



IMPACT OF AGROFORESTRY PRACTICES ON INCOME AND LIVELIHOOD SECURITY: A STUDY ON TRIBAL HOUSEHOLDS OF DHALAI DISTRICT, TRIPURA

Dr. Rajib Malakar¹, Shri Dayananda Reang²

¹Assistant Professor-Senior Grade, State Institute of Public Administration and Rural Development (SIPARD), Tripura, India

²Young Professional, State Institute of Public Administration and Rural Development (SIPARD), Tripura, India

¹Corresponding Author: Dr. Rajib Malakar

Article DOI: <https://doi.org/10.36713/epra25119>

DOI No: 10.36713/epra25119

ABSTRACT

In the context of livelihood sector, agroforestry has emerged as a promising livelihood option that supports both ecological balance and income generation, particularly for the rural vulnerable communities. This study analyses how agroforestry practices have impacted the lives of tribal households in the Ganda Twisa subdivision of Dhalai District, Tripura. A total of 100 agroforestry farmers were randomly selected to understand their current practices, the implementation process, livelihood outcomes, and the overall sustainability of their livelihood.

The standard agroforestry model adopted in the study area combines agarwood, are canut, and pineapple, and has been widely accepted by the beneficiaries. Several farmers have also added other crops on their own to increase diversified income. The study observed that, about 78% of the participants have already started earning supplementary income, mostly from pineapple, grown as an intercrop. Overall, agroforestry has significantly contributed to livelihood through long-term income security through agar cultivation, diversified income sources, improved food and nutritional support, and increased employment opportunities.

At the same time, several challenges were identified, including limited technical knowledge, financial constraints for fencing in the farm land, inconsistent access to quality planting materials, and market linkages. Despite these challenges, an encouraging 92% of the farmers were found optimistic and were ready for expanding agroforestry on their land. The study recommends continued extension services, market access and training as needed to achieve the full potential of agroforestry as a rural sustainable development model in Tripura.

KEY WORDS: Agroforestry, Livelihood Security, Income Diversification, Tribal Communities, Sustainable Rural Development

I. INTRODUCTION

Globally, agriculture is increasingly challenged by environmental degradation, declining soil fertility, and the impact of climate change. Commercial mono-cropping is still not meeting our ecological and livelihood goals, and this has resulted in increased interest in agroforestry—a form of land use that combines trees, crops, and sometimes livestock within the same system (Nair & R., 1993). A few examples of the international organizations such as (the Food and Agriculture Organization (FAO), the International Centre for Research in Agroforestry (ICRAF), and the Intergovernmental Panel on Climate Change) that have begun to acknowledge agroforestry as a climate-smart practice that could contribute to the attainment of Sustainable Development Goals (SDGs) such as enhancing food security, rehabilitating degraded land, and reducing net emissions of greenhouse gases (Gerard & Buttoud, 2013). Approximately 1.2 billion hectares of agriculture worldwide have tree-based systems (predominantly found in Asia, Africa, and Latin America) that have shown their effectiveness as an approach to produce resilient ecosystems and livelihoods (Nair & R., 1993). Because agroforestry is designed between conservation and development, it presents a reasonable option for sustainable land management.

India has a long-standing tradition of agroforestry as part of its culture and rural economy. In 2014, India took a very good initiative by launching the world's first National Agroforestry Policy to increase its adoption, reduce restrictions, improve access to planting material, and improve farmer support (National Agroforestry Policy, 2014). Throughout India, there are many types of agroforestry systems that exist, from the silvipastoral systems found in Rajasthan to agri-horticultural systems in the south and alternate (moonda) systems in the north-east for shifting cultivation (Viswanath, Lubina, Subbanna, & Sandhya, 2018). These systems also provide low-cost



timber, fodder, and dietary fruits, fuelwood, while simultaneously contributing to improved soil health and watershed protection (Deb, Deb, Sarkar, & Mujumdar, 2014). The National Mission for Sustainable Agriculture (NMSA) and Green India Mission (GIM) at the national level also support a pathway for Agroforestry to compete for equitable compensation to mitigate land degradation and climate change. Northeast India has used agroforestry practices locally for hundreds of years through its biodiversity, customary practices, and common property natural resources.

Agroforestry systems provide both ecological security and sustainable livelihoods in fragile regions such as Northeast India. In Tripura state of India, agroforestry has linked development and conservation in societies that are agriculturally dependent with the use of forested products since time immemorial. Over 60% of Tripura's geographical area is under forest cover, and much of the rural population depends on forests and forest-based activities. In regards to the socio-economic landscape in Tripura, agroforestry provides a diversifying income source and livelihoods for marginal and smallholders. Agroforestry systems were promoted through the Forest Department with external collaboration, like JICA, IGDC funded Projects, etc. When agroforestry projects were implemented through combined wage-based interventions, e.g., Mahatma Gandhi National Rural Employment Guarantee Schemes, this essentially creates new livelihoods, decreases seasonal unemployment, and provides opportunities to build agricultural assets in rural economies.

This present study takes place in Dhalai District of Tripura with a focus on agroforestry-based livelihoods, which are implemented under the Japan International Cooperation Agency (JICA) Sustainable Catchment Forest Management (SCATTFORM) project in conjunction with Mahatma Gandhi NREGS. The research assesses the sustainability and impact of the Agarwood, Arecanut, and Pineapple cultivation model for income generation patterns and livelihoods at the level of beneficiary households. The research explored beneficiaries' attitudes toward agroforestry, the support services they received, and the proposed future expansion opportunities in the identified study area.

II. OBJECTIVES OF THE STUDY

- i. To assess the current status and practices of agroforestry-based livelihood models in the selected study area.
- ii. To assess the implementation process of agroforestry models and examine their impact on rural livelihoods.
- iii. To identify key challenges and assess support needs for scaling up agroforestry-based livelihoods.

III. MATERIALS AND METHODS

3.1 Description of the Study Area

The study was conducted at Ganda Twisa, which is a sixth secluded area under the Tripura Tribal Area Autonomous District Council (TTAADC) and predominantly tribal subdivision of Dhalai district of Tripura. The area is largely hilly and forested. Ganda twisa consists of several semi-nomadic agrarian societies with tribes like Tripuri, Reang, Chakma, etc, relying on the natural resources base for their livelihoods. The livelihood of the tribal societies is agrarian-based. The majority of tribal communities rely on subsistence agriculture, jhum (shifting cultivation), the use of natural resources from the forests, and agroforestry for their livelihoods. Agriculture is the main economy, and in this region, jhum shifting cultivation is pretty predominant.

In Ganda Twisa subdivision, the Tripura Forest Department is implementing two externally funded projects, one from the Japan International Cooperation Agency (JICA) and the other from the Indo-German Development Cooperation (IGDC). The JICA-SCATTFORM project is a partnership and sustainable forest management project allowing the Government of Tripura, the Forest Department, and JICA to promote sustainable forest management with agroforestry, enhancing rural livelihoods. In this project, each beneficiary receives a 0.5-hectare plot of RoFR land from the Forest Department along with comprehensive support, including plantation materials, technical guidance, and labour assistance through MGNREGA. The standardized plantation package includes 480 Agarwood, 400 Arecanut, and 3,000 Pineapple plants per beneficiary. These crops are designed to provide income at different stages—pineapple in the short term (1–2 years), arecanut in the medium term (6–8 years), and agarwood in the long term (10–15 years). Additionally, MGNREGA ensures 100 days of employment for related activities such as land preparation and maintenance. Overall, this convergence approach promotes both immediate livelihood support and long-term sustainability for the beneficiaries.

3.2 Methodology

The primary respondents of the study comprised agroforestry beneficiaries who had been supported under the Agarwood, Arecanut, and Pineapple model. In order to verify practice at the field level, institutional support and constraints, officials of the Forest Department, as well as members of the Joint Forest Management Committees (JFMC), were also consulted. Quantitative data were collected using a structured interview schedule from the



beneficiaries, while key informant interviews with staff of the Forest Department were used to collect qualitative information. Field observations helped to verify stated practices.

For this study, a total of 100 agroforestry beneficiaries under the JICA-SCATTFORM project were randomly selected from Ganda Twisa and Raishyabari Ranges of the Ganda Twisa Subdivision in Dhalai District.

IV. RESULT AND DISCUSSION

4.1 Profile of the Agroforestry Beneficiaries

The details of the agroforestry beneficiaries studied in this study are shown in table-1. The table indicated a male-dominated composition with 92% of respondent beneficiaries identifying as male, indicating a gender imbalance with respect to control over land and decision-making. The mean age of the respondents was 37 years, while the largest group of overall participants (38%) were also within the age group of 30–39 years. Most of the respondents displayed limited education levels, where 66% of respondents indicated either only primary education or no schooling. The occupations are dominated by farmers (46%) and daily wage (32%) laborers who indicate a strong reliance on land-based and informal incomes. The majority of respondents are considered smallholders, comprising 66% of landowners, owning less than 5 Kani (0.81 hectare) of land, and emphasizing limited opportunity for agriculture on a large scale, while privileging the adoption of high-value crops like agarwood. The mean annual household income was ₹116,250, which has a significant standard deviation (SD ₹65,120), while still being reflective of a low and uneven economic profile.

Table-1: Details of the agroforestry beneficiaries

Details of the Household		Total (N=100)	Percentage (%)
Gender	Male	92	92
	Female	8	8
Age Profile	20–30	26	26
	30–40	38	38
	40–50	22	22
	50–60	14	14
Caste	Non- ST	0	0
	ST	100	100
Literacy	No Formal Education	36	36
	Primary	30	30
	Secondary	12	12
	Higher Secondary	20	20
	Graduate	2	2
Primary Occupation	Farmer	47	47
	Daily Wage Labour	33	33
	Entrepreneur	10	10
	Private/Govt. Service	10	10
Landholding Size	Up to 3 Kani	34	34
	4 – 5 Kani	32	32
	6 – 7 Kani	22	22
	7 Kani and above	12	12
Annual Household Income	Less than ₹50,000	8	8
	₹50,000 – ₹74,999	16	16
	₹75,000 – ₹ 99,999	26	26
	₹100,000 – ₹149,999	30	30
	₹150,000 – ₹199,999	12	12
	₹200,000 – ₹299,999	4	4
	₹300,000 and above	4	4

Source: Field Survey, 2025

4.2 Agroforestry Practices and Models

(i) Agroforestry model adopted by the beneficiaries

All the respondents (100%) were found benefited under the Japan International Cooperation Agency (JICA) funded Sustainable Catchment Forest Management (SCATTFORM) Project in convergence with the Mahatma Gandhi National Employment Guarantee Scheme (MGNREGS) by providing man-days for agroforestry beneficiaries. There are 5 models under the (SCATTFORM) Project. This model integrates the cultivation of Agarwood, Arecanut, and Pineapple under a structured format promoted by the Forest Department. The income generation potential in this model is designed across three staggered layers:



(a) Short-Term Income: Pineapple cultivation provides beneficiaries with short-term income within 1–2 years. It has strong commercial potential in the food processing industry and enjoys steady demand in both local and national markets.

(b) Mid-Term Income: Arecanut offers mid-term economic benefits after 6–8 years. It is a high-demand crop, particularly among tribal communities, and is well-suited for cultivation in hilly regions.

(c) Long-Term Income: Agarwood serves as a long-term income source with returns expected after 10–15 years through the extraction of high-value agar oil. In the North and Unakoti districts of Tripura, local communities are already engaged in agar cultivation, reflecting its cultural relevance and economic viability. The promotion of agar plantations aligns with the recently formulated State Agar Policy by the Government of Tripura.

(ii) Crop Composition under Agroforestry Practices

The analysis revealed that 42% of the respondents followed the core agroforestry model comprising Agarwood, Arecanut, and Pineapple, whereas 58% of the beneficiaries diversified their plots by incorporating additional crops such as Mango, Banana, Jackfruit, Teak, and others. The respondents reported that this diversified approach enhanced land productivity and enabled the generation of multiple income streams. It is also noteworthy that the beneficiaries introduced these additional crops on their own initiative, without receiving any technical guidance or support from the Forest Department.

(iii) Experience Profile of Agroforestry Beneficiaries

The study observed that, majority (54%) of the beneficiaries have been practicing agroforestry for 2 years, followed by 28% for 3 years, and 18% who started just 1 year ago. This suggests that agroforestry adoption in the area is relatively recent, with over 70% of participants having less than three years of experience under the current agroforestry models. The data shows early-stage adoption of agroforestry, with most farmers having just 1–2 years of experience. Continuous training and timely support are essential to improve model retention, survival rates, and long-term success.

4.3 Implementation Process of Agroforestry Models

(i) Government supports for agroforestry beneficiaries

To improve agroforestry practices, farmers need support from the government. Under JICA funded SCATTFORM Project each beneficiary received 3,000 Pineapple plants, 1,000 Arecanut saplings, and 480 Agarwood saplings. Table-2 reviews the support received by farmers under agroforestry programmes. The findings show that while most received planting materials, very few got technical help, and none received training—pointing to gaps in capacity-building.

The results reveal that 68% of beneficiaries received only free seedlings/Saplings, while 32% received seedlings along with technical advice, and none received any training or workshop support. Only a few and random beneficiaries have received Technical Assistance. This indicates a clear imbalance in the delivery of support services, focusing more on input distribution than capacity building.

Table-2: Support received for Agroforestry from Government/Others

Type of Support Received	Number of Respondents (f)	Percentage (%)
Only Free Seedlings	68	68
Free Seedlings + Technical Advice	32	32
Training / Workshops	0	0
Total	100	100

Source: Field Survey, 2025

(ii) Timely Supply of Saplings

Getting saplings at the right time is important for proper planting and good crop growth. Among the respondents, 62% reported receiving saplings or planting materials at the actual season of cultivation. However, 28% were unaware of the distribution schedule, and 10% stated that they did not receive the materials during the correct season. This indicates that while the majority experienced timely distribution, a considerable portion lacked clarity or access to timely planting support. The findings suggest that although the majority received timely support, the significant percentage of "Not aware of sapling distribution schedule" responses points to a communication gap and the need for better orientation regarding sapling distribution schedules.

(iii) Post-Plantation Survival of Distributed Saplings

The survival rate of saplings serves as an important indicator of the success of plantation efforts. Table-3 presents the survival status of Agarwood, Arecanut, and Pineapple plants distributed to farmers under the project.



The study found that Pineapple recorded the highest survival rate at 84.9%, with an average of 2,547 plants surviving per beneficiary. Arecanut showed a survival rate of 70.4%, with about 704 plants surviving per beneficiary, while Agarwood had the lowest survival rate of 56.4%, averaging 271 surviving plants per beneficiary. In general, the findings indicate a satisfactory level of survival among the distributed saplings, particularly for Pineapple and Arecanut. However, the comparatively lower survival rate of Agarwood suggests the need for improved post-plantation care, technical guidance, and monitoring support to ensure better establishment of the species.

Table-3 : Survival of Distributed Saplings

Name of Plant	Total Beneficiaries	Total Plants Provided	Plants Provided per Beneficiary	Total Survived Plants	Average Plants Survived per Beneficiary	Average Survival Rate (%)
Agarwood	100	48,000	480	27,068	270.7	56.4
Arecanut	100	100,000	1,000	70,400	704.0	70.4
Pineapple	100	300,000	3,000	254,700	2,547.0	84.9

Source: Field Survey, 2025

4.4 Impact Assessment of Agroforestry Practices

(i) Contribution of Agroforestry Practices on Rural Livelihoods

This study examines various dimensions such as income generation, employment opportunities, food security, and long-term economic stability derived from agroforestry interventions. The analysis of Table-4 highlights the multidimensional benefits of agroforestry interventions in enhancing rural livelihoods. Respondents’ perceptions were ranked based on the frequency of responses, which reveals both the economic significance and developmental potential of agroforestry practices.

The highest-ranked contribution is long-term economic stability and poverty reduction (Rank 1; 92% of respondents), indicating that beneficiaries perceive agroforestry as a reliable source of sustained income and economic security. This underscores the long-term viability of integrating tree-based systems with agricultural crops. The scope of income diversification (Rank 2; 86%) and employment opportunities (Rank 3; 74%) were also highly rated, suggesting that agroforestry helps reduce dependency on a single livelihood source while generating new forms of rural employment, particularly in plantation, maintenance, and post-harvest operations. Additional household income generation (Rank 4; 78%) further supports the view that agroforestry interventions enhance overall household income levels through the sale of diversified produce such as fruits, timber, and non-timber forest products. Meanwhile, food and nutritional security (Rank 5; 62%) reflects the contribution of agroforestry to household-level food diversity and resilience against seasonal food shortages.

In the mid-tier ranking, economic risk reduction (Rank 6; 44%) highlights agroforestry’s potential to stabilize household economies against climatic and market uncertainties. However, lower-ranked areas such as fuelwood generation (Rank 7; 34%) and women’s participation and empowerment (Rank 8; 8%) suggest that the social and energy-related benefits of agroforestry are not yet fully realized in the study area.

It is also important to emphasize that most beneficiaries are still new to agroforestry, and the benefits observed so far represent the early-stage impacts of the initiative. With continued technical training, financial support, and market facilitation, the long-term livelihood outcomes—especially in terms of income, employment, and resilience—are likely to strengthen substantially over time.

Table-4: Contribution of Agroforestry Practices on Rural Livelihoods

Sl. No	Contribution of Agroforestry	Responses*		Percentage based on answers (%)
		N	Percentage based on responses	
1	Additional household Income Generation	78	78	16.32
2	Scope of Income diversification	86	86	17.99
3	Employment Opportunities	74	74	15.48
4	Food & Nutritional Security	62	62	12.97
5	Fuelwood generation	34	34	7.11
6	Economical Risk Reduction	44	44	9.21
7	Women’s Participation & Empowerment	8	8	1.67
8	Long-term Economic Stability and poverty reduction	92	92	19.25
Total (Respondents)		100	478	100

*Calculated by the researcher



(ii) Income Generation Activities from Agroforestry

The analysis of Table–4 reveals that 78% of the respondent beneficiaries have started earning income from their agroforestry farms. It was observed that this income primarily originated from pineapple cultivation, which was introduced as an intercrop between the lines of agarwood and arecanut plantations.

Among the pineapple growers, the mean additional household income generated through agroforestry practices was found to be approximately ₹16,538 per annum, indicating that participating households have achieved a modest yet meaningful enhancement in income through these interventions. A closer look at the income distribution shows that 43.59% of the beneficiaries earned between ₹10,001 and ₹20,000, while 35.9% earned above ₹20,000. The farmers earning less than ₹10,000 (20.51%) were mostly new entrants to agroforestry, whose plantations are still in the early stages of productivity.

A moderate level of income variation was also observed among the beneficiaries. The calculated standard deviation of ₹7,353 indicates that individual incomes vary by approximately \pm ₹7,300 from the mean, largely due to differences in landholding size, and duration of participation in agroforestry activities.

4.5 Challenges and Sustainability of Agroforestry

(i) Challenges of Agroforestry Farmers

Farmers who practiced agroforestry were found to have faced a variety of challenges that affected both the implementation and sustainability of their plantations. The study identified four major challenges experienced by the agroforestry beneficiaries in the study area.

The most significant issue reported was technical knowledge gaps (40%), which reflected the absence of adequate capacity-building initiatives by the implementing agency. Many farmers lacked proper training and technical guidance on critical aspects such as site preparation, planting techniques, and disease management, which ultimately limited the success of their agroforestry ventures.

Maintenance and fencing difficulties (26%) emerged as another major problem, as a considerable number of farmers lacked the financial resources required to install or maintain protective fencing. This left their plantations vulnerable to damage by grazing animals and natural hazards.

Additionally, poor access to quality planting materials (18%) was a persistent concern among respondents. The low survival rate of agarwood saplings, as observed in the field, substantiated these complaints and pointed to the need for reliable sources of high-quality seedlings.

Lastly, market access and pricing challenges (16%) were commonly reported, particularly among pineapple growers. Due to inadequate market linkages and weak local demand, many farmers faced difficulties in selling their produce at reasonable prices, resulting in unstable income.

Overall, these findings emphasized the need for comprehensive technical training, timely supply of quality inputs, and the creation of effective market linkages to strengthen the agroforestry sector and ensure sustainable livelihoods for the farmers involved.

(ii) Sustainability of the Agroforestry Practices

Understanding the future plans of farmers provides valuable insights into the long-term sustainability of agroforestry initiatives. The study revealed that a large majority (92%) of the beneficiaries expressed their willingness to expand agroforestry activities, reflecting their confidence and satisfaction with the practice. Only 8% of the respondents remained undecided about whether to expand or not, while none opposed further expansion.

This strong interest for continuing and scaling up agroforestry suggests that farmers in the study area perceive it as a profitable, sustainable, and livelihood-enhancing option.

(iii) Farmers' Support Needs for Agroforestry Promotion

In the study area, most farmers were relatively new to agroforestry practices and therefore required substantial handholding support during the initial stages of implementation. The majority of respondents (94%) emphasized the need for better training and extension services to enhance their technical knowledge and management skills. Additionally, 86% of the farmers expressed the need for access to credit facilities or subsidies to overcome financial constraints related to plantation establishment and maintenance.



A considerable proportion of respondents also highlighted the importance of market linkage support (62%) and the extension of Mahatma Gandhi NREGS man-days (54%), which could help them sustain labour and maintenance activities during the early years. Furthermore, 48% sought legal and technical assistance, while 34% identified the need for support in land fencing, reflecting diverse priorities among farmers.

Overall, these findings underline the necessity for a comprehensive and multi-dimensional support system that combines capacity building, financial assistance, technical guidance, and market facilitation to effectively promote and sustain agroforestry in the region.

5. RECOMMENDATIONS

Based on the findings of the study the following recommendations are proposed to enhance the effectiveness, sustainability and livelihood impact of the agroforestry practices in Tripura –

1. It is suggested that regular training, orientation programme and exposure visit be conducted by the implementing agencies to improve understanding of the agroforestry beneficiaries. For practical learning farmers field school or demonstration plots may be introduced.
2. The timely distribution of quality saplings should be ensured. It is also suggested to establish community (JFMC of Self-Help Group) managed decentralized nurseries to ensure continuous availability of quality planting materials, particularly for high-value species such as agarwood, arecanut etc.
3. The study found that many farmers lacked adequate financial resources to construct or maintain fencing around their farmland. Therefore, it is suggested that financial assistance or subsidies be provided for fencing and maintenance.
4. To address marketing challenges, it is suggested that effective market linkages be developed through Producers Groups (PGs), Farmers' Producer Organizations (FPOs), and partnerships with private buyers or agro-industries. Cluster level value addition and collective marketing initiatives would help farmers secure fair prices and stable income.
5. It is suggested to strengthen the linkages between agroforestry farmers, banks and Tripura Rural Livelihood Mission for inclusive financial support.
6. Women members of households should be encouraged to actively participate in agroforestry activities through targeted training, entrepreneurial support, and group-based activities. Self-Help Groups (SHGs) may be formed with the women of the households for nursery management, value addition, and marketing of agroforestry produces.
7. It is suggested that inter departmental convergence among key departments—such as Forest, Rural Development, Agriculture (including of Horticulture) and Industry be enhanced to ensure effectiveness in programme delivery.
8. The State Government may also consider policy measures that promote agroforestry under state livelihood and climate-resilient development programmes.

6. CONCLUSION

The study found that agroforestry has become an important and promising livelihood option for tribal households in Dhalai District, Tripura. Through the integration of tree-based and agricultural components such as Agarwood, Arecanut, and Pineapple, the JICA-supported SCATTFORM Project has shown how agroforestry can enhance household income, diversify livelihoods, and promote sustainable land management in a fragile ecological setting. Although the economic benefits are still at an early stage, many farmers have already started earning additional income from pineapple cultivation. The real potential of the model will unfold over time as the long-term crops like Agarwood and Arecanut mature. The staggered income structure—offering short-, medium-, and long-term returns—provides farmers with a stable and sustainable income base, helping reduce poverty and dependence on shifting cultivation.

At the same time, the study brought to light several challenges faced by the beneficiaries, such as limited technical knowledge, poor access to quality planting materials, lack of proper fencing, and weak market linkages. These issues highlight the need for continuous capacity-building, timely supply of quality inputs, and strong institutional support to improve the overall effectiveness of agroforestry interventions. Encouragingly, most farmers expressed their willingness to expand agroforestry, reflecting their positive experience and confidence in its long-term benefits.

For agroforestry to sustain its impact, there is a clear need to strengthen training and extension services, improve access to credit and subsidies, and establish robust market linkages that can connect farmers to better value chains. The convergence approach adopted under MGNREGS and externally funded projects like JICA-SCATTFORM has already demonstrated success in generating employment, creating assets, and ensuring livelihood security.



In essence, agroforestry in Dhalai District represents not only an environmentally sound land-use system but also a pathway toward improved income, livelihood resilience, and ecological stability for tribal communities. With continued institutional guidance and farmer-focused support, agroforestry can play a transformative role in promoting sustainable rural development in Tripura.

7. REFERENCE

1. Bora, S. S., Sharma, K., Borah, K., Saud, R., Konwar, M. J., & Rahman, S. W. (2019). Problems and Prospects of Agroforestry Systems in NE India. *Bulletin of Environment, Pharmacology and Life Sciences (BEPLS)*, 152–161.
2. Deb, S., Deb, D., Sarkar, A., & Mujumdar, K. (2014). Community Structure, Biodiversity Value and Management Practices of Traditional Agroforestry Systems in Tripura, North East India. *Journal of Biodiversity Management & Forestry*, 2.
3. Dhyani, S.K., Handa, A.K., & Uma. (2013). Area Under Agroforestry in India: An Assessment for Present Status and Future Perspective. CIFOR-ICRAF Policy Brief, 1–8 .
4. Gérard, & Buttoud. (2013). *Advancing Agroforestry on the Policy Agenda: A guide for decision-makers*. Rome: FAO.
5. Government of India, Department of Agriculture & Cooperation, Ministry of Agriculture. (2014). *National Agroforestry Policy*. New Delhi: Government of India, New Delhi.
6. Kumar, B.M., & Nair, P. K. (2011). Carbon sequestration potential of agroforestry systems: Opportunities and challenges. *Advances in Agronomy*, 263–317.
7. Majumdar, K., & Datta, B. K. (2018). Forest type classification of Tripura in Northeast India: an overview on historical aspects and present ecological approaches. Dehra Dun: M/s Bishen Singh Mahendra Pal Singh.
8. Mercer, E. D., Miller, & P., R. (1998). Socioeconomic Research in Agroforestry: Progress, Prospects, Priorities. *Agroforestry Systems*, 177–193.
9. Nair, & R., P. K. (1993). *An Introduction to Agroforestry*. Dordrecht: Springer Science & Business Media.
10. Nath, J. A., Brahma, B., & Das, A. K. (2016). Agarwood plantation as a livelihood option for farmers in Northeast India. *Tropical Plant Research*, 307–310.
11. P.K.R, N. (2007). The coming of age of agroforestry. *Journal of the Science of Food and Agriculture*, 1613–1619.
12. Sarveswaran, S., Singh, V., Johar, V., & Raghunathan, C. (2023). Agroforestry: A Way Forward for Sustainable Development. *Ecology, Environment and Conservation*, S300–S309.
13. Sharma, P., Singh, M., Tiwari, P., & Verma, K. (2017). Agroforestry Systems: Opportunities and Challenges in India. *Journal of Pharmacognosy and Phytochemistry*, 2411–2417.
14. Singh, S., & Pegu, S. (2012). Role of agroforestry in livelihood security of tribal farmers in Northeast India. *Indian Journal of Agroforestry*, 33–37.
15. Tiwari, B., & Kayenpaibam, P. (2006). Ecological impact of joint forest management in Tripura, India. *International Journal of Environment and Sustainable Development*, 23–34.
16. Ulman, M., Dutta, D., Borah, A., Nath, A. J., Sahoo, U. K., & Das, A. K. (2022). Traditional Agroforestry Systems and Practices of Assam. *Bulletin of Environment, Pharmacology and Life Sciences (BEPLS)*, 13–21.
17. Viswanath, S., Lubina, P. A., Subbanna, S., & Sandhya, M. C. (2018). Traditional Agroforestry Systems and Practices: A Review. *Advanced Agricultural Research & Technology Journal*, 18–29.