SUMMARY
The investigations carried out on the ecology, taxonomy of arbuscular-mycorrhizal fungi from Mollem and Dharbandoda forests, disturbed areas of Collem forest, and the studies related to screening of efficient arbuscular-mycorrhizal fungi for some tree species are presented under five chapters and the important results are highlighted below.

The status of arbuscular mycorrhizal fungi in Mollem and Dharbandoda forest areas of Goa is reported for the first time. All the twenty eight tree species belonging to twenty two families were taken up for the study and were found to be mycorrhizal. The mycorrhizal colonization was characterized by intra-radical and extra-mitral hyphae, intra-cellular coils, vesicles and/or arbuscules. Higher spore density and higher percentage root colonization was recorded from Mollem forest as compared to Dharbandoda forest area. In all a total of 31 arbuscular mycorrhizal fungal species are identified from both Mollem and Dharbandoda forest. The genus *Glomus* was found to be dominant in both Mollem and Dharbandoda forest areas.

Studies on arbuscular mycorrhizal fungi in Mollem and Dharbandoda forests, and disturbed areas of Collem forest revealed a rich diversity of arbuscular mycorrhizal fungi. A total of 33 arbuscular mycorrhizal fungal species belonging to five genera viz., *Acaulospora* (6), *Gigaspora* (2), *Glomus* (19), *Sclerocystis* (3) and *Scutellospora* (3) are isolated by using trap plants and pot cultures, and described with modern terminologies. A total of 31 arbuscular mycorrhizal fungal species were recovered from Mollem site, 26
arbuscular mycorrhizal fungal species were recovered from Dharbandoda site and 22 arbuscular mycorrhizal species were recovered from Collem site.

Studies on seasonal variations of arbuscular mycorrhizal fungi with respect to root colonization, spore density and species diversity was taken up at two sites viz, Mollem and Dharbandoda forest areas. The study revealed that the seasonal variations have a remarkable influence on the occurrence on the spores and root colonization. It was also observed that the average spore density recorded was maximum in pre-monsoon, followed by post-monsoon and was minimum in monsoon. However, average percentage root colonization was maximum in post-monsoon, followed by monsoon and was minimum in pre-monsoon. It was also observed that the climatic and edaphic factors strongly influence the spore density and root colonization.

Two sites viz., undisturbed (Mollem) and disturbed (Collem) taken up for the study indicated that the average spore density was higher in undisturbed site than the disturbed site. Similarly, percentage root colonization was also higher in undisturbed site as compared to the disturbed site. Also the arbuscular mycorrhizal fungal species richness was higher in undisturbed site than in the disturbed site. The dominance of arbuscular mycorrhizal species varied at both sites.
All the tree species *viz.*, *Anacardium occidentale, Artocarpus heterophyllus* and *Terminalia crenulata* inoculated with the two species of arbuscular mycorrhizal fungi *viz.*, *Glomus mosseae* and *Glomus intraradix* showed better growth response compared to control. It was observed that *Anacardium occidentale* inoculated with *Glomus intraradix* showed better mycorrhizal inoculation effect (MIE = 48.31%) than *Glomus mosseae* (44.01%). While, *Artocarpus heterophyllus* inoculated with *Glomus mosseae* showed better mycorrhizal inoculation effect (MIE = 75.23%) when compared to inoculation with *Glomus intraradix* (MIE = 55.46%). Similarly, *Terminalia crenulata* inoculated with *Glomus mosseae* showed better mycorrhizal inoculation effect (MIE = 38.50%) when compared to inoculation with *Glomus intraradix* (21.52%).

Transplantation of arbuscular mycorrhizal inoculated nursery seedlings may prove advantageous on reclamation sites as limited nutrients in the soil would be more efficiently extracted. It is essential to isolate local arbuscular mycorrhizal fungi and include them during screening for efficiency, in order to select an efficient strain of arbuscular mycorrhizal fungi best suited for a particular plant host.