Effect of the Arbuscular Mycorrhizae *Glomus fasciculatum* and *Acaulospora laevis* on Two Varieties of *Triticum aestivum* L.

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SUMMARY

The bread wheat (*Triticum aestivum* L.) var. DWR-195 and DWR-162 are commonly grown in Dharwad district. To understand the efficacy, indigenous AM fungi, *Glomus fasciculatum* and *Aculospora leavis* were selected and Glass house studies conducted by inoculating these two fungi. The results revealed that the increased plant parameters were recorded on DWR-195 and DWR-162 which were inoculated with *Glomus fasciculatum*. However, the effect on shoot growth, phosphorous content in DWR-162 var. of *Triticum aestivum* L. was not influenced much with inoculation of *Aculospora leavis* compared to *Glomus fasciculatum*.

Key words : AMF (Arbuscular mycorrhizal fungi), Biomass, *Glomus fascieulatum*, *Aculospora leavis*

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AMF (Arbuscular mycorrhizal fungi) form symbiotic association with 80% of tropical crop plants. They play very important role in plant mineral nutrition and plant health (Allen 1991; Cucenca *et al.*, 2007). The symbiotic association with AM fungi allows the plant to access phosphorus beyond the depletion zone through the extraradical fungal hyphae, in addition to the root uptake (Pearson and Jackobsen, 1993). The host growth benefit resulting from the mycorrhiza is generally quantified as mycorrhizal responsiveness.

Wheat (*Triticum aestivum* L.) is an important food crop next only to paddy. It is known that, 70% of population is depending on food products prepared from wheat. Very limited studies on wheat inoculated with arbuscular mycorrhizae have been carried out. In view of this, investigation is undertaken to evaluate the efficiency of two AMF species towards biomass and growth enhancement in DWR 195 and DWR 162 varieties of *Triticum aestivum* L. (wheat).

MATERIALS AND METHODS

Pot experiment:

The soil physico-chemical characteristics used for pot experiments were estimated as per Jackson (1973). Per cent of organic matter was determined according to Piper (1950). Electric conductivity was measured using Bridge meter and pH by 1:1 (w/v) soil to water ratio (Table 1). The pure cultures of two AM species - *Acaulospora laevis* and *Glomus fasciculatum* were maintained in poly house using jowar (*Sorghum vulgare*) as host for mass multiplication in the 30 cm diameter pots containing sterilized sand - soil mix (1:1) and used as inoculum. 15 cm diameter pots amended with air dried sterilized soil - sand mix (3:1) ratio was used for the experiments. About l0g of inoculum consisting of 3g roots and 7g soil containing 200-250 spores of *Acaulospora laevis* and *Glomus fasciculatum* was inoculated 2cm below the soil surface in the earthen pots.

Later, one week old healthy germinated seedlings of DWR 195 and DWR 162 *Triticum aestvium* L. varieties grown in small plastic cups containing sterilized soil were transferred to the pots containing the inoculum. Uninoculated (non-mycorrhizal) plants received similar amounts of autoclaved sterile soil. The experiment was completely randomized with three replications per treatment of the two varieties. All the pots were maintained under poly house condition. To maintain moisture, pots

Table l: Physico-chemical characteristics of the soil used for pot experiments

Characteristics	Garden soil
pH	5.80(5.77)
Soil moisture (%)	28.36 (0.32)
Organic matter (%)	0.84(1.15)
E.C.mmho/em	10.17(3.33)
Nitrogen (mg/kg)	1.41(5.77)
Phosphorus (mg/kg)	0.22(8.81)
Potassium (mg/kg)	2.41(5.77)
Zinc (mg/kg)*	2.02(8.81)
Copper (mg/kg)	1.04(3.33)
Magnesium (mg/kg)	1.42(3.33)

*Values in parentheses represent standard errors of mea