

Seasonal variation in three leguminous tree seedlings associated with AM fungi

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SUMMARY

Three important leguminous plants *Tamarindus indica* L., *Dalbergia sisso* Roxb., *Cassia nodosa* Roxb., their roots and soil samples were screened for their AM fungal association. Percentage of root colonization and spore number of these plants were co related to each other. Higher spore number was recorded in *Cassia nodosa* Ham., during December and April compared to *Tamarindus indica* L., *Dalbergia sisso* Roxb in soil depth between 16-24 cm. On contrast to this percent root colonization significantly increased during April in *Dalbergia sisso* Roxb., *Tamarindus indica* L., followed by *Cassia nodosa* Ham. The results revealed that both root colonization sporulation decline from September to April in the examined tree species.

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Legumes are among the three largest families of flowering plants. The flowering plants of greatest importance to world agriculture belong to the orders Gramineae (cereals and grasses) and Leguminosae (legumes or the bean family). The Leguminosae consist of about 750 genera and 19,000 species of herbs, shrubs, trees, and climbers. This large family is divided into three subfamilies—the Mimosoideae, Caesalpinoideae, and Papilionoideae. *Tamarindus indica* L. is a multipurpose tropical fruit tree used primarily for its fruits, which are eaten fresh or processed, used as a seasoning or spice, or the fruits and seeds are processed for non-food uses. The species has a wide geographical distribution in the subtropics and semiarid tropics and is cultivated in numerous regions. *Cassia nodosa* Roxb is used a traditional laxative throughout, bark and seeds are also used as antipyretics. However, it was noted that emesis may be observed. Tannin or dyestuff: The bark has been used for tanning leather, but the amount of tannin is comparatively low. The wood is used for general construction, furniture and cabinet making.

Arbuscular mycorrhiza (AM) Fungi are geographically ubiquitous and occur over a broad

ecological range. They are commonly forms mutualistic symbiotic association with agricultural crops (Bagyaraj, 2006). Many Horticultural crops, weeds grasses and forest tree species have also been reported to form AM fungal association (Smith and Read, 1997). The AM symbiosis influences several aspects of plant physiology, such as plant rooting, closing of the nutrient cycles, nutrient acquisition, and plant protection. The primary effect of the AM symbiosis is to increase the supply of mineral nutrients to the plant, particularly those nutrients whose ionic forms have a poor mobility rate or those present in low concentration in the soil solution. This situation mainly concerns phosphate, ammonium, zinc and copper. The processes of nutrient transport in AM systems have been reviewed recently. It has also been recognized that AM colonization affects a wide range of morphological parameters in developing root systems, with greater root branching as the most commonly described effect.

It is now well known that AM fungi play a vital role in plant growth, especially plants growing with nutrient deficient soils, since naturally occurring AM fungi are well adapted to the conditions of their natural occurrence due to their long process of evolution, they can be of immense use for various plants. AM fungi benefit the host plant primarily by increasing the capacity of the root system to absorb and translocate phosphorus and minor elements through an extensive network of hyphae external to the root (Cuenca *et al.*, 2007). Less emphasis has so far been laid on seasonal fluctuation of their occurrence with roots of three leguminous plants therefore in investigation three leguminous trees were selected *Tamarindus indica* L.

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