



कृषि एवं किसान कल्याण विभाग
DEPARTMENT OF
AGRICULTURE AND
FARMERS WELFARE

सत्यमेव जयते



Department of Industries & Commerce
Government of Kerala

NATIONAL SEMINAR ON BAMBOO SECTOR

JANUARY 12 & 13, 2024
Taj Vivanta, Kochi

REPORT



National Bamboo
Mission



Kerala State
Bamboo Mission



Directorate of
Industries & Commerce

K-bip

Kerala Bureau of
Industrial Promotion



Kerala State Bamboo Mission (KSBM) is constituted under Department of Industries & Commerce, Government of Kerala with the broad aim of marshalling the unorganised Bamboo sector of the State and adopting a focused approach to revitalize by promoting value addition & design thereby, enhancing income generation of Artisans/Craftsmen in Bamboo Sector. Kerala State Bamboo Mission functioning at Kerala Bureau of Industrial Promotion (KBIP) is the Bamboo Development Agency (BDA) of the State for the implementation of schemes of restructured National Bamboo Mission (NBM) (NBM) under Government of India.

Concurrent to the 20th edition of Kerala Bamboo Fest, a two-day National Level Seminar in Bamboo Sector was held from January 12 to 13, 2024 at Hotel Taj Gateway at Marine Drive in Kochi, Kerala. The Seminar focused on the latest developments in the Bamboo Sector and Technical Experts/Resource Persons from various National level Institutions, NGOs and successful Entrepreneurs in the Bamboo Sector handled the technical sessions. The Kerala Bamboo Fest and the National Level Seminar in Bamboo Sector was organised with the support of National Bamboo Mission (NBM), under Department of Agriculture & Farmers Welfare, Government of India.

The Technical Experts/Resource Persons were from various Institutes like Bamboo & Cane Development Institute (BCDI), Tripura; Konkan Bamboo & Cane Development Center (KONBAC) Maharashtra; National Institute of Design (NID), Bengaluru; Kerala Forest Research Institute (KFRI) Thrissur; University of Kerala, Thiruvananthapuram & Uravu Indigenous Science & Technology Study Centre, Wayanad. Successful Bamboo Entrepreneurs from Organisations like Bamboo India, Pune & Neera Sarmah Foundation, Assam shared their valuable insights in Bamboo Sector. The officials from National Bamboo Mission (NBM), New Delhi and the Mission Directors from various States under National Bamboo Mission participated in the Seminar.



The National Seminar on Bamboo Sector commenced with a warm welcome speech delivered by Shri. Suraj S., Chief Executive Officer, Kerala Bureau of Industrial Promotion (KBIP)/Kerala State Bamboo Mission.

Dr. Prabhat Kumar, Horticulture Commissioner & Mission Director, National Bamboo Mission (NBM), New Delhi, shared insightful perspectives in his Keynote Address. He appreciated the efforts of Kerala State Bamboo Mission in successfully coordinating the Annual Event 'Kerala Bamboo Fest' and the National Seminar on Bamboo Sector.

The official inauguration of the Seminar was graced by Shri. S. Harikishore IAS, Director of Industries & Commerce, Government of Kerala & State Mission Director, National Bamboo Mission (NBM)-Kerala.

Smt. Viswasree B., IAS, Mission Director, State Bamboo Mission Tripura; Shri. Ilango Krishnan IFS, Mission Director, State Bamboo Mission, Uttar Pradesh; Shri. Suman Kumar Sharma, Mission Director, State Bamboo Mission, Sikkim and Shri. Mukesh Kumar Sinha, Mission Director, State Bamboo Mission, Jharkhand shared their valuable insights and experiences in the Special Addresses.

Shri. Benedict William Johns, Managing Director, Kerala State Bamboo Corporation, extended a heartfelt Vote of Thanks to all Speakers, Dignitaries, Participants and Bamboo Artisans for their contributions in making the Seminar a resounding success.

Technical Sessions started after the inaugural session of the Seminar. Dr. Prabhat Kumar, Mission Director, National Bamboo Mission (NBM), New Delhi was the Moderator for the first day of the National Seminar. The Resource persons from renowned Institutes / Organisations covered various topics on Bamboo Sector on January 12 & 13, 2024.



Technical Sessions - DAY 1

Session-1

Introductory Address by the Moderator & Presentation on National Scenario of Bamboo Development – Dr. Prabhat Kumar, Mission Director, National Bamboo Mission (NBM), New Delhi

The Mission Director of the National Bamboo Mission (NBM) in his Address and presentation outlined the key schemes and interventions aimed at revitalizing the Bamboo sector. He highlighted that Engineered Bamboo, Woven bamboo and Bamboo shoot products collectively dominate the global Bamboo trade. However, several challenges like insufficient Bamboo supply, market price fluctuations, lack of trained labour and fragmented industry hinders the growth of the sector.

To address these challenges, the Mission Director emphasized sustainable forest management through Joint Forest Management Committees and Rights of Forest Resources beneficiaries. He also advocated for commercial Bamboo plantations on Government lands and supported biotechnological projects for high-yield Bamboo strains.

The key interventions of National Bamboo Mission (NBM) include identifying commercially important species, accrediting Bamboo nurseries, adopting a cluster approach for value chain development and promoting Bamboo as a sustainable building material. Moreover, policy advocacy, institutional development and expert advisory groups have facilitated India's transition to a net exporter of Bamboo.

The Mission Director proposed initiatives such as producing biodegradable plastic from Bamboo, reviving the incense stick industry with eco-friendly technology and enhancing Bamboo plantation productivity. Additionally, he suggested collaborating with other government schemes, developing Bamboo value chains in the Northeast with Asian Development Bank assistance and exploring export potential with International partners like Japan International Co-operation Agency (JICA). Other future steps include ethanol



production, green furniture and buildings, bio-energy and carbon-negative Bamboo utilities to foster sustainable growth in the sector.

He welcomed all the Speakers, Dignitaries and Participants to the National Seminar and moderated the Technical Session on Day 1.

Session-2

Design Approach for Bamboo sectors in India – Shri. C.S. Susanth, Head-Bamboo Initiatives, National Institute of Design (NID), Bengaluru

Shri. C.S. Susanth, Principal Designer at NID has mentioned that Bamboo is one of the fastest-growing plants and emphasized its versatility as a raw material for various applications. He also highlighted its conversion into different sizes of splits and its pliability for weaving and constructing structures, which they found remarkable among natural materials. Additionally, he pointed out that Bamboo possesses special properties conducive to creating a wide range of everyday products, making it the most sustainable, eco-friendly and renewable natural resource for various purpose.



The speaker referred India's rich tradition in utilising Bamboo, especially in basket making, with the North-East region demonstrating diverse applications across different species and the increasing popularity of Bamboo among professionals, from design to technology, with the introduction of innovative products that align with contemporary lifestyles.

Furthermore, Shri. Susanth emphasized the significance of Bamboo weaving, commonly used for baskets and containers, due to Bamboo's longer fiber structure allowing it to be split into thin slivers and woven into different structural forms. He also highlighted the traditional baskets from various North-Eastern regions as examples showcasing Bamboo's potential for woven structures, suggesting that this approach could be applied to contemporary lifestyles.

Session-3

Breaking Barriers: Oppam Tribal Project in Manithookki Kani Settlement in Thiruvananthapuram District – An initiative by Department of Sociology, University of Kerala – Dr. Syam P.S., Executive Director, KU Life Tribal Start Up under KUBIIC, University of Kerala

Dr. Syam P.S., a Post Doctoral Fellow at the Department of Sociology at Kerala University mentioned that the University has achieved a significant milestone by leading the launch of the first Tribal startup in Kerala. He noted that this initiative is a collaboration between the Department of Sociology and the University aims to empower the



Manithookki Kani Tribal Community in the Vithura panchayat of Thiruvananthapuram District. The Kani Tribal Group, known for their historical presence in the forested regions of the Western Ghats, predominantly resides in the Kollam and Thiruvananthapuram Districts of Kerala and possesses a profound understanding of forest ecosystems.

In an effort to enhance their prospects for survival, the Department of Sociology at the University of Kerala, led by Dr. Sandhya R.S., Head of Department, initiated a dedicated project within the Manithookki settlement in the Vithura Panchayat of Thiruvananthapuram. This project was inaugurated in February 2023 by the esteemed presence of Shri. K. Radhakrishnan, Hon'ble Minister for Welfare of Scheduled Castes, Scheduled Tribes and Backward Classes, Government of Kerala.

He explained that the Skill Upgradation Training Programme was successfully conducted to a group of twenty eight individuals, including elders, women and youth in three phases spanning a total duration of forty three days with the support of Kerala State Bamboo Mission and Department of Tribal Affairs, Government of Kerala. The members of the Kani Tribe were able to make Baskets, Handicrafts and other utility products within a short span of time. The products made by the Group which was exhibited in the Trade Fair conducted as part of Keraleeyam 2023 held from November 1 to 7, 2023 at Thiruvananthapuram had received a good response which inspired them to involve more in Bamboo Product making.

Dr. Syam also emphasized the need for more specialized training sessions which has to be conducted to impart skills in crafting various handicrafts using Bamboo and Reed to the people in Manithooki Kani Tribal Settlement areas to improve their standard of living. As part of this, the Department has initiated the ‘Oppam Phase-II’ project for conducting training to Bamboo Skill Upgradation Training Programme to 30 participants of six tribal community Wards namely Peppara, Maruthamala, Kallar, Manali, Ponnammund and Chettachal of Vithura Grama Panchayat in Thiruvananthapuram District for 40 days with the financial assistance from Kerala State Bamboo Mission (KSBM).

The Technical Sessions concluded on 2.00 PM and the Speakers and other Dignitaries visited the Kerala Bamboo Fest and attended the inaugural function of the 20th edition of Kerala Bamboo Fest held at January 12, 2024 at Jawaharlal Nehru International Stadium Ground at Kaloor in Ernakulam (Kochi).

DAY 2

Introductory Address by Dr. Shyam Viswanath, Former Director, Kerala Forest Research Institute (KFRI), Thrissur

In the introductory address, Dr. Syam Viswanath presented an analysis of the Bamboo Sector, which encompassed the standardization of technology and the cultivation of economically viable species, the assessment of environmental impacts and the utilization of Bamboo in various industrial applications, such as employing Bamboo roots in sewage treatment. He underscored the potential for developing viable models within the Bamboo industry, particularly if it is utilised for industrial purpose. He also detailed the challenges faced by Kerala in the Bamboo sector, advocating for the promotion of coastal afforestation programs featuring salt-tolerant Bamboo species.



Moreover, Dr. Syam Viswanath emphasized the significance of selecting species based on topographical considerations and highlighted the importance of encouraging the production of high-demand Bamboo species in Kerala, including Thyostaceous Oliveri, Dendrocalamus stocksii, Dendrocalamus strictus, Bambusa polymorpha and katcharis.

Additionally, he stressed the urgency of addressing Kannadippaya, a traditional Bamboo craft practiced in the Orali Village in Idukki District, where traditional methods persist even today. He also mentioned that the Bamboo Charcoal Making Unit holds promising prospects within the Bamboo sector.

Session-1

Role of BCDI in development of Bamboo Sector - Dr. Abhinav Kanth, Chief Executive Officer, Bamboo & Cane Development Institute (BCDI), Thripura

In the session, Dr. Abhinav Kanth initially outlined the major interventions of Bamboo & Cane Development Institute (BCDI), Tripura, in the Bamboo Sector and highlighted one of the renowned projects of BCDI, which involved the construction of a completely Bamboo-made Terminal at the Bengaluru Airport.



He mentioned that currently, there are 15.69 million hectares of Bamboo-growing areas worldwide. India ranks as the second largest producer of Bamboo globally, with 135 species available in the Country. He identified some weaknesses in the Bamboo sector, including lack of Quality Production Management (QPM), lower productivity and heavy reliance on forest-based resources. He also discussed the major opportunities within the sector such as the availability of indigenous Bamboo species and the potential for demonstration plantations targeting end users.

Dr. Abhinav Kanth detailed several aspects of Bamboo processing and the different forms of Bamboo being utilised such as whole Bamboo, rings, slat, slivers and sticks. Out of which slats are used in making chopping boards, trays, etc., slivers are used for Bamboo handicraft making, while sticks are used in the production of incense sticks, curtains, chopsticks, etc.

He also discussed the use of jigs and molds during processing to ensure uniformity, highlighting the models of knockdown chairs and stackable chairs, which are highly demanded in the market. Additionally, he presented ideas for Bamboo Jewellery,

including woven jewellery and jig jewellery, as well as degradable Bamboo plantation bags made from Bamboo granules, Bamboo toys, Bamboo cookies and pickles made from Mooli Bamboo. He also discussed the application of photochemical engineering, where Bamboo can be easily cut and overlaid over another piece.

Dr. Abhinav concluded the session by mentioning the availability of various skill development training programme modules at BCDI covering Bamboo basketry, furniture, jewellery and cluster-based activities which includes training for identified Bamboo clusters nationwide.

Session-2

Bamboo Propagation in Kerala and Success Stories - Dr. V.B. Sreekumar, Principal Scientist, Kerala Forest Research Institute (KFRI), Thrissur

Dr. V.B. Sreekumar emphasized the recent surge in industrial applications of Bamboo, sparking interest among farmers in cultivating commercially significant Bamboo species. He highlighted a major obstacle in scaling up Bamboo plantations: the limited availability of quality planting materials. He stressed the need to establish more nurseries in accordance with the guidelines issued by NBM to ensure a continuous supply of such materials.



According to him, the production of Bamboo planting stock involves various propagation techniques including tissue culture. He underscored the importance of certifying these stocks to ensure their superiority, which in turn would enhance plantation productivity. Dr. Sreekumar mentioned that Bamboo nurseries should adhere to the 'Guidelines for Accreditation of Bamboo Nurseries, Tissue Culture Laboratories and Certification of Quality Planting Material' set forth by National Bamboo Mission (NBM). He suggested that DNA Barcodes could be relied upon for certifying planting materials in Nurseries. Additionally, he referenced the National Certification System for Tissue Culture (NCS-DBT) System for accrediting Bamboo Tissue Culture Units, which entails meeting specific criteria related to infrastructure, production of quality planting materials and management practices.

Furthermore, he highlighted the importance of cultivating commercially valuable species like *Bambusa balcooa*, used in crafting table lamps and in construction activities as well as *Bambusa tulda*, employed in making lumpers and chopsticks.

Session-3

A 20+ Years of Journey to Transforming Lives in Rural India (Bamboo Jewellery)

– Smt. Neera Sarmah, Chairperson, Neera Sarmah Foundation, Assam

Smt. Neera Sarmah, also known as the Bamboo Lady of India, began her session by praising the Artisans from Kerala for their remarkable work showcased at the 20th edition of the Kerala Bamboo Fest. She highlighted the quality and effort put into each product. Neera emphasized the importance for Kerala's Bamboo



Artisans to participate in global design competitions to gain unique ideas and create lightweight products that are easier to transport and attract International buyers.

She pointed out that many Bamboo Artisans lack knowledge about market demands, pricing and packaging techniques, hindering product demand. Smt. Neera highlighted the primary problem in remote Indian areas: a single source of income, mainly agriculture or selling wood, leading to secondary issues like lack of access, women's dependency and environmental concerns.

The increasing demand for contemporary Bamboo Jewellery in the urban and rural market can be explored and can create an opportunity for self employment to women endowed with creativity. The scope of crafting numerous Jewellery pieces from a single stalk creates a high appealing prospect for Artisans, she added.

Smt. Neera suggested solutions such as providing income opportunities, especially for women, offering basic and creative skill training and promoting eco-friendly alternatives. She mentioned the Neera Sarmah Foundation's expertise in crafting exquisite Green Gold Jewellery from Bamboo, showcasing sustainability and nature's beauty. She concluded by stating that by addressing these aspects, Bamboo can be seen as both 'poor man's timber' and 'rich man's fancy' earning applause from the participants of the Seminar.

Session-4

Crafting Bamboo to build sustainable livelihoods – Shri. Sanjeev Karpe, Managing Director, Konkan Bamboo and Cane Development Centre (KONBAC), Maharashtra

Shri. Sanjeev Karpe, Managing Director, Konkan Bamboo and Cane Development Centre (KONBAC) began his session by highlighting Bamboo's traditional use in the rural Konkan region of Maharashtra for construction purposes. He explained that in 2004, KONBAC recognized Bamboo's vital role in fostering a



circular economy and embarked on developing a high-value Bamboo supply chain. They collaborated with farmers in Sindhudurg District, Maharashtra, with technical support from International Bamboo and Rattan Organization (INBAR) to cultivate commercially valuable Bamboo species.

He mentioned KONBAC's decade-long research on the usage of Bamboo in construction as part of which M/s. Jans Bamboo Products Pvt. Ltd. was established in 2016 to promote Bamboo in building and construction sector. Jans has been very successful in constructing modern structures, the most highlighted projects among them includes a floating dining pod at a luxury resort in Maldives, a complete Bamboo construction, which received much applause from the attendees in the Seminar.

In conclusion, Shri. Sanjeev Karpe highlighted KONBAC's efforts in empowering youths, women and farmers across the Country to engage in Bamboo sector. He also addressed challenges such as raw material quality, treatment consistency and Artisans' availability while changing the perception of Bamboo from being seen as 'Poor man's Timber to rich man's choice'.



Session-5

Success Story of Bamboo India – Shri. Yogesh Shinde Chief Executive Officer, Bamboo India, Pune, Maharashtra

Shri. Yogesh Shinde began his inspiring journey after completing his Master's Degree from the University of Pune. He entered the IT industry and later traveled to Germany for work. It was during his time there that the concept of starting a sustainable business struck him. He returned to



India with the goal of launching something that would also benefit his Country. He credited digital platforms, particularly Facebook and Instagram, for playing a crucial role in transforming his vision into a successful business.

Reflecting on India's status as the second-largest Bamboo grower and one of the biggest Bamboo importers, he expressed his realization of the underutilization of India's Bamboo resources. He disclosed that he invested up to ₹15.00 Lakhs from his savings to kickstart his startup. One of his initial products was a Bamboo acoustic sound amplifier for which he required a Bamboo cross-cutting machine priced at ₹8,500. Presently, he stated that he owns a machine worth ₹ 2.5 crores.

Today, his company, Bamboo India, sells 46 products globally, including Bamboo pencils, toothbrushes and earbuds. He emphasized a focus on producing Fast Moving Consumer Goods (FMCG), particularly toothbrushes, which led to the demand for nearly 80,000 toothbrushes per day. He mentioned that his company can now produce 10,00,000 toothbrushes and handles per month, reducing the cost of one toothbrush from ₹180.00 to Rs. ₹40.00. Responding to the participants' queries on the making of tooth brush bristles, he explained that the toothbrush bristles are composed of nylon and vegetable oil in a 70:30 combination. To ensure water resistance and hygiene, each toothbrush undergoes carbonization treatment.

Shri. Yogesh Shinde's presentation sparked new ideas among Bamboo Artisans, encouraging a shift from decorative to FMCG products. His presentation proved that with dedication and vision, such success can be achieved in the FMCG sector and was a true inspiration to the participants for exploring new areas in Bamboo.

Session-6

Bamboo Preservation Treatment: A Sustainable Approach for Enhanced Durability – Dr. Shwetha B. Kukreti, Scientist, Kerala Forest Research Institute (KFRI) Thrissur

Dr. Swetha began her presentation by analysing that Bamboo, being fast-growing and renewable is widely used in construction, furniture, crafts and other industries. However, it is more vulnerable to decay and insects led to the development of preservation treatments. She also pointed out that the traditional methods like smoking and chemical treatment have drawbacks, including environmental concerns.



She emphasized new and eco-friendly methods such as boron-based treatments, heat treatment and oil impregnation, aligning with the demand for sustainability. Different Bamboo species have varying treatment techniques, so it is very crucial to choose right technique and standardization of procedures ensures consistent quality.

She also emphasized industry collaboration and adherence to international standards for consumer confidence and market access and also highlighted Bamboo's role in fighting deforestation and reducing carbon. Sustainable preservation methods protect Bamboo and support broader environmental goals.

Dr. Shweta concluded that adopting these techniques can address environmental concerns, meet demand for eco-friendly materials and contribute to a sustainable future.

Session-7

Building Bamboo Enterprise/Value Chain in Kerala - Experience Sharing - Shri. Tony Paul, Chief Executive Officer, Uravu, Wayanad

Shri. Tony Paul commenced his session by outlining the significant challenges faced by the Bamboo Sector in India, including insufficient harvestable Bamboo, limited data accessibility and the relatively small contribution of the Bamboo industry to the economy, which stands at less than ₹10.00 Cr.

He discussed strategies to overcome these challenges, emphasizing the importance of optimizing production processes through design thinking, innovation and skill development. He highlighted the need for diversification into other verticals to enhance scale and sustainability. Using Uravu Indigenous Science & Technology



Study Centre, Wayanad as an example, he illustrated how entities can evolve and support rural Artisans, particularly women, through a community-based production process.

Shri. Tony Paul recounted Uravu's journey, including its closure in 2017 due to institutional and supply chain limitations in the Bamboo value chain. He emphasized the need for natural forest management to address shortages in Bamboo supply, along with initiatives such as raising nano plantations, implementing buy-back guarantees and providing livelihood support programmes.

Today, Uravu has transformed into a stable ecosystem that explores various dimensions of Bamboo utilisation. Shri. Tony Paul stressed Bamboo's potential as a climate-positive resource for the future. He highlighted the importance of organizing the sector based on scientific data and market behavior to identify priority areas for value creation. Bridging gaps in the value chain and fostering an ecosystem conducive to institutional and enterprise growth are critical for the development of Bamboo as a green industry.

Conclusion

The Moderator of the Technical Session, Dr. Syam Viswanath summarized the topics handled by the Speakers and appreciated their remarkable contributions made in the Bamboo Sector.

There was a Special Address by Mr. Fujiwara, Representative from Japan International Cooperation Agency (JICA), New Delhi invited by Kerala State Bamboo Mission. He began his address by introducing JICA and its mission to promote economic and social development through international cooperation. He shared some examples of Japan where Bamboo has been successfully utilised in various industries, including construction, crafts and environmental conservation. He encouraged mutual learning

and appreciated future collaborations between JICA, National Bamboo Mission (NBM) and Kerala State Bamboo Mission (KSBM).

Shri. Georgy P. Mathachan IFS, Managing Director, Kerala Forest Development Corporation (KFDC), Kottayam also addressed the gathering and highlighted the activities of KFDC in the Bamboo sector and the Bamboo species available with KFDC.

Shri. Van Roy S., General Manager, Kerala Bureau of Industrial Promotion/Kerala State Bamboo Mission delivered Vote of Thanks to the Speakers, Moderators, Officials, Delegates and Participants of the Seminar.

There was a Bamboo Product Display Area set up on the sidelines of National Seminar Hall to display the unique products made by the Bamboo Artisans in Kerala. This display delighted the speakers, delegates, officials and other dignitaries who attended the Seminar. An Activity Wall was also set up along the sidelines showcasing the various initiatives and projects undertaken by Kerala State Bamboo Mission with the support of National Bamboo Mission.



The two day National Seminar on Bamboo Sector witnessed the participation of 130 Delegates consisting of Bamboo Artisans/Craftsmen, Officials from related Government Departments mainly from Industries Department, Agriculture Department, Research Fellows from Kerala Forest Research Institute, Entrepreneurs, Faculties & Students from Educational Institutions, officials from the Implementing Agencies of National Bamboo Mission (NBM) projects and various stakeholders in the Bamboo Sector.

