प्रिय पाठकों

Dear Readers,

प्लाईवुड के लिए यूकेलिप्टस और पोप्लर की सफल कृषि वाणिकी

SUCCESSFUL EUCALYPTUS & POPLAR AGRO-FORESTRY FOR PLYWOOD

गोदवरी मामले में मालनी उच्चतम न्यायालय के निर्फल के बाद, उत्तर-पूर्वी क्षेत्र में प्लाईवुड उद्योगों के अधिकीद बंद हो जाने के कारण देश में लकड़ी के उत्पादों की मांग और आपूर्ति के परिणाम में काफी अन्तर आ गया था। इससे अंतराल अभी भी जारी है, जो की वर्तमान में 590 लाख घन मीटर है और 2020 तक भारत में लकड़ी की अनुमानित मांग में 1530 लाख घन मीटर तक वृद्धि की संभावना है। इस परिप्रेक्ष्य-संदर्भ में पंजाब-हरियाणा-उत्तर प्रदेश के इलाके के किसानों के लिए यह अवसर का फायदा उठाया है और यूकेलिप्टस व पोप्लर की कृषि वाणिकी प्रजातियों से पैनल उत्पादों के निर्माण में दिलचस्पी दिखाई है। उत्तरी ओर उत्तर पश्चिमी राज्यों में बाद के वर्षों में प्लाईवुड और अन्य पैनल उत्पादों की भारी वृद्धि का श्रेय यूकेलिप्टस व पोप्लर की बागानी उद्योगों लकड़ी उगाने को जाता है। तथापि, इन तेजी से उगने वाली प्रजातियों की कुछ अंतर्क्रिया विशेषताओं के कारण, क्षेत्र में उद्योग की उन्नति के लिए गुणवत्ता पुरस्कार उत्पादों के निर्माण से संबंधित वैश्विक समझ और तकनीकी जानकारी बहुत महत्वपूर्ण है। यूकेलिप्टस उत्पादों के परीक्षण या तकनीकी जान तक पहुंच पाने के लिए कोई सुविधा उपलब्ध नहीं थी। 2002 में चंडीगढ़ में इपिर्ती द्वारा आयोजित कार्यक्रम में इस मुद्दे को उठाया गया। उत्तर भारत प्लाईवुड निर्माता संघ (NIPMA) द्वारा पैनल उद्योग को अब तक असक्त करने वाली सत्ता चूनोतियों के समाधान के लिए इपिर्ती फील्ड स्टेशन स्थापित करने
In the wake of Hon’ble Supreme Court Judgement in the Godavarman case, a big void was created in the Demand-Supply scenario of wood products in the country due to sudden closure of the plywood industries in the North-Eastern Region. The gap still continues which stands at a yawning 59 million m³ with the predicted demand of wood in India rising to 153 million m³ by the year 2020. However the Farmers of the Punjab-Haryana-Uttar Pradesh belt seized the opportunity and evinced interest to manufacture panel products out of Agro-forestry species of Eucalyptus and Poplars. Immense growth of plywood and other panel products in subsequent years in the Northern and North Western States owe their success to plantation grown timber of Eucalyptus & Poplar. However, due to certain intrinsic characteristics of these fast growing species, scientific understanding and technical know-how about manufacture of quality products was the key to the advancement of the industry in the region. Since no facility was available either to get the products tested or to access the technical back-up, the issue was raised in a Workshop pre-empted by IPIRTI at Chandigarh in the year 2002. A request was made by North India Plywood Manufacturers Association (NIPMA) to establish a Field Station of IPIRTI in order to address the nagging technology challenges hitherto crippling the Panel Industry. With the passage of time and establishment of IPIRTI's Centre at Mohali, many of the promising manufacturers in the region have started preparing premium quality panel products at par with those available in India and abroad. ISO certification and in-house testing facilities coupled with R&D support from IPIRTI have improved the quality of general purpose plywood as well as that of special grade products viz. Decorative/Marine/Shuttering grade Plywood, Particle Board, Medium Density Fiber (MDF) boards, Laminated Veneer Lumber (LVL), Compreg etc. States of Haryana, Punjab, Uttarakhand, UP in the North & North Western Region have also set a milestone in the development of Agro-forestry in the rest of India. The Forest Departments along with panel industries in the region are promoting and supporting...
Agro-forestry by planting and utilizing Eucalyptus and Poplar timber. This not only complements the effort for ecological balance but also helps in employment generation and improving the standard of living. This landmark break-through in the field of forest conservation is possible due to the incessant efforts of Scientists of IPIRTI, progressive farmers of the states and the ingenuity of Plywood Manufacturers in the region.

Dr. B. N. Mohanty, IFS
Director, IPIRTI

**RESEARCH & DEVELOPMENT**

**Development of UV & Weather Resistant Coating for Wood based Panel Products and Bamboo Composites**

A drawback with wood in exterior applications is its susceptibility to photo-initiated degradation, caused by radiation from the sun. Hence, wood needs to be protected against ageing by means of different surface treatments. The work presented in this research by Shri. S.C. Sahoo, Scientist and his team IPIRTI Field Station Kolkata describes a possible method for protecting wood against photo-initiated degradation. This study was aimed to develop a silicone based UV & weather protective coating and its efficacy study in both natural and artificial weathering conditions to reduce the destructive effect of UV radiation & weathering for wood based panel products and bamboo composites. A silicone intermediate has been co-polymerised with carbino1 functional resin before pre-formulation of coating for durable and non-toxic in nature. The system compromises by using silicone modified resin, thinner, pigment and other additive. The coating was widely applied on wood based panel product and bamboo composite surfaces as a protective coating and then exposed to damp environment under natural weathering test. Results from natural weathering test shows that the coating provided excellent water repellent properties and rain water protection together with outstanding UV Protection from photo degradation and prevents significant greying of the wood based panel products. Hence from overall performance and from Physico – mechanical properties, natural weathering test, the coating provides an excellent resistance against photo degradation, weather damage, greying, termite attack, rain water with economical and outstanding coverage. After 36 months of natural exposure the samples had too much mould in order to perform a reliable evaluation of the photo induced degradation. Overall the pre-treatment is concluded to have a photo stabilising effect of the wood. From the immersion study it has been observed that coating has not delaminated after exposed to mild acidic, alkaline and brine solution. Satisfactory coating resistance has been observed after 36 months exposure in natural weathering of bamboo composites.
Exploratory study on using foxtail millet husk for the manufacture of value added products.

Foxtail millet husk is an secondary waste product which can be used to manufacture value added products. Due to the increasing shortage of industrial wood and also associated policy changes in recent years, there is a need to find source of alternative materials that would be compatible with the strength properties of panel products made using wood. Agricultural residues are an excellent alternative to wood for many reasons. Aside from their abundance and renewability, using agricultural residues will benefit farmers, industry and human health and the environment. Using agricultural residues for industrial purposes is a much more environmentally friendly practice than many residue disposal methods currently in use. Until recently, many farmers disposed of agricultural wastes by burning or landfiling them.

Foxtail husk is a kind of material that is dumped as a waste at present that can be converted into value added products. Foxtail millet husks sourced from Tamil nadu were used for the exploratory study carried out by Ms. D Sujatha and her team at IPIRTI for making insulation boards/medium density particle boards. The foxtail husk poecessed a silica content of 11.36% (w/w). Investigations were carried out to manufacture Low density and Medium density particle boards from foxtail millet husk. Urea formaldehyde resin was used for the manufacture of particle boards. From the test results of particle boards made, it was found that the foxtail millet husk, requirea the combination of wood particles to get rigidity for insulation purpose. However, the Medium density particle board yielded satisfactory results for interior applications. Particle boards meets the physical property requirements as prescribed in IS 3087(2005) for Grade II Medium Density Particle board. The mechanical properties of the foxtail millet husk panels may be improved for various end use applications by blending it with other agro residues to form a hybrid composite. The exploratory studies carried out are limited to laboratory scale. The surface appearance of the foxtail millet husk particle board is as similar to other existing particle boards in the market.
INDUSTRY VISITS:


04.05.2016: Dr. Ranjana Yadav, Scientist, Officer-In-charge, IPIRTI-Centre, Mohali visited M/s. Pooja Machine (P) Ltd, Pathankot to solve floor level problem in plywood manufacturing.

06.05.2016: Dr. B.N. Mohanty, IFS, Director visited M/s. Plystone Plywoods Private Limited and other Industries at Perumbavoor, Ernakulam for understanding use of Rubber wood for plywood and other panel products.

10.05.2016: Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Ashish Enterprises, Bilmora, Gujarat to improve the quality of the plywood and to solve the floor level problem faced by them during manufacturing of plywood.

11.05.2016: Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Willmore Plywood Industries, M/s. Laxmi Industries, M/s. Teerth Plywood, Gandhidham, Gujarat and had discussion regarding membership of IPIRTI Society.


17.05.2016: Dr. B.N. Mohanty, IFS, Director and Shri. Amitava Sil, Scientist, Officer-In-Charge, IPIRTI Field Station, Kolkata visited Central Academy for State Forest Service (CASFoS), MoEF&CC,
Burnihat, Assam and had discussion with Shri. Roshan Horo, IFS, Principal and Shri. N. Luikham, IFS, Lecturer, CASFoS regarding future work on Bamboo Technology Park on the land given to NEC in association with IPIRTI.

17.05.2016: Dr. B.N. Mohanty, IFS, Director and Shri. Amitava Sil, Scientist, Officer-In-Charge, IPIRTI Field Station, Kolkata visited Cane and Bamboo Technology Park at Burnihat, Assam which is developed under implementing agency Cane and Bamboo Training Centre of NEC and had discussion with Shri. Tamriyo Longvah, Assistant Manager (Marketing) and Shri. Paramanada Mali, Research Officer regarding facilities developed at the bamboo technology park. They also visited, M/s. Cent Ply, Palasbari, Assam and had discussion with Shri. Y.K. Chaudhry, Unit Head regarding recent development on research work carried out by IPIRTI.

07.06.2016-08.06.2016: Shri S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Shree Bhabani Plywood, Assam to improve the quality of the plywood and to solve the floor level problems faced by them during manufacturing.

13.06.2016-15.06.2016: Dr. B.N. Mohanty, IFS, Director, Shri. Uday D.N., Scientist and Dr. Ranjana Yadav, Scientist, Officer-In-charge, IPIRTI-Centre, Mohali visited Kurali, Yamunanagar and surrounding areas for shooting of documentary film on “Eucalyptus and Poplar Agro Forestry for Plywood: A huge success in North-West India” along with DFO Mohali. They also visited the following industries: M/s. Shri Ram Panels, Khanna, M/s. Kalyan Industry, M/s. United Timber, M/s. Galaxy Plywood (P) Limited, M/s. Haryana Industry, Yamuna Nagar.

13.06.2016-17.06.2016: Dr. K.Ch. Varada Rajulu, Scientist visited M/s. Aditya Industries, Chikhli, Gujarat for Technology Transfer of Fire Retardant Doors through construction method for 60 minutes and 120 minutes.

18.06.2016: Dr. K.Ch. Varada Rajulu, Scientist, visited M/s. Iraj Evolution Design Company Pvt. Ltd., Udaipur, Rajasthan and had discussion about Technology Transfer of Fire Retardant Doors through construction method for 60 minutes and 90 minutes.

23.06.2016-25.06.2016: Dr. B.N. Mohanty, IFS, Director visited Gujarat had discussion with Dr. Dinesh Mishra, PCCF (HoFF), Gujarat about the progress of setting up of IPIRTI Centre at Gandhidham, Kutch and had meeting with Addl. PCCF (Research & Training) and Shri. Tinu Gandhi, President, M/s. Kandla Timber Association. He also, visited the Plywood and Panel Products Industries
in Ahmedabad and Gandhidham, Gujarat along with Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata.

28.06.2016-29.06.2016: Shri. Anand Nandanwar, Scientist, IPIRTI, Bangalore visited IPIRTI-Centre, Mohali and presented activities of the centre to the team from Gujarat consisting of Dr. D.K. Sharma, APCCF Gujarat; Gujarat Forest officers & Shri. Tinu Gandhi, President, M/s. Kandla Timber Association (KTA) and other representatives of KTA at IPIRTI Centre-Mohali.

Shri. Anand Nandanwar, Scientist also attended meeting with PCCF, Punjab; APCCF Gujarat; Gujarat Forest officers; President North Indian Plywood Manufacturers Association (NIPMA); President, M/s. Kandla Timber Association (KTA) and other representatives of KTA at Punjab Forest Department office and visited M/s. Shriram Panels, Khanna, Punjab. Shri. Ramesh Karri, Technical Staff, IPIRTI Centre-Mohali co-ordinated for the team visit.

**MEETINGS/SEMINARS/CONFERENCES**

08.04.2016-10.04.2016: Dr. B.N. Mohanty, IFS, Director and Dr. Manoj K. Dubey, Joint Director attended Global Bamboo Summit at Brilliant Convention Centre, Indore, Madhya Pradesh and made two presentations on “Value-addition Technologies in Bamboo treatment & Processing” and “Affordable Bamboo Housing” in the Technical Session No.3 and No.5 respectively.

06.05.2016: Dr. B.N. Mohanty, IFS, Director visited Kerala State Bamboo Corporation Ltd., Angamaly, Kochi for review of previous collaborative projects and prospect of future joint venture.

17.05.2016: Dr. B.N. Mohanty, IFS, Director visited CASFoS and Bamboo Technology Park, Burnihat, for exploring the possibilities of organizing Skill Development Training with the existing infrastructure of CASFoS.

19.05.2016: Dr. B.N. Mohanty, IFS, Director had meeting with Shri. Sunil Joshi, Vedha India and Shri. Sanjeev Karpe of CIBART about the prospects of Bamboo Development and future collaboration.

20.05.2016: Dr. Ranjana Yadav, Scientist, Officer In-charge, IPIRTI-Centre, Mohali attended the “International Conference on Recent Trends and Developments in Environment Sustainability” at National Institute of Technical Teachers Training & Research (NITTTR), Chandigarh.
Research Advisory Committee (RAC) of IPIRTI

60th meeting of the Research Advisory Committee (RAC) of IPIRTI held on 07th June, 2016 in the Conference Hall at IPIRTI, Bangalore under the chairmanship of Shri. Sajjan Bhajanka, President, FIPPI, New Delhi. Dr. B.N. Mohanty, IFS, Director Co-Chaired the meeting and Dr. Manoj K. Dubey, Joint Director is the Convenor of the meeting.
Highlights:
Dr. B.N. Mohanty, IFS, Director IPIRTI, welcomed Shri. Sajjan Bhajanka, Chairman and other RAC members and scientists present in the 60th RAC Meeting of IPIRTI.

Shri. Sajjan Bhajanka, Chairman of RAC, thanked the Director, all RAC members and scientists gathered for their self-introduction. He expressed his pleasure that this time IPIRTI has identified projects which are the need of the hour in the field of Nanotechnology, alternative adhesives, energy saving methods, reduction of pressing temperature, low curing time with low energy consumption and particularly the laboratory method to measure termite resistance which is a very good initiative.

Dr. Manoj Kumar Dubey, Joint Director, IPIRTI initiated the technical discussions. A power-point presentation on the progress of work of IPIRTI since last RAC meeting was made which also included an overview of research and training activities during the reporting period since last RAC.

Dr. Dubey briefed about the major focused areas of research as follows:
• Emphasis is on to meet R & D need of the industries
• Develop wood alternatives from bamboo and other lignocellulosic material such as agro waste, forest residue
• Process and product development with mass employment generation potential
• Environmentally benign and green technologies
He also highlighted that the major thrust areas for the new project proposals are:
• Development of Panel products from fast grown plantation wood, bamboo and agro-wastes
• Development of block board from Melia dubia, Study of acoustic & thermal properties of agroresidue boards, Decorative bamboo veneer production.
• Improved and efficient adhesive technologies: Development of PMDI/UF resin for interior plywood, Fast curing PF resin system, Anatomical evaluation of adhesive penetration.
• Development of adhesive system with reduced emission: Polyurethane based system; nano particle reinforcement.
• Application of novel technologies for wood composites: Block board with fire retardant nano chemicals, honeycomb panels using bamboo slivers, Decorative bamboo veneer production, Particle board from thermally modified wood & bamboo fibers.

New Institute Project (approved by RAC)
1. Development of low formaldehyde emitting particle panels by Nano particle reinforcement.
2. Development of fast curing modified phenol–formaldehyde resin for manufacture of plywood at lower curing temperature
3. Development of PMDI/UF modified resin for manufacture of BWR Grade Plywood
4. Evaluation of the adhesive penetration in bamboo based on anatomy and its effect on performance of the product.
5. Laboratory testing methodologies for panel products against termite resistance.
6. Study on Acoustic and Thermal efficiency of panel products made from agro residues
7. Study of suitability of Meliabokia for block board and flush door manufacturing
8. Preparation of block board with fire retardant nano chemicals
9. Development of technique for production of decorative Bamboo Face Veneers from Sympodial Bamboo
10. Development of honeycomb panels using bamboo slivers
11. Accelerated weathering study on Bamboo Composites Viz. Bamboo Lumber or bamboo vertical laminates
12. An experimental approach on development of alternate walling system for housing using bamboo and other materials
13. Evaluation of resistance to biological degradation and dimensional stability of thermally modified wood and bamboo based particle boards
14. Development of Particle Board using Carbon Nano Tubes (CNT) to improve physical and Mechanical Properties

The meeting concluded with a vote of thanks by Dr. Manoj Kumar Dubey to the Chairman, members and other participants in the meeting.

08.06.2016: Dr. B.N. Mohanty, IFS, Director participated in the “Brain-Storming Session” on “Promoting Marketing of Bamboo” organized by Tribal Co-Operative Marketing Development Federation of India Limited (TRIFED), New Delhi.


17.06.2016: Dr. B.N. Mohanty, IFS, Director attended the presentation and discussion with Dr. Arun Gupta, Associate Professor, Department of Wood Composites, University of Pahang, Malaysia.

21.06.2016: Dr. B.N. Mohanty, IFS, Director attended a meeting regarding Forestry Skill Development Programme under the Chairmanship of Director General of Forests & Special Secretary, MoEF&CC at Indira Paryavaran Bhawan, New Delhi.

28.06.2016: Dr. B.N. Mohanty, IFS, Director addressed one day Wood Industry Meet at IWST, Bangalore as Chief Guest. Dr. Manoj K. Dubey, Joint Director and Ms. Sujatha D., Scientist participated in the meet.
28.06.2016: Shri. Amitava Sil, Scientist, Officer-In-Charge, IPIRTI Field Station, Kolkata attended conference on Smart Living “Building Smart-Living Green” organized by Indian Chamber of Commerce at ITC Hotel, Sonar Bangla, Kolkata and gave presentation on “Bamboo Structured Green Building” in a Technical Session on “Energy and Water Efficiency in Green Building”.

Visit of Dignitaries:


13.04.2016: Dr. Mohan Verghese, Scientist, ITC visited IPIRTI, Bangalore and had meeting with Dr. B.N. Mohanty, IFS, Director about Collaborative Research Project on Panel Products from Plantation Wood.

27.04.2016: The representatives of Ecole Superieredu Bois (ESB), Mr. Antoine LEBEAU (Head International Relations) and Mr. Mark IRLE (Director –Research) from the Paysde la Loire Region of France and Ms. Kamala Govindarajan, Director - Office of the Pays de la Loire Region, in India (Chennai) visited IPIRTI, Bangalore and had meeting with Dr. B.N. Mohanty, IFS, Director, Joint Director, all Scientists and the trainees of PGDC of IPIRTI. Discussed about the possible collaborations between IPIRTI - PLR and the ESB in France, Research and Training Opportunities between both the establishments and about opportunities for IPIRTI students in ESB and vice versa.

06.06.2016: Forestry Students of TNAU, Mettupalyam visited IPIRTI, Bangalore. Dr. B.N. Mohanty, IFS, Director addressed about the prospect of Plantation wood and other Ligno-cellulosic materials for Panel Products as wood substitute.

21.06.2016: Dr. A.K. Behera, Technical Head, M/s. ARCL, Kolkata had visited IPIRTI Field Station, Kolkata and had a discussion with Shri S.C. Sahoo, Scientist regarding sponsorship of fire retardant adhesive project with the institute.

30.06.16: Shri. Biswapati Saha, Director (Technical), M/s. Adhunik Infrastructures (P) visited IPIRTI Field Station, Kolkata and had discussion with Shri. Amitava Sil, Officer-In-Charge on the testing facilities available at the Institute.

Visit to abroad:

Shri. Prakash V. and Dr. Pradeep Kumar Kushwaha, Scientists, IPIRTI, Bangalore have been deputed to attend the “2016 Training Course on Bamboo Industry Development for ITTO Member Countries” sponsored by Ministry of Commerce of China (MOFCOM) and organized by China National Bamboo
Research Center (CBRC) from 23rd May, 2016 to 10th July, 2016 at Hangzhou, Zhejiang province of China.

**NABL audit:**

NABL Re-assessment Audit was conducted during 28-29 May, 2016 at IPIRTI-Centre, Mohali.

**Swacchhata Day:**

On 29.04.2016, 31.05.2016 and 24.06.2016, IPIRTI observed Swacchhata Day by organizing Campus Cleanliness Drive through Scientists, Staff and Trainees of IPIRTI.

**World Environment Day 2016**

World Environment Day 2016 was celebrated on 05.06.2016 at IPIRTI, Bangalore by planting saplings in the Institute campus by Dr. B.N. Mohanty, IFS, Director along with Joint Director and other Scientists and Staff of IPIRTI.
Staff club, IPIRTI:

Dr. B.N. Mohanty, IFS, Director chaired the General Body Meeting of Staff Club, IPIRTI on 29.06.2016 and constituted the new Staff Club Executive Committee for the years 2016-2018.

One year Post Graduate Diploma Course in Wood and Panel Products Technology

The 27th Batch of one year Post Graduate Diploma Course in Wood and Panel Products Technology is in progress with full swing and 30 trainees are undergoing the training.

Short Term Vocational Training Courses:

11.04.2016-13.04.2016: A training course on “Testing of Block Board and Flush Door as per IS: 1659 & IS: 2202 (Part-I) was conducted for six candidates sponsored from plywood industries at IPIRTI-Centre, Mohali.

International Yoga Day:

“International Yoga Day Celebration” was organized on 21.06.2016 at IPIRTI Bangalore for all the staff of the Institute under the guidance of representatives of Art of Living.
02.05.2016-02.06.2016: One month training programme on “Plywood Manufacturing Technology” was conducted for six candidates at IPIRTI Field Station, Kolkata. Shri. Amitava Sil, Officer-In-Charge, IPIRTI Field Station, Kolkata, accompanied the trainees for demonstration at M/s. Century Plyboards (P) Ltd, Kolkata on 28.05.2016 as a part of the training programme.

20.06.2016-24.06.2016: Five days training course on “Testing of Plywood and Flush door as per IS: 303, 710 1328, 4990 & 2202” was conducted for four candidates from plywood industries at IPIRTI, Bengaluru.

**Special training course:**

Two-days Training Workshop for IFS officers on the theme of “Live Demonstration at Factories” for 21 IFS officers from all over India was conducted at IPIRTI, Bangalore during 28th – 29th April, 2016.

Five days training programme on “Flush Door manufacturing” was conducted for 6 candidates sponsored from plywood industries by Dr. Vipin K. Chawla, Scientist at IPIRTI, Bengaluru during 20th – 24th June, 2016.

**SHORT TERM TRAINING COURSES FOR SEP- DEC, 2016 AT BENGALURU**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Title of the Training Course</th>
<th>Duration</th>
<th>Date</th>
<th>Fees*</th>
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<tbody>
<tr>
<td>1.</td>
<td>Low Cost Phenolic Resins Using Renewable Bio Materials As Replacement For Phenol</td>
<td>5 Days</td>
<td>Sep 19-23</td>
<td>7500</td>
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<tr>
<td>2.</td>
<td>Low Formaldehyde Emission Adhesives For Plywood And Particle Board</td>
<td>5 Days</td>
<td>Oct 03-07</td>
<td>7500</td>
</tr>
</tbody>
</table>

* 15% Service Tax Extra

** Programme Coordinator: Dr. V K Upadhyay, Head, IT & SORIT (upadhyay@ipirti.gov.in). You can apply online by filling and submitting the Registration Form (PDF)/Registration Form (doc). Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, IPIRTI, Bangalore and sent by post to Post Bag No.2273, Tumkur Road, Yeshwanthpur PO, Bangalore - 560 022.
### SHORT TERM TRAINING COURSES FOR SEP - DEC, 2016 AT KOLKATA

<table>
<thead>
<tr>
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<th>Duration</th>
<th>Date</th>
<th>Fees*</th>
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<tbody>
<tr>
<td>1.</td>
<td>One Month Training Course on “Plywood Manufacturing Technology”</td>
<td>1 month</td>
<td>01-31 Sep</td>
<td>7,500</td>
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<tr>
<td>2.</td>
<td>Testing of Plywood, Block Board, Flush Door</td>
<td>5 days</td>
<td>19-23 Sep</td>
<td>7,500</td>
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<tr>
<td>3.</td>
<td>Analysis of raw material for resin manufacturing</td>
<td>5 days</td>
<td>03-07 Oct</td>
<td>7,500</td>
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<tr>
<td>4.</td>
<td>Low Cost and Special Resin for manufacture of Plywood</td>
<td>3 days</td>
<td>07-09 Dec</td>
<td>5,000</td>
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<tr>
<td>5.</td>
<td>Preliminary Bamboo Processing</td>
<td>3 days</td>
<td>21-25 Nov</td>
<td>7,500</td>
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<tr>
<td>6.</td>
<td>Plywood and Adhesive manufacturing</td>
<td>3 days</td>
<td>21-23 Dec</td>
<td>5,000</td>
</tr>
</tbody>
</table>

* 15% Service Tax Extra ;
** Programme Coordinator: Dr. Ranjana Yadav, IPIRTI Field Station Kolkata, 2/2 Biren Roy Road (West), Sarsuna, Kolkata-61, Tele Fax:033-24983120, Mob:09874219758 (ipirtikolkata@ipirti.gov.in). Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, Indian Plywood Industries Research & Training Institute. You can apply online by filing and submitting the Registration Form.

### SHORT TERM TRAINING COURSES FOR SEP - DEC, 2016 AT MOHALI

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<th>Title of the Training Course</th>
<th>Duration</th>
<th>Date</th>
<th>Fees*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Testing Of Block board And Flush Door As Per IS:1659 &amp; IS: 2202 (Part - 1)</td>
<td>3 days</td>
<td>21-23 Sep</td>
<td>5,000</td>
</tr>
<tr>
<td>2.</td>
<td>Analysis of Raw Material for Resin Manufacturing</td>
<td>5 days</td>
<td>03-07 Oct</td>
<td>7,500</td>
</tr>
<tr>
<td>3.</td>
<td>Testing Of Plywood As Per IS 303, 1328, 710 &amp; 4990</td>
<td>5 days</td>
<td>07-11 Nov</td>
<td>5,000</td>
</tr>
</tbody>
</table>

* 15% Service Tax Extra

** Lodging and Boarding are not included and have to be arranged by the trainees.

Programme Coordinator: Mr. Amitava Sil, IPIRTI Field Station Kolkata, 2/2 Biren Roy Road (West), Sarsuna, Kolkata-61, Tele Fax:033-24983120, Mob:09874219758 (ipirtikolkata@ipirti.gov.in). Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, Indian Plywood Industries Research & Training Institute. You can apply online by filing and submitting the Registration Form.
CAMPUS INTERVIEW AT IPIRTI, BANGALORE

IPIRTI is an Autonomous Research and Training Institute of the Ministry of Environment, Forest & Climate Change, Government of India. IPIRTI is the only training institute of its type in the country in the field of Wood based Panel Products Technology. In addition to Short Term Training Courses, IPIRTI conducts one year PGD Course on Wood and Panel Products Technology (WPPT).

This year 30 number of trainees are undergoing the PG-DC-WPPT course (27th batch). Campus interview for the successful trainees is scheduled on Monday the 07th November, 2016 at IPIRTI Campus. Wood based Industries in need of trained persons in Middle management cadre may contact: Dr. Manoj K. Dubey, Joint Director/ Dr. V.K. Upadhyay, SORIT Division, IPIRTI, Bengaluru.

Tel. No. 080-30534002/49, E-mail to: manojkumar@ipirti.gov.in/ upadhyay@ipirti.gov.in