

Symbiotic association of arbuscular mycorrhizal fungi in rhizospheric soils of *Jatropha curcas* L.

H.C. LAKSHMAN

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SUMMARY

This paper presents screening of arbuscular mycorrhizal fungi on *Jatropha curcas* L. Root colonization and spore number were calculated. Negative correlation was observed between per cent root colonization and spore number. Altogether 21 arbuscular mycorrhizal fungal spores were identified. *Glomus* species was most predominant among the recorded AM fungal spores. Very least number species of *Sclerocystis* were recorded in all rhizospheric samples.

Key words : Per cent root colonization, Spore number, Rhizospheric soil, *Jatropha curcas* L.

The ubiquitous nature of arbuscular mycorrhizal fungi and their beneficial role in plant growth are well documented. This fungus enhances the uptake of limited nutrients, hormone production, drought resistance, and suppression of root pathogens (Smith and Read, 1997). Colonization by arbuscular mycorrhizal fungi assures good survival and growth of plants. (Vijaykumar and Abraham, 2001; Lakshman and Patil, 2004). There are conflicting reports in vesicular arbuscular mycorrhizal association with medicinal plants (Mohankumar and Mahadevan, 1984). Mycorrhiza is reported to be absent in medicinal plants and the possible reasons for its absence is attributed to the presence of various secondary metabolites. However, in recent days many medicinal plants have been reported to harbour vesicular arbuscular mycorrhiza in their root system (Lakshman *et al.*, 2001). These fungi are major community forming symbiotic association with roots of many terrestrial plants.

Jatropha curcas L. is a member belonging to family Euphorbiaceae. *Jatropha curcas* L. is an important petro plant found growing in a semi wild condition in the vicinity of the villages, scrubby jungles rock and pillar sites etc. It grows rapidly in dry weather conditions. The plant was introduced in India by Portuguese as an oil yielding plant. It is one of the promising drought tolerant perennial plant and its adaptable to various kinds of soils. Reports of AM fungal association on *J. curcas* was very meagre as per the literature survey. Therefore, the present study has been undertaken to assess the per cent mycorrhizal root colonization and the types of arbuscular mycorrhizal fungi spores in its rhizosphere.

Correspondence to:

H.C. LAKSHMAN, Post Graduate Department studies in Botany, Karnatak University, DHARWAD (KARNATAK) INDIA

MATERIALS AND METHODS

Occurrence of Arbuscular Mycorrhizal (AM) fungal association was investigated in growing areas of *Jatropha curcas* L. in places such as; the geographical location ranging from 75° to 75° 20' East longitude and 15° 35' North latitude in Dharwad district. Root and rhizospheric soil sample were collected from *Jatropha curcas* L. Fresh root samples were brought to the laboratory and the fine roots in each sample were removed, rinsed with tap water and fixed in formalin, acetic acid, alcohol (90:5:5) for determination of root colonization. The soil samples were then air dried in the shade at laboratory temperature for spore counting.

Roots were washed and autoclaved for 15 minutes in 10% KOH solution, cleared in distilled water, neutralized with 2% HCL and stained in 0.05% trypan blue in lactophenol. Per cent of arbuscular mycorrhizal colonization was estimated following the slide method (Phillips and Hayman, 1970). Spore population in the rhizospheric was counted following the wet-sieving and decanting methods (Gerdemann and Nicolson, 1963). The species level identification of different arbuscular mycorrhizal spores was done with the help of key proposed by Schenck and Perez (1990).

The physical and chemical characteristic of soil samples was done according to the procedure of Jackson, (1973). Per cent of organic matter was determined according to Piper (1950). SPSS software version 7.5 was used for Statistical analysis.

RESULTS AND DISCUSSION

The number of spores in rhizosphere soils, mean spore number, per cent roots colonization and soil characteristics in rhizospheric soils of *Jatropha curcas* L. differed. The highest number was found in the rhizosphere soil of *Jatropha curcas* L. at Motagi where as the lowest in