

## National Medicinal Plants Board

### Project Completion Report

1. Title and Project Number: **Development of multitier cropping models for medicinal plants in A.P.** (Project No. GO/AP-6/2006)
  
2. Name of the Principal Investigator (With Address and Tel. No.):  
Dr. G. Ravi Shankar Reddy, Scientist -F  
Forest Research Centre  
Dulapally, Hakimpet (P.O.)  
Hyderabad-500 014 (A.P.)  
040-23194173, 23095921 Fax: 040-23095926  
E-mail: [grsreddy@icfre.org](mailto:grsreddy@icfre.org)
  
3. Name & Address of contact person to whom correspondence to be made, along with Tel. No. (With STD) code/Fax No. (With STD code)/E-mail address:  
Dr. G. Ravi Shankar Reddy, Scientist -F  
Forest Research Centre  
Dulapally, Hakimpet (P.O.)  
Hyderabad-500 014 (A.P.)  
040-23194173, 23095921 Fax: 040-23095926  
E-mail: [grsreddy@icfre.org](mailto:grsreddy@icfre.org)
  
4. Area of activity: R&D
  
5. Total amount of sanction along with period: Rs. 5, 40, 000/- (Four years, 2006-2010)
  
6. Amount of last installment and Date received: Rs. 79,519/ received on 2-12-2008
  
7. Period of Report : 2006-2010
  
8. Summary of work done:

Three species of medicinal plants namely, *Andrographis paniculata* L., (Kalmegh) *Ocimum sanctum* (Tulsi) and *Withania somnifera* (Ashwagandha) were raised in six ha area in combination with Teak Clones (Southern India collections) planted at 5x5 m in four hectare area, Teak (*Tectona grandis* L.) + Sandal (*Santalum album* L.) (5x2m), Rosewood (*Dalbergia latifolia* Roxb.) + Sandal (5x2 m), Eucalyptus (*Eucalyptus hybrid* clones 3, 7 and 10) + Sandal (5x2 m) four blocks each and their respective sole crops [eight rows by eight columns] of trees and medicinal plants were raised in between rows

in 2.25 ha. These medicinal plants were raised in 2007 and 2008 and 2009 all the three years in on-station trials. Also planted *Asparagus racemosus* L. and *Gloriosa superba* L. in between tree rows to give it a multi layered structure. The germplasm of *Asparagus* was collected from Darwar (Karnataka), Vishakhapatanam Ranga Reddy, Medak, Mahabubnagar, Manuguru (Khammam) and Kurnool districts from a number of places and that of *Gloriosa superba* locally.

On an average *Andrographis paniculata* has yielded a total biomass of 2.0 tons/ha at Mulugu and 1.57 tons/ha in Teak + Sandal, Rosewood + Sandal systems on dry matter basis while the same in combination with Eucalyptus it was the lowest at 0.5 tons/ha where as sole crop of *Andrographis* recorded 1.20 tons/ha. It is apparent that under low shade situation like Teak clones at 5x5 m the yields were highest and higher shades in 5x2 m spacing the yields were found to be reduced. Though, in Rosewood + Sandal blocks the yields were relatively more as compared to Teak or Eucalyptus. It seems to be a shade loving crop or may be even the humus under the trees might have been very helpful for the growths of *Andrographis* apart from shade. In contrast, the yield of total biomass in *Ocimum sanctum* was found to be 3.60 tons/ha on an average in inter crop as compared to sole crop which was found to be significantly more at 4.35 tons/ha total biomass. It was found to be light demander. The yields of *Withania somnifera* recorded were 3.0 tons/ha total biomass where as 0.72 tons /ha was found to be the root portion on an average in intercrops other than Eucalyptus and 3.21 tons/ha and 0.85 tons/ha in sole crop. The root yields were slightly higher in sole crop 0.79 as compared to intercrop. All the observed differences are statistically significant at five per cent level of significance.

The growths of all trees under intercropping with medicinal plants was recorded to be always higher as compared to sole crop of trees. It may be due to repeated maintenance through ploughing, bush removal, and the fact that the medicinal plants like *Andrographis*