

**A Report on the
Periodical seminar on “Bioprospecting: Scope and Challenges and Prospecting”
22 December, 2017
IFGTB, Coimbatore**

A periodical seminar of the institute was held at the Institute of Forest Genetics and Tree Breeding, Coimbatore on 22 December, 2017. Dr. S. Murugesan, Director and Group Coordinator Research chaired the seminar and welcomed the gathering. He highlighted the need for Bioprospecting in the country. Dr. N. Senthilkumar, Scientist E, Division of Bioprospecting, delivered detailed the lecture titled “*Bioprospecting, Scope and challenges and Prospecting*”. Scientists, officers and research staff including SRFs, JRFs, RAs and FAs of the Institute participated in the seminar.

India is one of the world 17 mega-diversity countries that harbor the majority of the Earth’s species with high numbers of endemic species. Being rich in natural resources with more than 18,000 known species of plants having medicinal and other use value, the biological implication of most of them is still unknown and we are sitting on it for centuries. India and most of the other developing countries have not been able to get full benefit from its biological resources due to lack of sound technologies, whereas the technologically rich developed countries lack genetic resources. Hence it is important to strengthen our technologies for bioprospecting and compete with the developed countries.

Bioprospecting is the process of discovery and commercialization of new products based on biological resources. Bioprospecting is an umbrella term describing the discovery of new and useful biological products and mechanisms, typically in less-developed countries, either with or without the help of indigenous knowledge, and with or without compensation from the existing bioresources. It is also looking for novel economically viable biological molecules, organisms or genetic material derived from Non-Timber Forest Products (i.e. trees, mushrooms, herbs, shrubs, etc.). Bioprospecting which provides an incentive for the conservation of biodiversity by adding value to natural resources and revenue generation is very much essential for sustainable utilization of plant genetic resources. Over 50% of the most common prescription drugs originated from plants, animals, fungi and bacteria, and over 60% of anti-cancer and anti-infective agents developed are of natural origin. Traditional Knowledge Digital Library (TKDL) consisting of more than 2.60 lakh medicinal formulations of Ayurveda, Unani and Siddha which are available in the public domain is referred before going for new formulations.

Local communities have rights on the bioresources in their region since it is they who conserve them and possess the knowledge of their properties and their use. In other words, they possess the traditional knowledge about the bioresources. This indigenous knowledge automatically confers on them certain rights including the right to share the benefits derived from the commercial exploitation of bioresources. Adequate compensation has to be given to the indigenous communities that have conserved the biological resources through centuries, and

have also generated valuable knowledge regarding their use. However, one of the challenges in Bioprospecting is Biopiracy, which is the unauthorized use of the genetic resources and the indigenous knowledge of communities by others who have neither taken permission from the communities nor entered into any kind of contract with them. The Biological Diversity Act 2002 recognizes local communities as the owners of the biological resources and the indigenous knowledge developed by them came into action for the benefit sharing and access sharing of natural resources.

The division of Bioprospecting in the institute has developed following products which are the research outputs of various projects.

Oil based Biopesticide

- **Vilvekam** *Aegle marmelos* seed oil based biopesticide”
- **Hy-ACT (HyPSO 25 EC)** *Hydnocarpus pentandra* seed oil based biopesticide
- **Tree PAL^H** *Hydnocarpus pentandra*, *Pongamia pinnata*, *Azadirachta indica* and essential oil of *Lantana camara* oil based biopesticide.

Green insecticide

- **Ento~fight Nasa** Entomopathogenic endophytic fungus - *Nigrospora sphaerica* (Sacc.) E.W. Mason spore suspension – Microbial insecticide
- **Crawl clean** *Melia dubia*, *Pongamia pinnata*, *Aristolochia bracteata*, *Adhatoda vasica* and *Vitex negundo* – powder based biopesticide

Growth promoting product

- **Tree Rich Biobooster** Instant Potting Mixture from coir pith waste
- **Vermico-IPM[®]** Instant Potting Mixture from vermiculite and coir pith waste

Beside the above products, Shikimic acid the precursor for the Tamiflu, a prescription medicine used to treat the flu (influenza) has been isolated from *Eichhornia crassipes*, (common) water hyacinth which is a promising alternate renewable source of shikimic acid other than star anise. Taxol producing fungal endophyte, *Colletotrichum gleosporioides* has been isolated from leaves of native tree species, *Tectona grandis* and taxol production was confirmed through chromatographic studies. Insect resources utilized for curing various diseases were discussed with suitable examples.



