PROJECT PROFILE

Title	Development of superior bio-fertilizers for enhanced Plant productivity
Principal Investigator	**Dr. A. Karthikeyan, Scientist – G**
Project Associate	Dr. Anish V. Pachu
Start and Completion dates	(July 2024- April 2025)

Objectives:

1. To evaluate the efficacy of different bio-fertilizers (both commercial and IFGTB developed) on quality seedling production in nurseries for developing potential biofertilizer consortia.
2. To determine the biocontrol efficacy of bio-fertilizers against soil/root born pathogens of seedlings in the nursery.
3. To assess the out-planting performance of bio-fertilizer-inoculated plants in different field conditions.
4. To conduct training-cum-demonstration of the bio-fertilizer production technology to various stakeholders to improve their livelihood.

Funding Agency	CAMPA- AICRP
Total budget outlay	34.35

SUMMARY

Research indicates that these bio-fertilizers effectively suppress the common plant pathogen *Fusarium oxysporum*, thereby mitigating its pathogenic effects on plants and enhancing their resilience under adverse conditions. When compared to commercial bio-fertilizers, the growth promoting capabilities of the IFGTB cultures were found to be significantly superior. The abundance of spores and colony-forming units in the IFGTB microbial cultures surpassed that of commercial alternatives. Key physiological parameters, including shoot length, root length, girth, and leaf count, were notably improved with the application of IFGTB cultures. Notably, the combination of *Azotobacter* and *Azospirillum* resulted in a significant increase in the growth of *Santalum album*. Additionally, the phosphate-solubilizing bacteria *Bacillus megaterium* produced substantial amounts of organic acids, such as tartaric, oxalic, and citric acids, which facilitated the solubilization of insoluble phosphates and contributed to pathogen inhibition. The synergistic effect of all these cultures further enhanced growth in*Gmelina arborea, Santalum album* and *Melia dubia*.