

# Forest Invasive Alien Plant Species–Management and Utilization in Panel Products

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**Abstract**—Management and control of Forest Invasive Alien Plant Species consume substantial financial resources as they cause immense damage throughout the world across sectors of agriculture and forestry, therefore huge effort is being made in national and international level to combat them. Efficient and economical utilization of various bio-based materials is an effective way to promote long term sustainability. Development of bio-based materials and value added products by utilizing Forest Invasive plant Species can help improve forest management. This paper will elucidate the utilization of certain Forest Invasive Alien Plant species in terms of panel products in India and scenario of the panel industry. Indian panel industries have traditionally been dominated by plywood as the primary panel, but the Supreme court ban in the year 1996 on utilization of natural forest timber has resulted to low availability of raw materials and scarcity of imported timbers due to limitations in timber resource export of foreign countries, Indian industries are slowly forwarding towards modern day engineered products such as medium density fiber boards (MDF), wood particle boards, cement bonded particle boards, veneer particle boards, pre-laminated particle boards and high density particle boards. There is good opportunity for the Forest Invasive Plant Species bio-fiber based engineered products in the Indian industry and also gives way to effective forest management.

**Keywords:** Forest Invasive Alien Plant Species, bio-fiber, panel products, Indian panel industry.

## 1. INTRODUCTION

Forest invasive Species are invasive weeds which have been introduced in India knowingly or unknowingly. They include indigenous and exotic taxa. These plants pose a lot of management problem and adversely effect the productivity besides incurring heavy costs in preventive and damage control measures. Some of the major Forest Invasive Plant Species are : *Lantana camera*, *Parthenium hysterophorus*, *Eupatorium glandulosum*, *Ulex europaeus*, *Acacia mearnsii*, *Mikania micrantha*, *Cytisus scoparius*, *Euphorbia royleana*, *Artemisia vulgaris*, *Carrisa carander*, *Dodonea viscosa*, *Agave catula*, *Ageratum conizoides*, *Casia tora*, *Cleodendron viscosum*. *Lantana camara* is one of the most obnoxious weed that has encroached most of the areas of community and forest lands. This weed not only ruins common agriculture and forestlands but also has allopathic impacts on regeneration of

important forestry species. *Parthenium hysterophorus* is another weed which has achieved the status of ‘worst weed’ in India [1] as it not only affect crop production and biodiversity but also poses serious health risk. *Eupatorium glandulosum* is a fast spreading weed that checks the regeneration of other species and it is commonly known as ‘goat weed’. These few Forest Invasive plant species have the capability to be exploited in terms of panel products due to presence of fibres.

## 2. RESEARCH ON FIS BASED BIOCOMPOSITES

Organizations like Botanical Survey of India, Botany Departments of the Universities, State Agencies, Van Vigyan Kendras have worked on forest vegetation but not much on weed control but some organizations of ICFRE like Forest Research Institute, Dehradun has contributed to development of panels with Forest Invasive Species in India. Fibreboards have been successfully manufactured from *Parthenium hysterophorus*. Grade II fibreboards conforming to all requirements of Indian Standard (IS: 12406) Indian Standard Medium Density Fibreboard for general purpose has been successfully developed.[2]. *Lantana* is another Forest Invasive Plant Species which has been exploited for development of value added composite. Hardboards have been developed with *Lantana* [3]. Building boards have also been developed using *Lantana camara*. [6]. *Lantana* is also found to be a promising raw material for high density laminates [5]. Owing to its high suitability *Lantana camara* has also been used in making particle board [4].

## 3. SCENARIO OF PANEL INDUSTRIES IN INDIA

Indian Panel Industries have traditionally been dominated by plywood as its primary panel. Initially plywood were being imported to India in 1906-1907 which continued till early 1950's. In 1923-1924 two plywood factories were established in Assam. From Bengal factories spread out over the northeast during the second half of the 20<sup>th</sup> century, by 1965 there were over 50 factories producing a large variety of plywood such as aircraft grade and marine grade plywood. Further the Industry expanded to about 62 large and medium sized plywood mills and over 2500 small scale industries emerged in the country

out of which about 1000 units are located in Punjab, Haryana, Uttaranchal and western Uttar Pradesh. The plywood business flourished in India with abundant prime forest timber available in North Eastern region. Then came the Supreme Court ban in the year 1996 on using natural forest timber, whereby the plywood industries faced a substantial blow and many industries were shut, others relocated to coastal areas depending upon imported raw materials. The situation today is fast changing. The survival of plywood industry have become very challenging and the raw material availability is a major concern of the industry. To make up for the forest timber, the plantation timbers are being drawn at a much early stage of life cycle resulting in shortage of material for plywood industries. Non wood raw materials are gaining importance for manufacture of Medium and High Density Fibreboards, Particleboards etc. Non wood natural bio-fibre resource that have been utilized at IPIRTI, Bangalore for development of panel products are bamboo, rice-husk, jute, coconut coirs, bagasse, wheat straw, chir pine needles, cotton stalk, casuarinas leaves, banana stem, and rice straw .

#### 4. CONCLUSION

The scarcity of raw materials is the major concern of the plywood industries. The panel market in India is yet to mature towards modern day engineered products such as MDF's and Particleboards. The wide gap in demand and supply has necessitated to look beyond the raw material being used at

present. In view of scarcity of conventionally preferred species, different unutilized species have also been put to use to suit different end users. In this regard few Forest Invasive Alien Plant Species that have been studied and successfully utilized in development of panel products have quite an opportunity for production of value added composites. Going forward, the panel industry and consumers, willingly or unwillingly will have to switch to engineered panels instead of plywood.

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