# Project Profile

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| **Title**: | **Studies on Essential Oils: Chemical constituents and toxicity assessment of the Leaf oil *of Lantana camara* from Tamil Nadu Regions** |
| **Principle Investigator**: | Dr.S. Murugesan, |
| **Co Investigators**: | Dr. N. Senthilkumar<br>Dr. V. Mohan<br>Dr. K. R. Sasidharan |
| **Duration:** | 3 years 2010-2013 |

**Objectives:**

1. Survey and collection of *Lantana camara* in various parts of Tamil Nadu differing in their flower colour (including natural forest and hill areas), and processing for extraction.
2. Evaluation of the inhibitory potency of essential oils of *L. camara* in comparison with synthetic pesticides/fungicides against target pests and diseases of forestry tree species.
3. Chemical investigation of the major compounds of the oils, which make easy to investigate Active Principles.
4. To develop suitable pre-formulations for application at nursery level in combination with commercially available oils like neem/pongam.

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| **Funding Agency**: | ICFRE |
| **Summary/Achievements** | Essential oil was steam distilled from the leaves of *Lantana camara* differing in flower colour (orange, pink, white pink, pink yellow, orange yellow) collected from different agro climatic zones. Essential oil percentage varied from region to region and the leaves with rose colour flower found to yield more oil. Nucleus cultures of the teak defoliator larvae *Hyblaea puera* and fungal cultures such as *Alternaria solani, Fusarium oxysporum, Cylindrocladium, Rhizoctonia solani* and *Trichosporium vesiculosum* were initiated and maintained to conduct bioassay studies. Bioactivity of the essential oil was evaluated against the teak defoliator and observed 60 % mortality at higher concentration and found antagonistic activity against fungal pathogens. The bioactive compounds of the essential oil have been eluted by sequential chromatographic techniques and the elutants were further fractionated and analyzed by MPLC, HPLC and GC-MS-MS for characterization of β Caryophyllene and Aromadendrene II oxide as major compounds. The bioefficacy of the bioactive compounds Aromadendrene and caryophyllene identified from the essential oil of *L.camara* tested against *H.puera, Eligma narcissus* and *Atteva fabriciella* showed significant larval mortality. Based on the significant insecticidal activity of the *L.camara* essential oil against teak defoliators developed preformulation.Developed preformulation containing bioactive fractions extracted from *Lantana camara*, *Hydnocarpus pentandra,* Neem, Pongam tested for its bioefficacy against the defoliators of teak/ ailanthus, casuarinas both in the laboratory and field condition showed significant result based on which a new product Tree Pal (H) has been developed and released during the Tree Growers Mela 2013. |