



## OCCURRENCE OF ARBUSCULAR MYCORRHIZAL FUNGI IN CERTAIN MEMBERS OF POLYGONACEAE FROM TELANGANA STATE, INDIA.

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Three host plants viz. *Antigonon leptopus* Hook. & Arn., *Cocoloba uvifera* L., and *Polygonum glabrum* (Wild.) belonging to the family Polygonaceae were screened for arbuscular mycorrhizal fungal association in their rhizosphere soils. All plants which were either medicinal or ornamental were found to harbour arbuscular mycorrhizal fungi. All three host plants surveyed form new host records for Arbuscular mycorrhizal fungi reported in this paper.

**Key words:** Mycorrhizae, Rhizosphere soil, *Glomus*.

Arbuscular mycorrhizal fungi (AMF) (Schü ler and Walker 2010) are obligate fungal symbionts of an estimated 80-90% of vascular plants and some non-vascular plants such as Ferns and Mosses (Smith and Read 1997). Compared to the diversity of mycorrhizal associations, this symbiosis is the most prevalent and is a type of endomycorrhiza in which the fungus penetrates cortical cell walls. They are characterized by specialized intercellular hyphae and unique branching hyphal arbuscules which form inside the cells. The fungi are assumed to be mostly unculturable and except for germination, wholly dependent on photosynthetic plants. According to Dodd (2001) these fungi are primarily responsible for nutrient transfer from soil to plant, soil aggregation, and protection of plants against drought stress.

The present investigation was carried out on three unreported plant species (Wang B, Qui Y L 2006) which were considered to be non-mycorrhizal, namely, *Antigonon leptopus* Hook. & Arn., *Cocoloba uvifera* L., and *Polygonum glabrum* (Wild.) belonging to the family Polygonaceae to find out the association with AMF species along with the other ecological parameters such as soil PH, soil moisture, soil texture, etc.

### MATERIALS AND METHODS:

AM fungal spores were extracted from the rhizosphere soil samples employing wet-sieving and decanting technique (Gerdemann and Nicolson, 1963). Various spore types were isolated and mounted on slides in polyvinyl alcohol, sealed with Dinitroparaxylene (DPX). Later, all such slides were fully examined under Leitz microscope and photographed with digital camera. AM fungi were identified up to species level based on morpho-taxonomic criteria such as hyphae, spore and sporocarp morphology, subtending hyphae, ornamentation, wall layers, suspensor cells, shape, colour etc using taxonomic keys proposed by Walker (1986) and Schenck and Perez (1990). All the slides are deposited with Prof C. Manoharachary's Fungal Herbarium, Department of Botany, Osmania University, Hyderabad with OUFH No.81.

### RESULTS AND DISCUSSION:

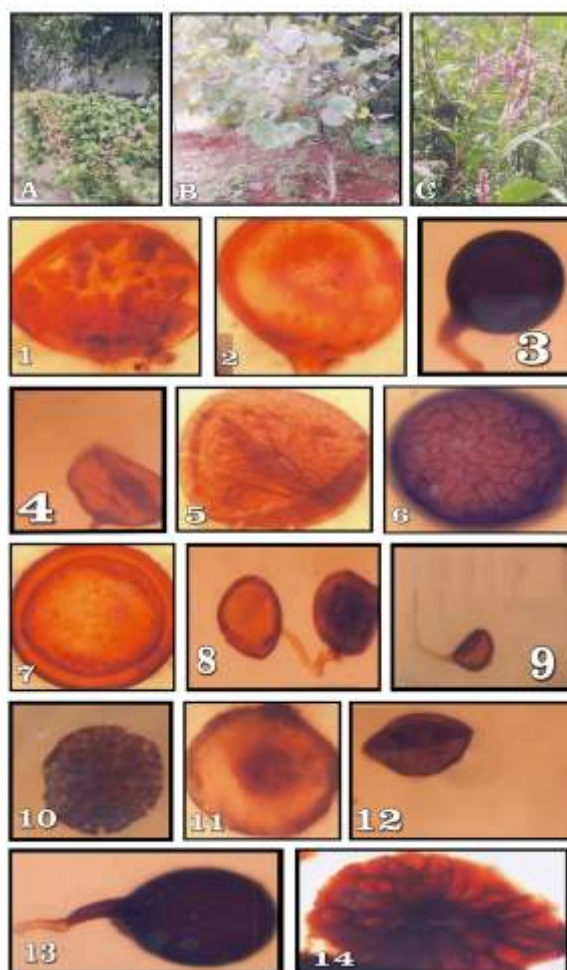
A total of fourteen AM fungal species were isolated and identified up to species level from the host plants *Antigonon leptopus*, *Cocoloba uvifera* and *Polygonum glabrum* belonging to the family Polygonaceae. Soils supporting plants belonging to Polygonaceae were investigated and are of clayee, sandy clayee type with pH ranging from 7 to 10 being poor in

**Table 1:** AM fungal species isolated from the host plants of Polygonaceae:

	AM Fungal species	<i>Antigonon leptopus</i>	<i>Cocoloba uvifera</i>	<i>Polygonum glabrum</i>
1.	<i>Acaulospora bireticulata</i> Rothwell & Trappe	+	+	+
2.	<i>Acaulospora delicata</i> Walker, Pfeiffer & Bloss	-	+	-
3.	<i>Acaulospora elegans</i> Trappe & Gerd. 1974	-	+	+
4.	<i>Acaulospora foveata</i> Trappe & Janos	-	-	+
5.	<i>Claroideoglossum claroideum</i> N.C. Schenck & G.S. Sm.) C. Walker & A. Schüßler			
6.	<i>Glomus fasciculatum</i> (Thaxter) Gerdemann & Trappe emend, Walker & Koske	+	-	-
7.	<i>Glomus fistulosum</i> Skou & Jakobsen	-	+	-
8.	<i>Glomus geosporum</i> (T.H. Nicolson & Gerd.) C. Walker 1982			
9.	<i>Glomus pansihalos</i> Berch & Koske	-	-	+
10.	<i>Glomus sinuosum</i> (Gerd. & Bakshi) Almeida & Schenck	-	-	+
11.	<i>Scutellospora auriglobosa</i> (Hall) Walker & Sanders	-	+	-
12.	<i>Scutellospora dipurpurascense</i> Morton & Kosko	-	-	+
13.	<i>Scutellospora erythropha</i> (Koske & Walker) Walker & Sanders	-	-	+
14.	<i>Scutellospora pellucida</i> (Nicolson & Schenck) Walker & Sanders	+	-	-

nutrients. As most of the plants are weeds no fertilizers were used to grow.

Altogether fourteen AM fungal species were found associated with three host plants viz., *Glomus* and *Scutellospora* were found to be dominant genera representing six species of *Redeckera* followed by *Scutellospora* with four species, *Acaulospora* was represented by four species. *Antigonon leptopus* was harboured with four AM fungal species, *Cocoloba uvifera* with three AM fungal species and *Polygonum glabrum* with three fungal species. All the three host plants of Polygonaceae form new hosts for AM fungi.



**Figure 1.** (1-14): Spores isolated from Polygonaceae members: A: *Antigonon leptopus*: 1. *Gl. fistulosum* 2. *Gl. geosporum* 3. *Sc. dipurpurescence* B: *Cocoloba uvifera*: 4. *Acaulospora bireticulata* 5. *Gl. sinuosum*, 6. *Gl. pansihalos* 7. *Ac. delicata* 8. *Sc. pellucida*, C: *Polygonum glabrum*: 9. *Glomus fasciculatum* (*Rhizophagus fasciculatus*), 10. *Sc. auriglobosa*, 11. *Ac. elegans*, 12. *Sc. erythropha*, 13. *A. foveata*.

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