

EFFECT OF APPLICATION OF ARBUSCULAR MYCORRHIZAL FUNGI AND FOLIAR HORMONE ON GROWTH OF SOME FOREST TREES

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Inoculation of indigenous arbuscular mycorrhizal fungi and foliar application of cytokinin based anand vishal (BEC) plant hormone individually and in combination, was done on seedlings of *Albizia lebbek*, *Pongamia pinnata* and *Cleistanthus collinus*. Data on growth parameters was taken periodically and analyzed. Among 3 tree species maximum response to mycorrhizal inoculation was observed in *Pongamia pinnata* and *Cleistanthus collinus*. In all the three species a combination of both the treatments gave superior growth responses than in individual case.

Keywords : *Albizia*; Arbuscular mycorrhizal fungi; *Cleistanthus*; Foliar hormone; *Pongamia*.

Several higher plants are associated with arbuscular mycorrhizal colonization and benefited in different perspectives of growth and development¹. Besides higher biomass production, this interrelationship helps them in establishments and survival in the natural and disturbed habitat². Several reports are available in the combined inoculation of arbuscular mycorrhizal fungi and other beneficial symbiotic and nonsymbiotic organisms^{3,4}, but no reports are available on the effects of foliar hormone with mycorrhizal inoculation of forest trees. Therefore, a preliminary experiment was carryout on the joint application of foliar hormones and arbuscular mycorrhizal treatment and their effects on growth of forest trees.

Seedlings of *Albizia lebbek*, *Pongamia pinnata*, *Cleistanthus collinus*, were raised in sterilized soil of 7.8 pH in the poly bags of 7.5 Kg. Indigenous incoulum of *G. fasciculatus* containing 150-200 spores / 100g soil were inoculated below 1 cm and seed sowing level. Presoaked and surface sterilized seeds were sowed in the uninoculated and inoculated pots. Plants were treated with regular watering and sprayed with 1% foliar hormone (Cytokinin based anand vishal BEC) with the interval of 30 days. Plants of 12 month age were analyzed for the height and diameter.

Field trials of plants of these species

were conducted in complete block design in 6 replicates. The distance between each plot were 3 x 3 m and plant to plant was 2 x 2 m. The twelve month old seedlings were transplanted in this field and data of plant height and diameter was again recorded after one year of transplantation.

In the present study, indigenous arbuscular mycorrhizal fungi and foliar hormone showed the beneficial effect on the host plant species grown in nursery and transplanted in the field. A significant difference in the plant growth over untreated and uninoculated control in individual and combination treatment of foliar hormone and arbuscular mycorrhizal fungi was observed. Overall *Cleistanthus collinus* and *Pongamia pinnata* showed better plant height and diameter as compared to control (Fig.1). After transplantation a significant difference was observed in the plant height of *Pongamia pinnata* in the field. As successful reforestation programs have included application of the biofertiliser at the nursery stage so as to produce seedlings which value added with microsymbionts⁵. In the present context, our studies revealed the usage of joint application of arbuscular mycorrhizal fungi and foliar hormone very promising and beneficial.

References

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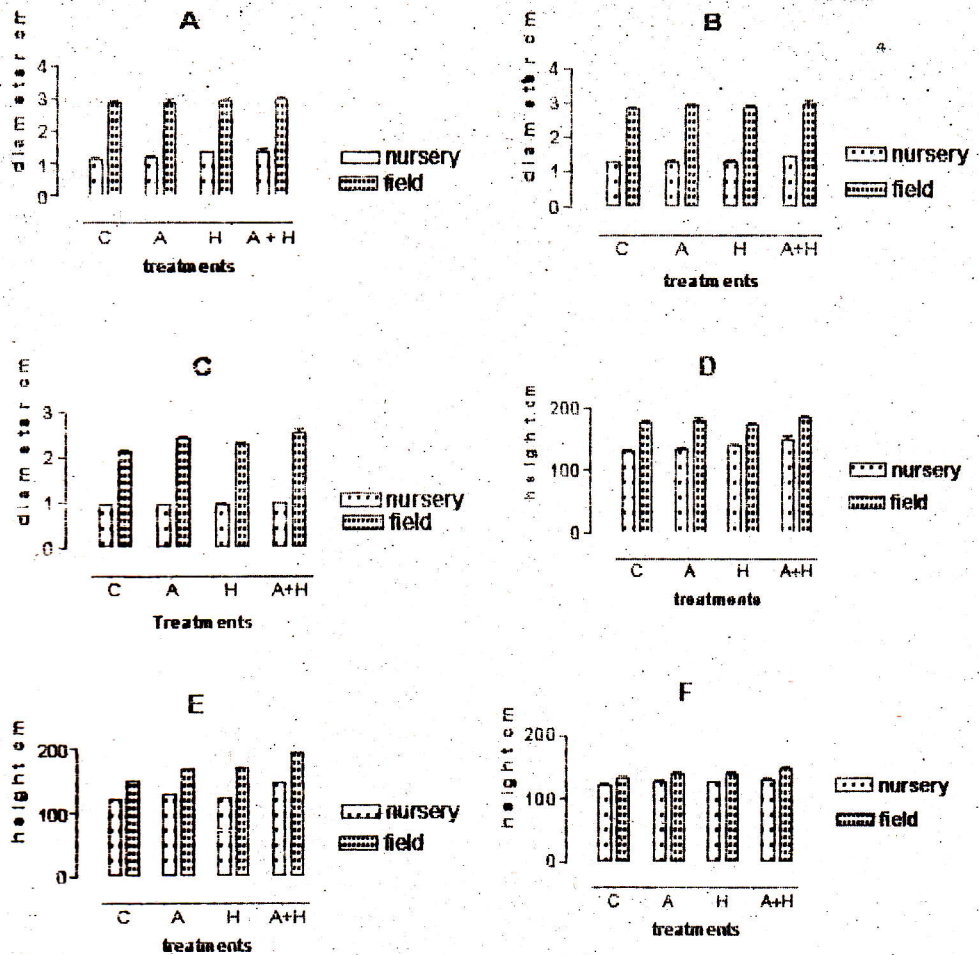


Fig. 1. Effect of arbuscular mycorrhizal fungi and foliar hormone on growth of *Albizzia lebbek* (A & D), *Pongamia pinnata* (B & E), and *Cleistanthus collinus* (C & F). Treatments : C= Control, A = Arbuscular mycorrhizal fungi, H = Foliar hormone

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