Project title	Development of Biopesticide products/ formulations from extracts of tree borne oil seeds and tissues of wild plants for management of insect pests
Principal Investigator	Dr. N. Senthilkumar
Co-Investigators	Smt. R. Sumathi
Project duration (Start & End)	5 years: 2019-2024
Objectives	To tests the efficacy of the biopesticidal formulations of **TreePAL** and **Crawl clean** at multi locations across the country against targeted forest pests. Bioassay directed characterization of active principles or compounds from selected tree borne oil seeds and plant tissues. To develop biopesticidal formulations using most effective bioactive principles for the management of insect pests of forestry crops.
Progress	One litter preformulation of **Tree PAL^{H}** and 400 gms of **Crawl clean** were supplied to participating institutes of ICFRE *viz.*, FRI, Dehradun; TFRI, Jabalpur; HFRI, Shimla; AFRI, Jodhpur, IFB, Hyderabad and IWST, Bangalore for multi locational nursery and field evaluation against important key forest pests along with the data format to be collected.The Phytotoxicity study was carried out in different concentrations *viz.*, 0.5% and 1% of Tree PAL^{H} formulation in different forest plant species *viz., Tectona grandis* L.F., ***Gmelina arborea*** Roxb. and ***Ailanthus excelsa*** *Roxb*. and observed no phytotoxicity. Physicochemical properties of selected tree borne oil seeds *viz., Pongamia pinnata* and *S. glauca* were studied. The secondary metabolites of *Pongamia pinnata* and *S. glauca* seed oil were fractioned using TLC analysis and obtained the fractions. The fractions were subjected to HPLC and GCMS analysis foe identification of major active compounds. The *S .glauca* seed oil contains more fatty acids *viz.*, Oleic acid (94.17%), Palmitic acid (93.2%), Eicosanoic acid (69.9%), Octadecanoic acid (67.96%), Heptadecanoic acid (36.89%) and Linoleic acid (6.8%). The efficacy of the biopesticide, Tree PAL^{H} and *Pongamia pinnata* seeds oil at different concentrations ranging from 0.25% to 1% in comparison with Chlorophyriphos and Neem oil as positive controls were tested against Ailanthus defoliator, *Eligma narcissus* under laboratory and nursery conditions. Under laboratory condition Tree PAL^{H} and *Pongamia pinnata* seed oil exhibited 96-100% and 61.42-66.67% larval mortality respectively at 5000 ppm on 48 hours observation. The biopesticides were evaluated against the defoliators in 100 days old Ailanthus seedlings at Arasanoor and Piranmalai forest nurseries and observed 70-84 % larval mortality.
Budget	Rs. 51.32 lakhs
Funding agency	CAMPA, MoEF&CC