

## ***Growth promoting product – “Tree Rich Biobooster”***

**A growth promoting product “Tree Rich Biobooster”** using ecofriendly organic materials for growth improvement of fast growing trees species such as *Casuarina*, *Gmelina*, *Ailanthus*, *Melia* and *Eucalyptus* has been developed.

### **Economic Importance of the product**

Biological products based on natural products derived from biomanures/microorganisms specific to their mode of action/function offer an ecological and effective solution to crop productivity, health and pest problems. Such bioboosters/bioinoculants are an alternative to synthetic molecules that continue to be used appropriately, particularly in developing countries, threatening the environment and human health. There have been massive upsurges in chemical product use in recent years and increasing use, and often misuse, has led to increased problems of quality planting stock in terms of plant health and plant away from pest’s pressure. New chemicals with improved properties are available but are beyond the means of many farmers in developing countries. The use of bioboosters which are highly safe and act as induced plant defenses has been proposed for many years. If produced, formulated and applied in appropriate ways, such treerich bioboosters can provide ecological and effective solution to production of healthy planting resources. In view of the experience gained by the researchers over the past one decade in the field of biofertilizers, biopesticide and made culture bank in the institute, it is essential to take up a research programme to further screen the effect of various bioinoculants, biocompost, green manure, kernel cake etc., as an Integrated Nutrient Management for the important forest tree species like Eucalyptus, Casuarina, Teak, Ailanthus, Gmelina and Neolamarckia species. Experience has shown that attention to the detail of bioinoculant application technology can yield significant improvement in performance of those planting stock in nurseries in near future.

### **Need for the product**

Plantation forestry has tremendous scope for rural livelihood improvement and improvement of activities of wood based industries in the country. However, supply of quality planting stock to the farmers is the major bottle neck due to lack of micro and macro nutrients, insect pests, diseases and nematodes. Various nursery practices are available individually for pests, diseases and nutrient management however, integrated strategy to manage growth, pests and diseases is lacking, hence, the product tree rich biobooster has been developed for the production of quality planting stock for farm and plantation forestry.

### **Research output**

As far as nurseries/farmers are concerned, generating planting stock in sufficient quantities are not easily available. Currently, efforts are being made to develop organic bio-boosters from plant based products. However, each of them is deficient in some of the parameters necessary for an efficient product against causative organisms like insect pests, diseases and nematodes. Also, the concept of phyto-synergistic strategy, studying the toxicity of co-occurring toxins, seems to have potential and could lead to further advancement in proximate composition of bio-inoculants. IFGTB has made and maintained different isolates of bio-inoculants such as *Azospirillum*, Phosphobacteria, *Frankia* and AM fungi. Screening and selection of potential isolates of these

beneficial microbes as biobooster are very much essential for increased productivity of commercially important tree species. As a result, it showed 30-40% increment in growth when compared to all other combinations.

### **Technology**

As an outcome of the result, mixtures were subjected to hydraulic pressure to make into a disc/pellet of 60mm/25mm size with 50-60gms. One pellet of the said size will expand to 12cm height with 6cm diameter after adding 350ml of water in a standard (6x15cm) polybag for raising seedlings.



**Treerich Biobooster – Organic growth promotor (Cost per pack: Rs.30/300 gram)**

## **Biopesticide - Hy-ACT & TreePAL<sup>H</sup>**

“Hy Act & TreePAL<sup>H</sup>”- a new biopesticidal product of seed oil based formulation developed from *Hydnocarpus pentandra* as a base in combination with pongamia, neem and lantana oils.

### **Nature of Technology:**

Ethnobotanical records indicate that *H.pentandra* oil possesses many medicinal properties. But no information on its pesticidal properties is available. Hence, the bioactivity was evaluated on the key insect pests of Ailanthus, Casuarina and Teak. Preliminary study conducted both in the laboratory and field conditions revealed that the oil possesses insecticidal properties against these pests. The oil formulation showed effectiveness in managing the insect pests in terms of larval mortality; *Hyblea punea* (80-90%), *Inderbella quadrinotata* (60-80%) and *Eligma narsisuss indica* (45-55%). The formulation is also found to act as feeding deterrents, growth inhibitors, repellents (or) oviposition inhibitors against the target species. Therefore, *H.pentandra* oil seed fractions were considered as promising biopesticide against these pests and the formulation named as “Hy-ACT (HyPSO 25 EC) & TreePAL<sup>H</sup>” have been prepared and released.

### **Beneficiaries of the Technology**

#### **Prominent beneficiaries / user groups**

User groups are farmers and State Forest Departments and Forest Development Corporation and other industries who are investing considerable amount of resources in search for pesticides, drugs and related processes.

The products developed have been introduced during "Tree Growers Mela 2012" & 2013 conducted at the IFGTB, Coimbatore. Sample products have been given to selected fifty farmers and feedback/queries have been collected. Dr. S. Murugesan was invited to give special lecture on the product during Coimbatore Tree Growers Association meeting. The products information have been published in local Tamil magazines and wide demand has been received from farmers not only for tree crops but for Agriculture.

### **Economic significance**

#### **Potential to address Livelihood issues and generate additional income**

Biopesticide developed by an exploitation of natural plant resource is an environmentally safe method. The productivity of the short rotation native tree species was increased by protecting them from insect pests and diseases using biopesticides from forest resources. Since the preparation and formulation of botanicals insecticides was not expensive, the growers need to spend very less money for the management of insect pests. Since the development of biopesticide is user friendly, self help group can be well benefited to make the product in a large scale which gives them additional income.

### **Productivity enhancement and economic benefits over replaced technology**

Pest management through botanical pesticides will help in sustainable forest development by reducing the pressure inflicted by the insect pests and also help to conserve the non target/beneficial organisms by not using scientific chemical pesticides. The tree damage is very much reduced by using the biopesticide which causes the death of the larva in early instar itself.

1 liter oil can be extracted from 5kg of seeds. 100ml formulated 'Hy-Act & TreePAL<sup>H</sup>' can be mixed with 10 litre of water to save 1.5-2.0 lakhs seedlings. The estimated cost of biopesticide 100ml bottle is Rs. 80/- only.

### **Impact of the technology**

(As the case may be)

*Hydnocarpus pentandra* seed oil based biopesticide formulation 'Hy-Act & Tree PAL<sup>H</sup>', developed against insect pests and disease prevent the tree damage and makes the Forestry sectors and Agriculture truly organic and attuned to the nature.



**Hy ACT – Oil based biopesticide (Cost per bottle: Rs.80/-)**  
**TreePAL<sup>H</sup> – Oil based biopesticide (Cost per bottle: Rs.80/-)**