the study materials. Enumerations of rhizospheremycoflora were done by serial dilution technique(Harley and Waid, 1955). Martin's agar medium supplemented with Rose Bengal was used to isolate the rhizosphere fungi of Jatrophacurcas. The petri plates were incubated at 27±2°C for a week.

III. Results & Discussion

During investigation period 22 species belonging to 11 genera of fungi were recorded and identified asAspergilluscervinus; Aspergillusflavus; Aspergillusniger; Aspergillusterreus;Chaetomellaraphigera;Cladosporiumcladosporioides;Cladosporiumoxysporum; Curvularialunata; Curvulariapallescens; Emericellanidulans; Fusariumequiseti; Fusariumsolani; Monodictyscastaneae; Monodictys fluctuate; Paecilomyceslilacinus; Penicilliumaurantiogriseum; Penicilliumcitrinum; Penicilliumthomii; Rhizopusoryzae; Rhizopusstolonifer; Trichodermahamatum and Trichodermaharzianum(Table-1). A total of 1220 colonies of rhizosphere fungi were isolated. Maximum number of colonies were isolated during Rainy Season (757) followed by summer (323) and winter season (140). Colonies of Aspergillusniger was isolated throughout the study periods. Maximum number of colonies of A. terreus was isolated (317) during investigation period followed by Paecelomyceslilacinus (309) and Penicilliumaurantiogriseum (207). Monthly analysis of the rhizosphere fungi showed that highest 109 solonies of Paecilomyceslilacinus were isolated in the month of August followed by Aspergillusterreus (108) in Sept. Cladosporiumoxysporum was present only in the month of Feb 08 with its highest (45) number of colonies. Thus many pathogenic, non-pathogenic, saprophytic and antagonistic fungi were isolated from the Rhizosphere of Jatrophacurcas. Two species of the most important antagonistic fungus Trichoderma were also present.

Several fungal and bacterial biocontrol agents have been used for achieving plant disease control, amongst them Trichodermagroup has been found effective against aerial, root and soilpathogens (Weller, 1988; Kumar and Mukerjii, 1996; Van Loon et al., 1998; Whippset al.,1993; Eladet al., 1998 a, b and 2000; Chaubeet al., 2002; Harman et al., 2004). Trichodermaas a potent fungal biocontrol agent against a range of plant pathogen has attracted considerablescientific attention (Rini and Sulochana, 2007).Along with other factors, presence of Trichoderma species in the rhizosphere of Jatrophacurcas may be one of the cause for its disease resistant nature.

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