

## **Weed to Wonders**

### Crafting with Lantana a path towards sustainable Future

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## EIACP RP Amrita Vishwa Vidyapeetham, Coimbatore









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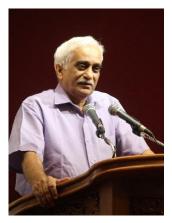
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Maya Mahajan

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### Foreword Note



I am extremely pleased to write this foreword note for the book entitled "Weed to Wonder - Crafting with Lantana: A path towards Sustainable Future" written by Dr. Maya Mahajan.

The Ministry of Environment, Forest and Climate Change (Economic Division) sanctioned 'ENVIS Resource Partner' on the theme 'Science Based Management of Biological Invasion/ invasive alien species in India, in the year 2019. Later, in the year 2022, this programme was renamed as

Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) and Amrita Vishwa Vidyapeetham was granted a resource Partner status in this. The expertise for this program was developed based on the insights gained from the Rural Technology Park project in Siruvani Hills, which was funded by SEED, DST from 2015 to 2019.

Most of the topics covered in this book are derived from the experience the authors gained from projects undertaken under the above-mentioned centres. For this, Amrita Vishwa Vidyapeetham and the author of the book are indebted to the Ministry of Environment, Forest and Climate Change, Government of India.

Lantana camara, an invasive weed of South American origin, has become a significant ecological threat across various forest areas in India, including biodiversity hotspots like Northeast India and the Western Ghats. This invasive species poses a serious challenge to native vegetation and biodiversity, prompting an urgent need for effective management strategies. The Forest Department has been actively exploring solutions to curb this menace, with a focus on community participation.

In a remarkable turnaround, this ecological crisis was transformed into an innovative opportunity. Lantana wood, once deemed a nuisance, was utilized as a resource to create value-added products such as furniture, offering a sustainable alternative to conventional timber. This approach not only addressed deforestation but also enhanced the livelihoods of indigenous communities, marking a significant step in combating the lantana invasion.

Under this initiative, tribal communities participated in the mechanical control of Lantana by manually cutting and uprooting the weed. Simultaneously, the harvested Lantana wood was repurposed to develop sustainable livelihood options. Tribal members were trained to craft low-cost furniture, handicrafts, toys, and other utility items from Lantana wood.

Following the project's success in Siruvani, Coimbatore Forest Division, a structured and certifiable course on Lantana craft and furniture making was developed. This course, conducted under the Green Skill Development Program funded by ENVIS-MOEFCC, was implemented in multiple locations.

I am sure this book will turn out to be a very valuable resource to any individual or organisation engaged in community development activities or sustainability projects.

Dr K. Sankaran Registrar, Amrita Vishwa Vidyapeetham Deemed to be university



## Lantana Camara: an invasive disaster

Invasive Alien Species are species introduced into a new habitat where they establish, proliferate and spread rapidly, which affect the native vegetation and animal communities. They alter the local biodiversity, causing changes in hydrology and ecosystem functions.

The International Union for Conservation of Nature (IUCN) considers *Lantana camara* as one of the world's 100 most invasive species, and one among the 10 worst



weeds in the world. This species is native to Central and South America and has been introduced outside its native geographic range as an ornamental garden plant. It has escaped from the garden and has spread across forests and follow lands in tropical and sub-tropical Africa, Asia and Australia in around 60 countries. According to some news reports, Australian farmers have been spending \$17.1 million annually on controlling lantana. Similarly, in Africa, lantana disrupts local ecosystems, especially in countries like Kenya, Tanzania, and South Africa, where it invades protected areas such as the Kruger National Park, threatening endangered species and obstructing animal migration. The National parks in Southeast Asian countries including Thailand, Malaysia, and Indonesia are seriously affected by the proliferation of lantana, which chokes out the native plant community, decreasing biodiversity and disrupting environmental stability.

Lantana camara has invaded tropical dry deciduous, moist deciduous to

scrub forests in most parts of India. This weed was introduced in India for horticultural purposes. Since then, this highly invasive plant has taken over the landscapes of India, growing in thickets and encroaching wastelands, forests, wetlands, and agricultural fields. Lantana camara poses threat to the biodiversity of these ecosystems due to its allelopathic effects and its rapid growth rate covering the open grounds hastily hindering the regeneration process of the native species. Lantana often outcompetes other important species, leading to a reduction in native biodiversity. Within the Western Ghats, a UNESCO international heritage site and one of the world's 8 hotspots of biodiversity, lantana has severely affected the regeneration of native species like *Diospyros melanoxylon*. The thorny and toxic nature of this plant prevents animals from feeding on its leaves. Furthermore, as Lantana dominates these ecosystems, it reduces the food supply of important organisms like nilgiri langur, gaur, deer and sambar deer, ultimately disrupting the community food chain. In Bandipur National Park (Karnataka) and Rajaji National Park (Uttarakhand), large mammals along with tigers, leopards, and elephants conflict to navigate via lantana-infested areas. In some instances, elephants have been seen averting these areas completely, which fragments their habitats and disrupts migration routes. Moreover, the highly flammable nature of lantana also makes the invaded areas fire-prone. Lantana becomes a catalyst during forest fires as the fire spreads more through its rampant shrubs. The incidence of forest fire has been a common scene within the lantana-infested forest ranges in India. Lantana invasion has additionally affected the livelihoods of indigenous communities who rely on forest assets. In places like Madhya Pradesh and Chhattisgarh, these people had to face a massive decline in the availability of resources like timber, fruits, medicinal plants, and other forest products, making their livelihood difficult.

Being able to control lantana is challenging since most of the conventional methods fail to completely eliminate it. Mechanical methods like uprooting or

burning hold the possibility of regeneration of lantana from the left-out fragments. Chemical management strategies pose both health and environmental risks, as they can pollute natural resources. Biological control is achieved through the introduction of natural enemies such as insects or pathogens which is a more sustainable solution. But chances of accidental breakouts are unnegotiable. However, careful research and monitoring are essential to avoid those undesired ecological effects. Although several attempts have been made to control Lantana by physical, chemical and biological methods, there is no considerable success either in its control or the prevention of its spread across different habitats in India. No management strategy is very successful in controlling the spread of this obnoxious alien weed as it spreads very rapidly. Considering the encroachment of a large portion of the Indian forests by Lantana, the Indian Government has taken some initiatives to curb Lantana infestation. The forest department deploys significant resources into the cutting and uprooting process of this plant to regulate its rapid growth. However, Mechanical control of this weed is a very tedious and expensive job.

Therefore, the participation of the local tribal community in managing lantana was encouraged by engaging them in cutting and uprooting the invasive plant while utilizing it to support their livelihoods. The tribal members involved in lantana removal were trained in crafting and furniture-making using lantana wood. Crafting value-added products like furniture and utility articles from lantana wood has introduced a creative and sustainable alternative to traditional cane furniture. At the same time, this initiative has improved the livelihoods of indigenous communities while serving as an effective strategy to combat deforestation. This transformation—from an ecological threat to an economic opportunity—creates a mutually beneficial impact on both the environment and tribal communities. Some of the success stories of tribal empowerment in different parts of the India are discussed in this book.

## An Overview of Our Endeavour!

The efforts of EIACP RP Amrita Vishwa Vidyapeetham in the management of the lantana invasion were a voyage of dedication, collective action, and immense love for nature. This journey began with the initial step aimed at controlling the invasion of lantana in Indian forests with community participation in the Siruvani forest range of Tamil Nadu.

In the year 2000, Maya Mahajan (author), then a PhD scholar at SACON Coimbatore, was researching the impact of invasive alien weeds on native flora and ecosystems across various forest types in the Nilgiri Biosphere Reserve, including the Siruvani Hills, Mudumalai Wildlife Sanctuary, Silent Valley National Park, and Upper Bhavani. Her study revealed a severe infestation of *Lantana camara* in the dry and moist deciduous forests of Siruvani Hills and Mudumalai Wildlife Sanctuary.

Through discussions with forest officials in these regions, she realized that mechanically controlling *Lantana camara* was labour-intensive, costly, and time-consuming. Later, after joining the Centre for Sustainable Future at Amrita University, she secured funding for an innovative project focused on managing lantana through community participation. The initiative involved training local communities to create furniture and other value-added products from uprooted lantana, turning it into a source of livelihood. The primary challenge in launching the project was persuading the tribal community to collect *Lantana camara* from the forest, as the area was prone to frequent elephant attacks. It was only when V. Vellachi, a resident of Singampathy, along with seven other women, stepped forward for training that others gradually joined in.

Another hurdle was obtaining permission from the forest department to cut and transport the weeds to the villages. However, once the department recognized this initiative as an effective solution for removing the invasive species—an otherwise difficult task—they readily granted us the necessary approval.

This work was funded by the Department of Science and Technology (DST). With the continuous support and encouragement from the funding body, the entire team easily succeeded in achieving our goal. This novel, innovative utilization of the invasive weed, lantana stole the attention of people, which motivated more tribal people to join the scheme. This journey which started in 2014 was then further supported by Ministry of Environment Forest and Climate Change as a GSDP course with consistent financial assistance. This program enabled 500 tribal people to attain a skill and provided them with a livelihood opportunity.

The courses were not just a period of training but an experience that impacted the lives of people and the design of landscapes. The stories told here are about people who did not allow a problem to limit them and exhibited creativity and zeal for making actual change happen. The programme was conducted in five locations covering 500 people who were given a guidance to achieve self-sustainability. Each location holds a special tale of commitment and nature love. Our success stories are arranged in five chapters, where you can experience how the joint effort resulted in the successful co-existence of humans and the environment.

https://www.youtube.com/watch?v=yBKuMWUuSkw



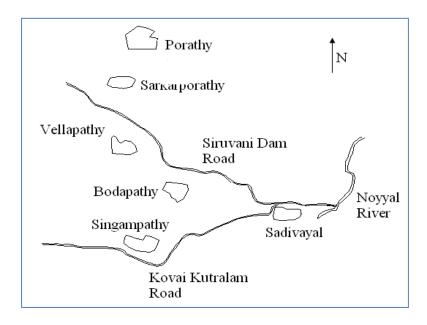
## Success story 1

# Invasive Weed to Wealth: story of Siruvani hills

#### Dr Maya Mahajan

Siruvani Hills, a part of the Western Ghats encompasses pristine, semievergreen, moist, and dry deciduous forests that represent rich faunal and floral diversity. It is located 25km to the west of Coimbatore, away from the hustle-bustle of the city. A serene Kovai Kutralam waterfall is located within these forests surrounded by majestic hills. In the foothills of Siruvani, six hamlets of the Irula tribe, home to around 550 people, are situated. The tribal communities in this region rely on non-wood forest products and face challenges in cultivating their agricultural lands regularly due to water scarcity and frequent raids by wild elephants and other animals.

#### Location of six tribal hamlets in Siruvani Village (project Location)



The communities residing in these villages experience difficult socioeconomic conditions, lagging behind the urban population of Coimbatore in crucial areas such as maternal and child health, agricultural land ownership, and access to basic services. It was observed that the forests around these hamlets were severely infested by Lantana which was affecting native



biodiversity of the area. Hence tribal communities residing in these remote hamlets were actively engaged in controlling Lantana infestation through manual removal and uprooting from nearby forest areas. The extracted Lantana wood is then repurposed to create sustainable livelihood opportunities for the community. Tribes were trained to craft value-added products such as sofas, chairs, stools, teapoys, racks, corner stands, computer tables and other small furniture items, decorative handicrafts, toys, and other utility items using Lantana wood.

The primary challenge in launching the project was persuading the tribal community. Since they were uncertain about the sustainability of the training program and the collection of lantana wood was challenging in an elephant-prone area, they were hesitant to join initially. It was only when V. Vellachi, a



resident of Singampathy, and fifteen other women volunteered for training that more women gradually began to join. Another challenge was securing permission from the forest department to cut and transport the lantana wood from forest to the villages. However, once the department recognized the

initiative as an effective solution for removing the invasive species through community involvement, they quickly granted the necessary approval and further support.

This initiative has provided sustainable income sources for 100 families across four remote tribal hamlets namely Singampathy, Sarkarporathy, Kalkothipathy and Porathy in the Siruvani forest. Over 150 tribal men and women have been empowered through skill development in Lantana wood furniture making.







Additionally, 30 tribal farmers have been trained and transitioned to 100% organic farming, now practicing on 45 acres of land in Siruvani.

Making furniture out of lantana is quite different from the usual way furniture is made. After the shrub is chopped off, its wood is treated in boiling water to make it flexible. The bark is removed, and the log is sliced into sticks and bended as required before it is assembled into different craft and furniture pieces









Boiling



# **Assembling**



# **Finishing**





Products are then painted with varnish and golden yellow vegetable colour to give finished look and protection from termites.

Over 60 percent of the participants in this program were women, as it allowed them to work from their own villages while also caring for their children. Women's participation grew in the second phase of the program after witnessing the success of the first phase.





Women taking care of their children while working in Singampathy hamlet

Later, design school students from TU Delft, Netherlands visited our project. After conducting a detailed market surveys in Coimbatore, Salem and Bangalore they developed innovative designs for lantana craft and furniture & assisted us in this project as a part of Live in lab program of Amrita University





Lanana Products made by tribals in Siruvani Hills





Diverse lantana products were made by tribals from Singapathy, Sarkarporathy and Kalkotipathy hamlets as per the traditional and new design ideas given to them.







Assistance is provided to communities in the marketing of the products in potential areas in Coimbatore and other major cities in the country. Market linkages are now being established in these areas for sustainable marketing of these products with the support of national organizations like the Tribal Cooperative Marketing Development Federation of India Limited (TRIFED), and Tamil Nadu Handicraft Development Corporation Center. Online selling via e-commerce websites like Amazon is also being explored. This program was

supported by Sustainable Environment and Ecological Development Society (SEED), and the Department of Science and Technology, Government of India. To promote marketing and generate awareness about this low-cost ecofriendly furniture and craft, several exhibitions were organized in strategic locations at Coimbatore and Ooty. This intiative has also reduced pressure on cane which was used traditionally to make this kind of furniture.



The empowered tribals can continue the production and marketing of various commodities using this transferred technology and, in the process, establish small-scale enterprises. The Forest Department and Amrita University are supporting these tribals even after the completion of the project period

Following the successful implementation of this project, a structured and certifiable course on Lantana craft and furniture making was developed. A dedicated module was created and is now being offered as part of the Green Skill Development Program, funded by ENVIS-MOEFCC, at various locations. This training program focuses on Lantana furniture and crafts, targeting communities in and around Siruvani Hills, Senguttaiyur in the Coimbatore Forest Division of Tamil Nadu, the Wayanad Wildlife Sanctuary in Kerala, and Dahanu taluka in the Palghar district of Maharashtra. The initiative aimed to provide sustainable livelihood opportunities for tribals in these villages

# Green Skill Development Program

The Green Skill Development Program (GSDP), set up by the Ministry of Environment, Forest and Climate Change (MoEFCC), in 2017, has stepped in to train India's young generation in environmental conservation & sustainable development. The founding aim of GSDP is to reduce the skills deficit by investing in green sectors, which are important for biodiversity conservation, pollution management, renewable energy, and providing job opportunities, especially in rural areas. GSDP sets out to build skilled professionals to cope with the increasing demand for employees in the environmental domain. The program provides practical training in areas such as waste management, water conservation, and forest management, making the trainees capable of employment or launching eco-friendly start-ups. The venture of GSDP in India has been a great success, with thousands of people across the country achieving a livelihood that aligns with the goal of sustainability. Generating more working opportunities in the green domain through this initiative has helped India to broaden its environmental objectives. By encouraging its people to adopt eco-friendly livelihoods and embrace a greener lifestyle, India is setting a perfect example for other nations on sustainable living and shaping a sustainable future with the harmony of life.

After visiting the Singampathy tribal village and observing the successful implementation of Lantana craft and furniture making project in Siruvani hills funded by DST-SEED, Dr Anandi Subramaniam the then Senior Economic Advisor to Ministry of Environment and Forest suggested to develop the Green Skill Development Programme (GSDP), under the ENVIS now EIACP (Environmental Information, Awareness, Capacity Building and Livelihood Programme)- MoEFCC in partnership with Amrita University, Coimbatore.

We introduced a specialized course aimed at managing the invasive *Lantana* camara by using it for crafting furniture and small utility and decorative

articles. This GSDP focuses on sustainable livelihoods aligned with the global Sustainable Development Goals (SDGs), particularly those addressing No poverty, responsible production and consumption, decent work and economic growth and life on land.

This GSDP course was conducted in different tribal villages in three states such as Tamil Nadu, Kerala and Maharashtra has facilitated the empowerment of tribal communities by providing them with skills to create marketable products out of lantana, such as utility articles, crafts, chairs, sofa, teapoy, racks, tables, stools, corner stands and other furniture items. These communities, often marginalized and dependent on forest resources, gained access to a sustainable income source, significantly improved their livelihoods. The 60 days long training covered all the aspects of the craft and furniture making, from collecting the lantana sticks to producing finished products, creating long-term economic opportunities for participants. These appealing, trendy eco-friendly, low cost and aesthetic products have gained incredible market value due to its performance, convenience and affordability. This initiative not only helped controlling the spread of lantana but also offered a sustainable livelihood for tribal communities.

Participants were given certificates from Ministry of Environment after successful completion of the program followed by practical examination. Many expert master trainers were developed through these programs who were resource persons for new training programs conducted in different locations

Success stories from tribal villages located in Siruvani reserve forest, Wayanad wildlife sanctuary, Dahanu taluka, and Senguttiyur in Coimbatore Forest division highlight the transformative impact of this course, with tribal communities reporting improved incomes and quality of life, while the local ecosystems benefit from reduced Lantana infestation are narrated by people worked on ground with tribal communities.

## Lantana Eco-toys: Invasion to Innovation

The first green skill development training program was conducted in Singampathy tribal hamlet in Siruvani hills. The aim of the training program was to train them to make small furniture with innovative designs and small toys which can be sold easily and generate sustainable livelihood for the tribal community.



Training on small toy making was conducted with the help of lathe machine, which was installed with the funding from SEED, DST project. The trainer from Chengapattanam trained the participants to make idols of Ganesha, Shivalinga, different types of key chains, screen set, small toys, flower vase, skipping

ropes and small utility and decorative articles. Vegetable colours were used to colour the toys and there was huge demand for such small eco friendly

handicrafts in various exhibitions around organised in and Coimbatore. After attending the training program, the tribal people realized that the utility articles and small toy and furniture making by using the lantana sticks could be an alternative livelihood support and profitable business as they do not get daily wages jobs on regular basis.



Toys looked similar to the Chengapattanam toys, however, are ecofriendly as lantana wood was used to make these toys instead of traditional wood of native plants in the forests.



Participants also learned to make small handicrafts like pen stand, baskets paper holder, wall hangings, computer table, laptop table and other utility articles



Examination was conducted at the end of the training program and certificates from ENVIS, Ministry of Environment were distributed to all the participants at the hands of Capt (Retr) Lakshaman Iyer from Biobasics.



# Roots of Change: The story of Dahanu

Mr Binish M P

In the heart of the dense, forested tribal region of Dahanu taluka, an ecosensitive zone in Maharashtra, a story of determination and creativity was unfolding. Seventeen women from these forest-dwelling communities signed up for the course, carrying with them a sense of hope and opportunity.

The GSDP program was inaugurated on the 11th of February 2020 by Mr. Shivaji Mahale (Panchayat Member, Duldhanwadi Village) in the presence of Mr Babasaheb Nivrutinath Pawar (Principal. NLC), Mr. Aniket Mahulikar (General Manager, Girivanvasi Educational Trust), Mr Valvi (Community Outreach Coordinator, NLC), Mr. Shailesh (Assistant Agricultural Instructor, NLC), and Mr. Binish M B (Information officer, Amrita University).



The program, led by Dr. Maya Mahajan, was launched with a clear goal in mind. Dr. Mahajan highlighted the impact of the invasive lantana plant on local

ecosystems and explained how it could be used to create value-added products. The participants, members of forest-dwelling communities, gathered to learn how the threat of lantana could be transformed into an opportunity. The once-damaging *Lantana camara*, which had been ravaging their environment, was now becoming a potential source of livelihood.



The participants received handson training from Mr. Sandip Tekam, a trainer from Nagpur, covering everything from collecting and preparing lantana sticks to creatively crafting baskets, chairs, and decorative items. Additionally, they were taught how to make the products

more appealing and polished by applying varnish and organic colours. As the lantana available in this region wasn't very thick, the focus was placed on crafting small utility items and decorative pieces.

Dr. Maya suggested several new designs for functional items and shared innovative craft ideas based on market demand and her prior experience in Siruvani. Daily hands-on sessions helped participants overcome their initial

apprehension, gradually empowering them to transform lantana into artistic products with high market value.

This was particularly special for the women in the group who had very limited options to earn





money. For them, this course was not just learning a new craft

a step towards financial independence and social upliftment and contributing to conservation. The participants formed strong ties as the younger Village Forest Committee members joined the elder experienced hands on this

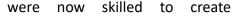




shared journey of transforming their villages by looking at an invasive weed not as a curse but as a resource.

After several weeks of hard work participant got confidence to make products without any assistance. After 45 days of hand on training session exam was conducted and participants made beautiful articles without any support from the trainer. These young women and men (more so women –Seventeen!)







sustainable livelihoods while helping manage *Lantana camara*. Later participants sold their products in exhibitions conducted by Naresh wadi training center in Dahanu and Mumbai.

Mr Sandip Tekam and his wife from Nagpur had developed a good rapport with villagers and were invited again to conduct the second phase of advanced

training and marketing of value-added products from lantana (Ghaneri in Marathi). A batch of 20 women were trained again to make value added products in 2022.



The training program concluded with a valedictory function on April 28, 2022. The participants were felicitated for not only their hard work but also for their resilience and resolve in overcoming the many odds.

Each of the twenty participants had a story of triumph against adversity to share – adversities that included environmental hardships, lack of resources, and patriarchal norms.



# Conquering the thorny menace in Wayanad, Kerala

Dr. Magesh G

In the remote tribal hamlets located in forest area of Wayanad, Kerala, a thorny wall of the invasive shrub Lantana camara (Kongini /Unni Chedi) had become so dense and tall that it blocked vehicular movement and prevented locals from reaching their sacred shrines deep in the forest. The tribal communities who relied on forest products from this forest near their village for food, and fodder were eventually forced to beg for these items in neighbouring towns as they could no longer access their traditional sources. EIACP RP Amrita Vishwa Vidyapeetham's decided to conduct GSDP course here to empower local tribals in these areas. Dr.Magesh. G, who was the Program Officer of EIACP RP AWV at that time, narrates the journey here...

Dr Maya contacted Wildlife warden of the Waynad wildlife sanctuary and discussed the problem of Lantana invasion in the forests and possible solutions including training on Lantana furniture making to local communities. Wildlife warden readily accepted the proposal and the Green Skill Development Program was inaugurated by Mr. Sunil Kumar (Forest Range Officer, Muthanga) on 24<sup>th</sup> of February, 2020 in the presence of Mr. Sundar (Deputy Forest Range Officer, Mr Subhash (Trustee, Shola Trust), and Dr. Magesh G (Program officer, ENVIS, Amrita University). Twenty tribal from adjacent villages registered for the training program on furniture and crafts making from Lantana. Majority of the participants were women and youth from the tribal communities such as Kattu Naikkar, Paniya, and Kavara from nearby hamlets.

Later, Dr. Maya visited the field site along with the trainer and provided an overview of the initiative during the implementation of the program. She also emphasized that it should be a self-sustaining activity, rather than just a one-time training session.

Training program was conducted by one of our master trainers, Mr. Veerasamy, who was trained in the Siruvani GSDP program. Lantana sticks





collected from the forest were processed through boiling and peeling. After the sticks were prepared, the villagers received training in creating beautiful craft items and furniture, including book racks, vegetable baskets, flower baskets, hanging stands, small racks, sofas, chairs, stools, and teapoys. Forest department officials, especially Mr Sunil Kumar took great interest in supporting this initiative and provided lunch for the tribal participants and accommodation for trainers and coordinators. The completion of the training program was followed by an exam and each participant was awarded with a certificate at the hands of Dr Maya Mahajan.

Dr Maya explained how the livelihood and income generation through lantana furniture and craft making can be converted into a sustainable business model as there is an abundant availability of this invasive weed in Wayanad forests.



Due to the Covid pandemic, the second phase of the training program was delayed by a few months. It was observed that the tribal communities in Wayanad were not fully grasping how this could be leveraged as a business opportunity. Instead, they were primarily focused on earning daily wages in the form of a stipend during the training period. This highlighted the urgent need for awareness-building among the tribals, emphasizing that they should look beyond the daily stipend and take proactive steps to establish their own small-scale production and businesses by forming self-help groups and collaborating with the forest departments, they can utilize Lantana, which is freely available in the forest, as a valuable resource for their ventures. Local NGOs and Forest Departments need to hand hold them at initial stage till they become self-sustainable.

## Training Process and products during GSDP in Wayanad















# Feedback from the Trainees



We are trained to make elegant craft items. Its aesthetic appeal and being an eco-friendly substitute to other craft items, these products can sell through Eco development Centers (EDC) of Forest Department-SURESH



Detailed training sessions on craft making from the basics of collection of Lantana sticks from the forest to different stages of craft making made us skilled in craft making- CHITHRA S



The crafts items made from lantana mostly look like those made from bamboo or cane, and are long lasting. At the same time, the cost is also less, as unlike bamboo or cane that we have to purchase, lantana is available free of cost in the nearby forest areas, he said. Since I am having a bamboo craft shop, crafts made with Lanatana also can be sell through my shop-GARAJ P



Lantana craft making training helped our communities to enhance the livelihood by earning decent amount of income. It has enabled our villagers and tribal groups to earn livelihood from a widely available weed-SANTHI



# Income from Invaders: The Story of Senguttiyur Tribal Village

#### Dr Sampriti Kataki

The fifth phase of our GSDP course took place in the remote and picturesque tribal village of Senguttiyur, nestled amidst forests. During this phase, we introduced the community to *Lantana camara*, an invasive plant, as a valuable resource. This once problematic plant was transformed into a source of wealth, as the community began using it to craft useful products that generated sustainable income. At the same time, this initiative helped facilitate the regeneration of their ecosystem. It was a phase that not only imparted skills but also strengthened the bond between the tribal community and nature. Dr Brindha & Dr Sampriti (EIACP officers) share their experiences

Sengeuttaiyur hamlet is in the Anaikatti ReserveForest hill region (11"09'02.4" N, 76"46'36. G" E) in North Taluk of Coimbatore district in Tamil Nadu. The



places cover a large area of thick forest vegetation which habitats wild animals. The preserved forest covers dry deciduous forests, thorn forests,

and scrub vegetation in which lantana, a garden ornamental has spread extensively in the village. Lantana grows at a ferocious rate and removing it has its challenges. Forest departments spend significant effort and money to remove these invasive species.

Most of the settlements in the area consist of forest-dwelling communities such as Irula. There were 90 Irula residences in the community, with a total population of over 300 people. Irula tribes in Sengeuttaiyur village traditionally depend on the forest for their livelihood. Land holding is small and most of the land parcels are covered with reserve forest area. As a result,



most of the community members depend on temporary jobs in nearby private concern for their livelihood. There have been only limited agricultural activities. Based on this background, Amrita ENVIS under the GSDP programme

organized the Lantana craft-making training programme in January 2022 at Sengeuttaiyur village. Twenty tribal folks in Senguttiyur gathered for the first community meeting when Ms Kamini Surendran introduced them to Dr Maya. We screened videos of successful Green skill development programs conducted in Singampathi.

All the members expressed great interest in participating in the GSDP program. Many of them were aware about Lantana plant as they used to collect the stems of Lantana and sell for Homam (burning material in religious Homa).

Dr. Maya Mahajan, the coordinator of ENVIS RP, Amrita Vishwa Vidyapeetham, launched the training program along with other ENVIS





employees. The training program was conducted by Mr. Rangasamy Kumara, a master trainer from the Siruvani tribal hamlet. Trainees were provided with a stipend and a food allowance. Initially, the participants were taught to create small items such as stools, baskets, flower vases, pen and mobile stands, and trays. As the training progressed, they learned to craft larger furniture pieces, including sofas, chairs, teapoys, and racks. The center supplied all the essential materials needed for the furniture-making process.



The program was a success, with active participation and strong engagement from the trainees throughout.

On successful completion of the training programme titled "Value



addition and marketing of NTFPs (Plant Origin): Lantana Furniture and Crafts Advance course, the valedictory function was held at Sengeuttaiyur village on April 6th,2022. The Chief Guest of the

function was Mrs Prema Rangachary, Founder, of Vidya Vanam tribal school and a famous activist. The Registrar, Amrita Vishwa Vidyapeetham Dr.K Sankaran graced the function as Guest of the Honor. Dr. Maya Mahajan,

coordinator of ENVIS RP, and Associate Professor, Amrita Vishwa Vidyapeetham gave a brief highlight of the overall project. The event was graced by dignitaries from FICCIFLO, Ms. Ritisha Niveda and Dr. Kamini



Surendran, who are dedicated to promoting entrepreneurship and skill development programs for women. Participants were presented with certificates in recognition of their efforts. Lantana furniture was highlighted for its eco-friendly, cost-effective, durable, and termite- and insect-resistant qualities. With these benefits, along with its easy maintenance and appealing design, the demand for this type of furniture is expected to grow in the near future.

In addition to its aesthetic appeal, the eco-friendly nature of lantana wood has made it a sought-after alternative to traditional cane and wooden furniture, especially in offices and resorts.







A training programme on making Lantana craft and furniture was conducted for Irula tribes at Senguttiyur village, as a part of the green skill development programme (GSDP) organised by ENVIS Centre of Amrita Vishwa Vidyapeetham. GSDP aims at capacity-building of tribal people to enable them to gain a sustainable livelihood, said Maya Mahajan, the coordinator of Envis Centre. Tribal people were trained to make objects and furniture.

https://www.youtube.com/watch?v= hTecmC7QuGY

News In Simplicity TV Chanel





## My Discovery of Lantana Furniture

#### Mr. Jon William Bauer

Mr Jon Bauer, (a senior citizen from USA who has settled in India ) shared his journey regarding his awareness and contribution to sustainable living through eco friendly Lantana furniture purchasing

In the United States, lantana is a favored ornamental plant. Its delicate



inflorescences of red, yellow, orange. blue and pink grace the garden plantings of sub urbanites throughout the country who flock to garden centers every spring and pay good money for cultivars

with names like Miss Huff and Patriot Cowboy. In most of the country, winters are too cold for the plants to survive. So, they remain annual adornments to our gardens.

In India, however, these non-native plants have become obnoxious and unwelcome guests. crowding out the scrub growth under forest trees and producing only toxic leaves that cannot be eaten by most animals. I was therefore delighted to learn that a method had been developed by Dr.

Maya Mahajan al Amrita University to manage these difficult plants. Unlike the gentle NorthAmerican varieties, these fierce invaders grow study canes several feet in length which are harvested by hill station tribals who then use them to construct attractive rustic furniture. The furniture is quite cheap and very sturdy, the undergrowth of lantana is successfully managed, and the tribals have a new source of revenue. When I heard about this furniture. I made a trip to Amrita. where Dr. Mahajan and some of her assistants showed me the pieces on hand and



took measurements for special-use items. At the end of what could be called a very long day (due to the weather interference on the cane harvesting), I had eighteen pieces at a total cost of less than 40,000 rupees. These include sofa, armchairs, armless chairs, coffee tables, a settee, a bed, bookshelves, and more. The commissioned pieces didn't always come out the way I had intended, but they were all useful and attractive. Everything has been admired by friends around the globe. Lantana furniture has allowed me to help with a forest management project. To provide income to tribals, and to buy attractive cane furniture at a very low price. It has been a happy discovery.

# Insights

# What do the Siruvani tribals say about Lantana Training?"

An informal conversational interview was conducted with the tribals of the Siruvani hills, where they shared their experiences and feedback on the Lantana craft and furniture making training program conducted through Science for Equity, Empowerment and Development, DST and Green Skill Development Program (GSDP), MoEFCC in seven years (2015 to 2021)

On a beautiful sunny morning in May 2021, the tribal participants gathered behind the workshop room in Siruvani Hills to have a casual discussion and share their experiences of the Lantana training program with Dr. Maya and her team, seven years after the project's inception (2015 to 2021).



During the conversation, several women trainees, including Kaliyammal,

Chinnathai, Savithri, Kannama, and Lakshmi, as well as men like Rangasamy Kumara, Rangasamy Pujari, and Vimal, were particularly vocal, while others supported them. They shared details about their village, which was home to 58 families—30 males, 38 females, and 50 children. Kumara shared, "We were once daily wage labourers in agriculture, earning just 250 rupees a day, which wasn't even regular income." Chinnathai added, "We struggled with unreliable income, and it was difficult to afford proper food, medical



expenses, and education for our children. Dr. Maya Mahajan and her team visited our village to discuss Lantana furniture making. At first, we didn't believe that furniture could be made from Lantana, especially since so many people had come to train us before, taken photos, and never returned. But Dr. Maya, Kalidass Anna,

and Kanakraj Anna came back multiple times, shared meals with us, and explained how this training could improve our income, and slowly, we started

to trust them." Later, Vellachi, an active member of the group, encouraged everyone to give it a try. A group of 24 women and 4 m en registered for the Lantana furniture-making training in 2015, which was co nducted at Amrita University under a SEED, DST-funded project.



Saraswati explained, "The program lasted 45 days, and we received a stipend and food allowance. We couldn't believe that the Lantana sticks we collected were transformed into beautiful furniture by Madesh Anna, our trainer from MM Hills. He spoke fluent Tamil and Kannada and lived with us, eating Ragi Kali. He taught us how to collect, boil, peel, bend, and assemble the Lantana

into furniture and craft items. The ENVIS team also provided us with nails, hammers, small cutting tools, cane wire, paint, varnish, and more."



The training allowed them to craft various types of furniture, such as sofas, bookshelves, chairs, vegetable racks, reading tables, computer tables, waste bins, and swings. They showcased their work at exhibitions in Coimbatore (Codissia), Rotary Club, Amrita University, and Ooty, where the public greatly appreciated the products, resulting in significant sales, as Kannama shared.

The following year, a follow-up advanced training was organized under the Ministry of Environment's Green Skill Development Program, with 20 new trainees joining. The program duration was extended to 60 days, with three trainers who taught them how to create new models of chairs, cots, sofa sets,

and utility items. All the furniture and crafts they produced sold out within three months, and the demand for their products grew rapidly.

A third training program, also under the Ministry of Environment's Green Skill



Development Scheme, was conducted for 15 tribal people, focusing on producing small toys and furniture. They were overjoyed when they received an order worth 2 lakh rupees for furniture, including sofas, tea tables, and chairs, from the Ministry of Environment and Forests. This order was made

possible when Ms. Anandi Subramaniyan, Principal Economic Advisor to MoEFCC, personally visited the production site and encouraged them to continue their work, as Rangaswamy Pujari explained.

The training program aimed to provide sustainable livelihood opportunities



for the community by producing furniture and small toys, which were easy to sell. The participants realized that Lantana furniture and toy-making offered an excellent alternative livelihood and a profitable business in addition to their daily wage jobs.



However, Savithri mentioned, "Now that we've exhausted the Lantana resources near our area, collecting the sticks has become a difficult and risky task, as we have to venture deep into the forest, where there are elephants." She added, "We hope the forest department can provide some support. We are willing to continue producing furniture, but we would appreciate Amrita's guidance in marketing our products.

We hope you can help us make this activity sustainable and support us until we establish it as a small-scale business. We kindly request that a permanent Lantana craft center be set up in Siruvani, with the assistance of the Forest Department and Amrita University," said Kumara Rangaswamy

# Crafting Change: Lantana Innovation Takes the National Stage

Amrita EIACP team was specially invited to participate in National level workshop of all EIACP coordinators across India and exhibition on Mission LiFE (Lifestyle For Environment) and green skill development programs organized by Ministry of Environment and Forest and Climate Change at Delhi in the month of January. EIACP Coordinator Dr. Maya Mahajan Programme Officer Sushmita K and GSDP master trainer/tribal community representative Mr. Veerasamy represented the Amrita EIACP team at the workshop conducted in New Delhi on 30<sup>th</sup> January 2024. We had exhibited work done in 7 villages in three states by displaying information and prototypes made during GSDP programs



Amrita EIACP exhibition stall with the lantana products

The team set up an exhibition showcasing the Lantana furniture at the exhibition stall. The Honorable Minister for Environment Shri Bhupendra Yadav visited the stall and lauded the efforts of the Amrita team in showcasing a significant achievement in tribal development and lantana management. Other senior dignitaries of the Ministry visited the exhibition and expressed their appreciation to Dr. Maya and





Dr Maya Mahajan explaining about the lantana furniture to the Honorable Minister

team for successfully embarking on a mission of a sustainable future through efficient utilization of invasive plant. Mr. Veerasamy was appreciated for breaking societal odds and taking forward the outcomes of the GSDP training to a sustainable business model.



The video of the Honorable minister visiting our stall can be found in this YouTube link.

When the exhibition was open to the public after 12pm, many scientists from reputed institutes of MOEFCC, other institutes of eminence, and officials from other ministries visited our stall and were enthralled to



see the miracles of transforming a weed into a commercial product with extensive durability and value.

Naming a few, two IFS officers from the Delhi National Zoo were amazed by how the *Lantana camara* stem has

been utilized as they have seen the menace of Lantana in Indian forest on -the ground. At the end of the exhibition, as a token of appreciation and motivation, many visitors and officials of the Ministry purchased our Lantana furniture and showed their support to scale grassroots efforts of ENVIS at Amrita led by Dr. Maya in uplifting tribal communities to greater heights. This reflected the potential of Lantana

in finding its significant place in the global market and the impacts of the projects taken up at ENVIS. They also appreciated her grit and determination to constantly engage with projects at the grassroots level with global implications.



# Global Spotlight: Innovative Lantana Crafts Shine at the G20

The Ministry of Education hosted the 2nd Education Working Group (EdWG) meeting in Amritsar, Punjab from 15th-17th March 2023. Around twenty eight G20 member countries, guest countries & invited organizations (OECD, UNESCO & UNICEF) participated in the 3-day event consisting of seminar/exhibition and working group meetings.



The seminar on 'Strengthening Research and Promoting Innovation through richer Collaboration' was organized at Khalsa College by IIT Ropar with collaborative inputs from prominent Higher Education Institutions such as IISc Bengaluru, IIM Amritsar, and TISS Mumbai.

An exhibition was organized which provided a physical format to the participating countries along with industry, and academia to present the best



practices in research, innovation, collaboration, and partnership. The EIACP team at Amrita University presented the innovative prototypes of crafts and furniture made by Lantana by tribals and a documentary was

screened about how the Green Skill Development on Lantana craft and

furniture making helped in capacity building of tribals in seven villages in three states. Thousands of students, teachers from local schools, citizens and researches from various institutes visited the exhibition and appreciated and purchased prototypes to display in school exhibitions.





Dr. Maya Mahajan also participated in the panel discussions and shared her insightful remarks on various topics including innovation and education for sustainable The development. panel discussion had participants from France, the United Kingdom,

Australia, India, Oman, South Africa, UNICEF, China and UAE.

The meeting provided a platform to deliberate on the four priority areas including building Capacities, promoting Life-long Learning in the context of the Future of Work and Strengthening Research, and promoting Innovation through richer collaboration and partnerships.

On the second day of the meeting, Dr. Maya Mahajan, coordinator of EIACP RP and Associate Professor at Centre for Sustainable Future was invited to speak on innovation aspect of Lantana craft and furniture making and how community participation can help achieve sustainable livelihood as well as forest conservation and sustainability.



Presentation was followed by question and answer session. Participants expressed willingness to visit the project sites and implement similar projects in different areas infested with Lantana.

# £xhibition of £antana Products









### Posters on Value-Added Products from Lantana

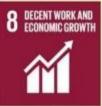
## Lantana furniture and crafts - weed to wealth

### **Project areas**









### Furniture making from Lantana camara





















# Lantana furniture























# Lantana craft

## TOY MAKING PROCESS





















## Lantana craft



























## Way Forward...

As we conclude this book, the transformational journey of the Green Skill Development Program stands as a testament to the power of community-driven ecosystem solutions in addressing environmental challenges. What was once an invasive threat to biodiversity has been repurposed—through value addition—into a source of empowerment and opportunity for tribal communities across the country. Beyond creating sustainable livelihoods, this initiative has also helped restore ecosystems previously overrun by this invasive species by equipping communities with skills in furniture and craft production.

The stories within these pages not only highlight the practical achievements of the course but also reflect the deep interconnection between nature and people. This initiative has demonstrated that conservation and livelihood enhancement can go hand in hand, transforming ecological challenges into sustainable opportunities.

Green Skill Development programs serve as proof of the resilience of both the environment and the communities that coexist with it. While the battle against Lantana continues, integrating initiatives like this with the production of value-added products such as briquettes, particle boards and manure from Lantana, alongside biological control methods will further strengthen efforts to manage its spread effectively. This course has become a model for the future—evidence that with the right approach, challenges can be transformed into pathways for growth, sustainability, and environmental restoration.

We hope that these stories and experiences will inspire and assist other young environmentalists, scientists, researchers, forest officials, social workers, and policymakers in replicating the program in lantana-infested areas across the country. This can contribute to forest conservation while simultaneously creating sustainable livelihoods for communities that depend on the forest.

## Media coverage

#### Better India

https://www.thebetterindia.com/108323/maya-mahajan-eco-friendly-furniture-from-lantana-weed/

### How Tribals Are Making Eco-Friendly & Cheap Furniture Using Weed That Otherwise Destroys Forests

In this project, the tribal community is involved in the mechanical control of lantana by manually cutting, and at the same time, they are trained in making low- cost furniture, handicraft, toys and other utility articles using lantana wood.



By Manabi Katoch

8 years ago



t was the year 2000 when Maya Mahajan, a PhD

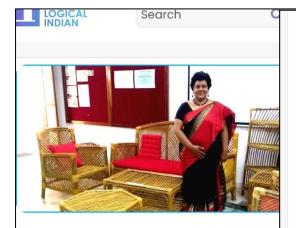
scholar from Coimbatore, was researching on the impact of invasive alien weeds on native flora and ecology in various forest types in the Nilgiri biosphere reserve, including Siruvani hills, Mudumalai, Silent valley and Upper Bhavani.

During her research, Maya came to know about lantana camara -, an exotic weed of South American origin – which was invading different forest areas and posing a serious threat to the native vegetation in Western Ghats, including Siruvani area in Coimbatore.



#### **Logical Indian**

https://thelogicalindian.com/my-social-responsibility/killing-weed-maya-mahajan-tn-tribals/



SOCIAL RESPONSIBILITY

### How To Make Use Of A Forest Killing Weed? Engaging Tribals, This Professor Is Making Eco-Furniture



**News Desk** 

October 9, 2018

You might have spotted *Lantana camara* plants with brightly-coloured flowers in nooks and corners of urban cityscapes. However, inside the pristine forests

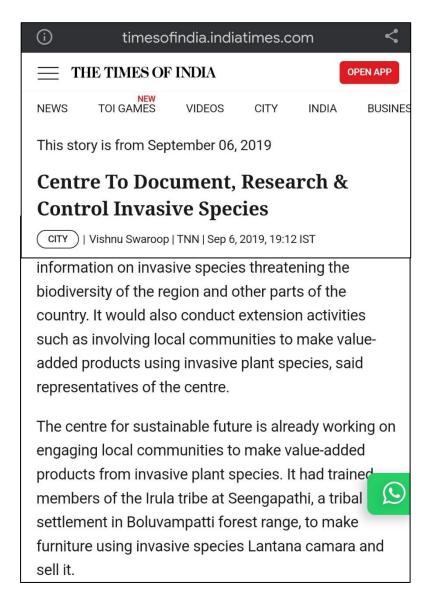
Prof Maya Mahajan with some of the beautiful Lantana furniture

# Local communities were sceptical about Lantana furniture

Born to social worker parents in Maharashtra, Maya had grown up watching her family actively helping the underprivileged people with food, clothing and funds for building houses. Due to her exposure to the masses, she always nurtured the desire to help them live better. "Through my research project on the forest product harvesting, I have had close interaction with the tribal inhabitants of Siruvani, Mudumalai, Wayanad and Silent Valley. I shared a good rapport with the communities. Yet when I approached them with the proposal of making furniture from Lantana, they were reluctant, doubting its feasibility," Maya shares with The Logical Indian. Most of them were complaining about other non-profit organisations who trained them in various skills in the past with the promise of employment but left with no fruitful results. It took Maya a lot of time and effort to convince the tribal villagers.

Dr Maya Mahajan was aware of the increasing demand for eco-friendly furniture. After detailed experimentation, she engaged the tribal people to turn these Lantana weeds into beautiful, and highly durable furniture. Since 2015, due to the efforts of Dr Mahajan and her research assistants Aravind R and Ramkumar, Lantana furniture has gained popularity

http://www.indianwomenblog.org/maya-mahajanassembles-her-weed-furniture-business-in-sync- with-triballife/



#### Read more at:

http://timesofindia.indiatimes.com/articleshow/71012804.cms?utm\_source=conte ntofinterest&utm\_medium=text&utm\_campaign=cppst of lantana furtniture is also much less than bamboo furniture as the raw materials are available for free.



"Not only is it cheap and durable, it will also help conserve bamboo and cane trees, which otherwise are cut down to make furniture."

#### - Maya



Seventy tribals in Singampathy,
Sarkarporathy and Kalkotipathy hamlets
were provided training in lantana furnituremaking for 45 days each in the past one
year. The training will be also provided to
tribals in other three hamlets during the next
two years.

Assistance was provided to the communities

#### Jewels Of Nature: Tribals Learn To Make Ornaments Out Of Lantana Camara

VIDEOS

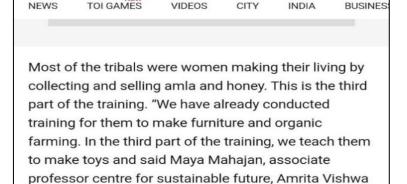
CITY

(CITY) | TNN | Jun 29, 2017, 13:29 IST

— THE TIMES OF INDIA

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as it has natural colours and wax. We have set up a machinery in their village. The villagers can use them once they know the art of making them," Maya explained.

Vidyapeetham. "These products are eco-friendly with

Two tribals from Chengapattinam in Karnataka, who are already making a living by making jewellery and toys, came to teach the tribals the skills required for the craft. The tribals were taught to cut, polish and give the wood different shapes on Wednesday. The training will go on for a month. It will be expanded to other nearby villages such as Sarkarparthy and Tanikandi in the coming months.

https://timesofindia.indiatimes.com/city/coimbatore/jewels-ofnature-tribals-learn-to-make-ornaments-out-of-lantanacamara/articleshow/59360485.cms?from=mdr

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# Tribal people get certified in making furniture from invasive weed

Published - March 24, 2019 09:58 pm IST - COIMBATORE

STAFF REPORTER



Maya Mahajan (centre), Associate Professor, Centre for Sustainable Future, Amrita Vishwa Vidyapeethan with members from the tribal community, who were trained to make furniture items from Lantana camar

Members from the Irula tribal community were awarded certificates after being trained to make furniture out of *Lantana camara*, a harmful invasive species of weed, at Singampathy village in Siruvani hills. The certificates for the course, which is offered under the Green Skill Development

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## Items made of lantana, an attraction in expo

Published - December 13, 2017 09:12 am IST - COIMBATORE

R ARIVANANTHAM











Furniture made in lantana, an invasive weed scrub, by the tribal artisans of western ghats on display for sale at Poompuhar's Crafts of Tamil Nadu exhibition in Coimbatore.

Read in App

Lantana crafts of the tribal people of Singapathy, near Kovai Kutralam, is a new attraction at the Poompuhar's 'Crafts of Tamilnadu' annual exhibition at its main showroom in Coimbatore.



Conserving forests by empowering locals is our Contribution for a Win Win situation for forests and tribals







