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Forestry has now assumed quite a different proposition, as it envisages to generate the renewable biomass energy and also aims to provide timber and pulp-wood requirements for the consuming society of our times. Our natural forests have got depleted beyond the limits of their sustainability and much depends on our efforts, for creation of artificial forests, through farm-forestry or social-forestry or environmental forestry. Both the public and private sectors have launched massive plantation programmes throughout India where the ecoclimatic differences exist on regional levels, either for reforestation of denuded areas or for farm-forestry. Consequently, selection of successful tree species has to be made in fitness of the prevailing agro-climate.

Complete packages of practice need to be developed, for the various tree species selected, which must include aspects such as the mode of propagation in nurseries, the nursery technology, and assessment of plantation strategies at the specific sites. This study was undertaken on the tree species that inhabit our natural forests in Chhattisgarh region, and it has been carried out on a specific aspect of the role of plant-microbe symbiosis in relation to their field performance under artificial plantations.
The investigations made and significant results obtained during the course of this work are summarised below.

SCREENING OF TREE LEGUMES FOR NITROGEN-FIXING SYMBIOSIS:

Twenty two species belonging to mimosaceae (11), papilionaceae (5) and caesalpinaceae (6) were screened for the root nodules. Only sixteen of them were found nodulated and confirmed their NFT status. All the species of caesalpinaceae were non-nodulated to show that these were not the NFT species.

ISOLATION, PURE CULTURE DEVELOPMENT AND CHARACTERIZATION OF THE RHIZOBIUM STRAINS OF THE NFT SPECIES:

The rhizobial strains were isolated from the root-nodules occurring on the seedlings germinated in nature and in wild-state in the forests. Subsequently, they were purified and maintained as pure culture for studying their various cultural and symbiotic characteristics.

All the 14 isolated strains of Rhizobium were Gram negative and confirmed their infectivity to their respective host species by conforming to the requirements of 'Koch's Postulate'. However, in cultural characteristics the strains associated with the species of Albizia among mimosaceae, and Pongamia pinnata and Fterocarpus marsupium of papilionaceae were slow growing and alkali producers. The rest a strains were fast growing and acid producers.
The cross inoculation results have shown that Albizia lebbek and Dalbergia sissoo were hosts for all the 14 strains, while Albizia procera and Acacia nilotica were non-hosts for the strains R-PM, and R-AL, R-AP, R-AO respectively. The most suitable strains found were R-AO for A. lebbek, R-LL for A. procera, R-AcN for D. sissoo and A. nilotica.

SCREENING OF PLANTS FOR VAM SYMBIOSIS:

Altogether 46 tree species belonging to 21 families of Angiosperms were examined for the endomycorrhizal association. All the species, excepting Schrebera swietenoides of oleaceae, were found endomycorrhizal having a desirable % VAM colonization on their roots and capacity for producing significant VAM spore-load in the rhizosphere soil.

Isolation of the VAM spores from the rhizosphere soils gave 12 different spore-types. All of which belonged to the single genus Glomus of Endogonales.

In inoculation tests upon 6 tree species under the glass house condition, these strains exhibited their symbiotic potentials variably as PT8 for A. lebbek, PT5 for A. procera, PT6 for A. nilotica & D. sissoo, PT4 & PT6 for G. arbores and PT10 for Pongamia pinnata were the absolute best in % root colonization. However, in producing the best growth effects more than one VAM isolates were found suitable on DMR analysis for each of the six test plant species. Nevertheless, isolates PT6 and PT7 appeared to be better inoculants in over all effects, and these isolates
of VAM were taken for dual inoculation experiment alongwith the R-AO and R-AcN strains of the Rhizobium.

**DUAL INOCULATION WITH R & VAM ISOLATES:**

For dual inoculation experiment only two host species viz., Albizia lebbek and Dalbergia sissoo were taken. The symbiotic microbes were R-AO & PT-6 and R-AcN & PT-7 for these hosts, respectively. In the case of both the test species dual inoculation was found superior over inoculation of the single-symbiont and the control. The usefulness of preinoculation of plant host seedlings made in the nursery itself was experimentally substantiated.

This study has provided an experimental approach to adopt pre-inoculation of the symbiotic microbes to seedlings in nursery for better plantation results. This aspect may become a very practicable and cost effective proposition in plantation programmes in tropical conditions.