Original Research Article

Role of Social Forestry Programme in the livelihoods of farmers in Thanjavur District, India

Abstract

Social forestry programs have been implemented to restore ecological balance, improve livelihoods, and enhance the overall well-being of rural communities. This study aimed to assess the impact and social benefits of the social forestry program in Thanjavur district, Tamil Nadu. A survey of 150 farmers was conducted in Orathanadu and Thanjavur blocks to gather data on socio-economic characteristics and perceived social benefits of the program. Data was collected through structured interviews and focus group discussions with farmers. Mean and simple percentage analysis were used to analyze the quantitative data. The findings revealed that the majority of respondents were middle-aged farmers with medium to high levels of education and economic status. Most farmers had a positive attitude towards the program and perceived it as a valuable source of additional income and environmental benefits. The study also highlighted the importance of extension services in facilitating the adoption of social forestry practices. The social forestry program in Thanjavur district has contributed to increased access to fue lwood, fodder, and timber, improved soil and water conservation, and enhanced biodiversity. To maximize the benefits of social forestry, it is essential to strengthen extension services, provide financial incentives, and promote community participation. By addressing these challenges and capitalizing on the opportunities, social forestry can play a crucial role in sustainable development and environmental conservation in the region.

Key words: social forestry, social benefits, biodiversity, forestry

1. Introduction

"Forests, as the lifeblood of our planet, play a crucial role in sustaining human life." However, increasing population pressure, deforestation, and unsustainable practices have led to a decline in forest cover, especially in regions like Thanjavur District. To address this issue, social forestry programs have been implemented to restore ecological balance, improve livelihoods, and enhance the overall well-being of rural communities.

'Social Forestry' was first used by Mr. Westoby in Ninth Commonwealth Forestry Congress in 1968 at Delhi. As per his definition SF is a forestry which aims at continuously providing protection and recreation benefits for the community. SF means the management

and protection of forests and afforestation on barren lands with the purpose of helping in the environmental, social and rural development (Negi, 1986).

Social forestry is a multi-faceted approach that involves the planting and management of trees on public and private lands. It aims to meet the diverse needs of rural communities, including fuelwood, fodder, timber, and environmental services.

Objectives of Social Forestry

- Improve the environment for protecting agriculture from adverse climatic factors and thereby reducing the pressure on the conventional forest area.
- Increase the supply of fuel wood, small timber for rural housing, fodder for livestock, and minor forest produce for local industries.
- Increase the natural beauty of the landscape; create recreational forests for the benefit of rural and urban population.
- Provide jobs for unskilled workers and control the out migration.
- Check problems like soil erosion, loss of biodiversity, depletion of ground water, over grazing, etc.
- To raise the standard of living and quality of life of the rural and urban people (NCA-1973)

Key Components of Social Forestry

1. **Farm Forestry:** Encourages farmers to plant trees on their land, providing additional income sources and improving soil health.
2. **Agro-Forestry:** Integrates trees with agricultural crops, enhancing biodiversity, soil fertility, and microclimate.
3. **Community Forestry:** Involves community participation in tree planting and management, fostering a sense of ownership and responsibility.
4. **Extension Forestry:** Focuses on planting trees on public lands like roadsides, riverbanks, and wastelands, improving environmental quality and providing ecosystem services.

Forest Cover in Tamil Nadu

Forest cover plays a crucial role in maintaining mountain ecology and economy, particularly with respect to soil, water, and environmental conservation. The state's forest cover is 26,419 sq. km, which is 20.31% of its total geographical area.

Table 1: Classification of land (2020-2021)

S. No.	Classification of Land	Area in ha.
1.	Total geographical area	339657
2.	Forest	3390
4.	Barren & uncultivable area	2149
5.	Land put to non-agricultural uses	81750
6.	Cultivable waste	12085
7.	Permanent Pastures & other grazing lands	1199
8.	Miscellaneous tree crops & groves not included in the net area sown	5988
9.	Current fallow	11006
10.	Other fallow	26549
11.	Net area sown	195541

- **Source:** season-crop-report-2021-22.pdf

One of the important activities of the social forestry program is to increase forest cover by introducing tree crop cultivation among farmers in Tamil Nadu through the Tamil Nadu Forest Department.

Given the aforementioned context, this research aims to:

- Study the profile characteristics of beneficiaries under the social forestry program.
- Assess the social benefits generated by the social forestry program.

2. Review of Literature

The National Commission on Agriculture (1976) introduced the term "Social Forestry," defined as the development of firewood resources, the supply of fodder and small timber, and the stabilization of hydrological and soil systems.

The Commission recommended that social forestry should:

- Meet the requirements for agricultural timber and fuelwood.
- Ensure the availability of grazing lands and grass.
- Address the recreational needs of the community.

The concept of social forestry was introduced to influence people's attitudes toward trees (Guggenhemik & Spears, 1991).

A comprehensive and critical review of past research in social forestry provides a solid foundation for scientific investigation. The literature review is organized sequentially to address the following key aspects:

- Profile characteristics of beneficiaries
- Benefits and impacts of social forestry on farmer livelihoods

It is essential that future research includes social variables, particularly in regions with high biological and cultural diversity, such as the Asia–Pacific and Latin America. These regions not only play a crucial role in the development of new research but also face significant challenges in terms of environmental degradation and the expansion of agricultural frontiers, due to their abundant resources and rapid demographic growth (S. Luna-Vargas et al, 2024).

Profile characteristics of the beneficiaries

Karyawan et al. (1996) observed that age, education, income, and availability of labor influenced participation in social forestry programs. Their study also revealed that 70% of respondents had a positive and supportive perception of social forestry.

Singhal and Kumar (1997) indicated that farm size, household size, and the number of livestock stall-fed by the household significantly and positively impacted the adoption of social forestry for income generation and meeting daily needs for fuel, food, and fodder.

Sumathi and Alagesan (1998) identified a positive and significant relationship between educational level and the adoption of new agricultural production methods.

Kumar et al. (2004) found that the level of education and financial status of respondents significantly and positively impacted the adoption of various viable agroforestry models.

Benefits of Social Forestry in the Livelihoods of Farmers

Suyanto (1995) found that social forestry had three positive impacts: good growth of plantation forests, additional income for foresters, and the creation of new labor opportunities for local communities.

Karyawan et al. (1996) found that social forestry practices created 60-180 man-days of work annually. These activities contributed up to 23.24% of respondents' annual income.

Pandey (1996) reported that encouraging people to participate in livelihoods with social forestry practices could prevent indiscriminate forest cutting for fuelwood and building materials. It can also provide sustainable livelihoods to rural populations.

Narain et al. (1997) found that agroforestry helped conserve water and prevent soil nutrient and moisture loss. This ultimately enhanced agricultural productivity and the economic upliftment of rural communities.

Kumar et al. (1998) observed that planting multipurpose trees with barley in arid ecosystems increased crop productivity and provided additional income sources for rural populations.

Bhatt and Mishra (2003) reported increased productivity of both agricultural and horticultural crops with the adoption of agri-horticulture and agroforestry practices. They observed a synergistic interaction between forest trees and crops, enhancing economic benefits for rural people.

Sood (2006) emphasized a holistic approach to agroforestry development. He found that agroforestry adoption was significantly influenced by crop diversification, agricultural production, food sufficiency, agricultural income, off-farm income, total household income, and the number of livestock units.

Mohammad et al. (2008) suggested that participants generated additional forest-based income, significantly contributing to improving the socio-economic conditions of rural poor.

Rakatama, A., & Pandit, R. (2020) indicated that economic opportunity is the main benefit of social forestry implementation, while social and environmental challenges seem to be the major implementation barriers.

3. Materials and Methods

Description of Study area:

Thanjavur district is one of the 38 districts in the state of Tamil Nadu. Located on the east coast, it is primarily an agrarian district situated in the Cauvery River delta. The district comprises 14 blocks and 589 village panchayats.

Farmers in this district primarily cultivate rice, followed by pulses, vegetables, cotton, and sugarcane. Additionally, tree crops like Eucalyptus (Eucalyptus globulus), Casuarina (Casuarina equisetifolia L.), Bamboo (Bambusa vulgaris), Teakwood (Tectona grandis), and Red sandalwood (Pterocarpus santalinus) are also cultivated.

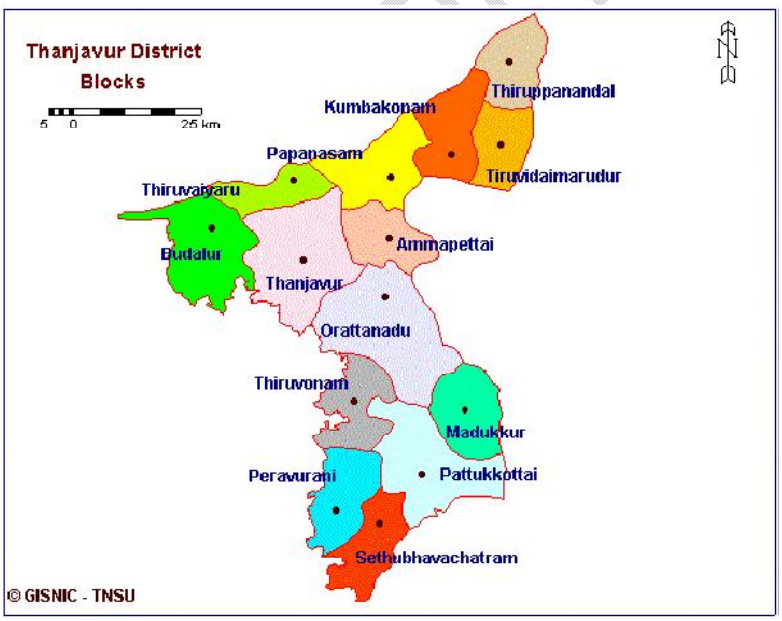
Table 2: Tree crops cultivated by farmers in Thanjavur District

S. No.	Particulars	Area in ha.

1.	Total area under tree crops	2219
1.1	Irrigated	665
1.2	Unirrigated	1554
2.	Eucalyptus	1404
3.	Casuarina	230
3.	Bamboo	129
4.	Teakwood	419
5.	Red sandalwood	33

- **Source:** Season and Crop Report 2020-21

The study area encompassed two blocks in Thanjavur district: Orathanadu and Thanjavur. Orathanadu block, spanning 571 sq km, is home to 236,624 people, with a population density of 432 inhabitants/sq km and a literacy rate of 67.56%. It houses approximately 114 villages. Notably, Orathanadu is renowned for its extensive paddy cultivation, particularly the renowned Thanjavur Samba variety. Thanjavur block, covering 616 sq km, accommodates 511,865 individuals, with a density of 830 inhabitants/sq km and a literacy rate of 78.94%. It comprises around 88 villages. This block is also significantly agricultural, with paddy cultivation being a major activity, along with other crops like sugarcane, cotton, and groundnut.



Picture 1- study area

Data collection, Sampling and Statistical tools used

The study was conducted in two blocks of Thanjavur district: Orathanadu and Thanjavur. A sample of 150 farmers was selected through random sampling.

The research aimed to assess the profile characteristics and social benefits of the social forestry program in Thanjavur district. This involved examining the profile characteristics of adopted farmers and the benefits realized by the community.

An ex-post facto research design was employed to analyse with the already implemented programme. Data was collected through structured interviews and focus group discussions with farmers. Mean and simple percentage analysis were used to analyze the quantitative data.

4. Results and Discussion

The collected data was classified, tabulated, and statistically analyzed to derive insights into the study objectives.

Profile Characteristics of Farmers

Age:

Age plays a significant role in decision-making, particularly in adopting new technologies.

Table 3: Distribution of respondents according to their age

(n=150)

S. No.	Category	No. of respondents	Percentage
1.	Young (Less than 35 years)	16	10.67
2.	Middle (35-50 years)	104	69.33
3.	Old (More than 50 years)	30	20.00
Total		**150**	**100.00**

As evident from Table 3, the majority of respondents (69.33%) were middle-aged, followed by the old (20.00%) and young (10.67%) age groups. The findings suggest that middle-aged farmers, due to their experience and exposure, were more receptive to innovation and adoption of new practices compared to older and younger farmers.

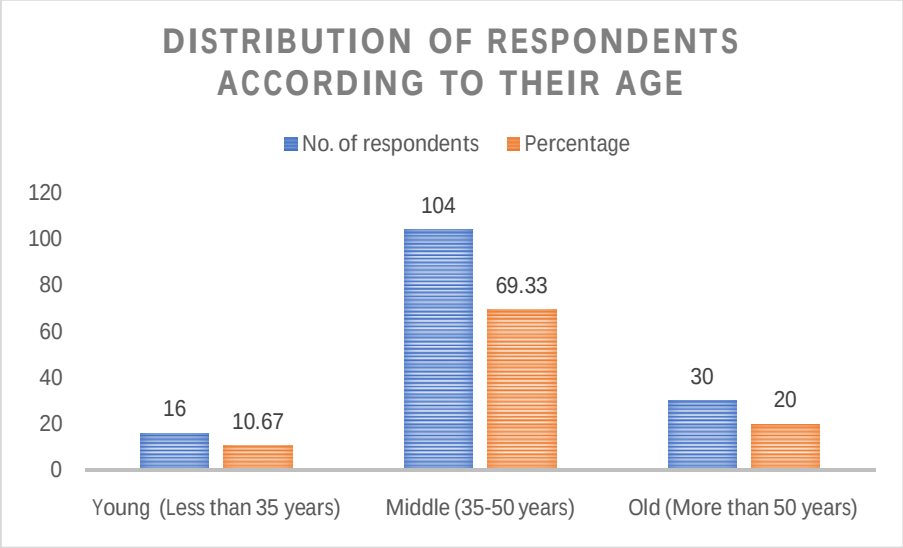


Figure 1: Distribution of respondents according to their age

Gender

Respondents were categorized into two groups: male and female.

Table 4: Distribution of respondents according to their gender

(n=150)

S. No.	**Category**	**No. of respondents**	**Percentage**
1.	Female	17	11.33
2.	Male	133	88.67
Total		**150**	**100.00**

As shown in Table 4, a significant majority of social forestry scheme adopters were male (88.67%). This disparity can be attributed to factors such as male farmers' greater exposure to government schemes and their more frequent interactions with extension officials compared to female farmers.

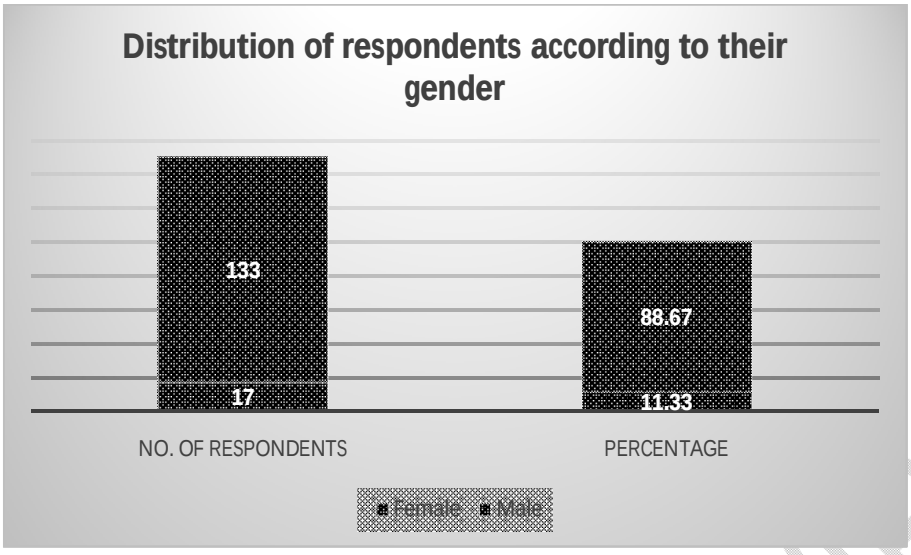


Figure 2: Distribution of respondents according to their gender

Education

Education level reflects the formal education attained by the respondents.

Table 5: Distribution of respondents according to their education

(n=150)

S. No.	Category	No. of respondents	Percentage
1.	Illiterate	0	0
2.	Functionally literate	0	0
3.	Primary education	21	14.00
4.	Middle education	24	16.00
5.	Secondary education	72	48.00
6.	Collegiate education	33	22.00
Total		**150**	**100.00**

As shown in Table 5, the majority of respondents (48%) had completed secondary education, followed by 22% with collegiate education, 16% with middle education, and 14% with primary education.

The results indicate a positive correlation between education level and the adoption of new technologies. Higher levels of education are often associated with greater awareness, knowledge, and willingness to adopt innovative practices.

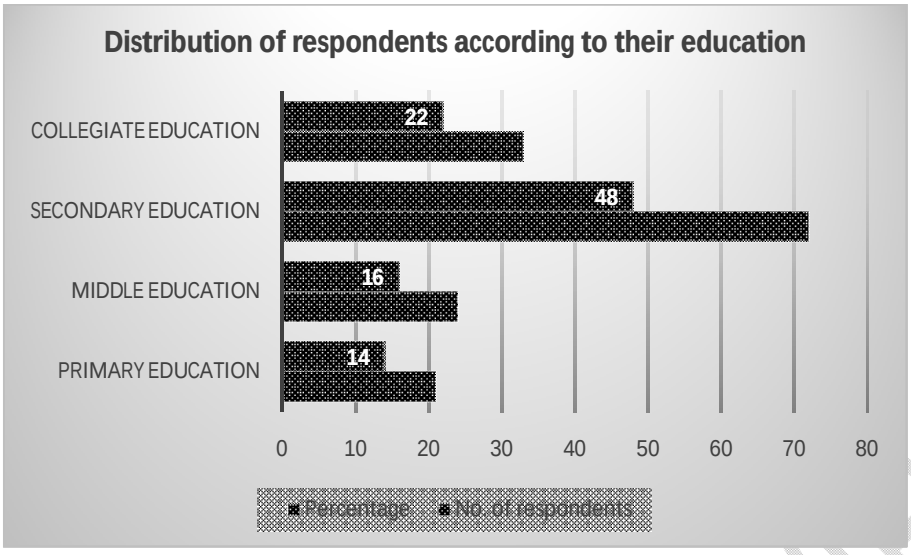


Figure 3: Distribution of respondents according to their education

Farming Experience

Respondents were categorized based on their years of farming experience.

Table 6. Distribution of respondents according to their farming experience

(n=150)

S. No.	**Category**	**No. of respondents**	**Percentage**
1.	Less than 10 years of experience	44	29.33
2.	10 to 30 years of experience	88	58.67
3.	Above 30 years of experience	18	12.00
Total		**150**	**100.00**

As shown in Table 6, the majority of respondents (58.67%) had 10 to 30 years of farming experience, followed by 29.33% with less than 10 years of experience. Experienced farmers were more likely to engage in diversified farming practices compared to less experienced farmers.

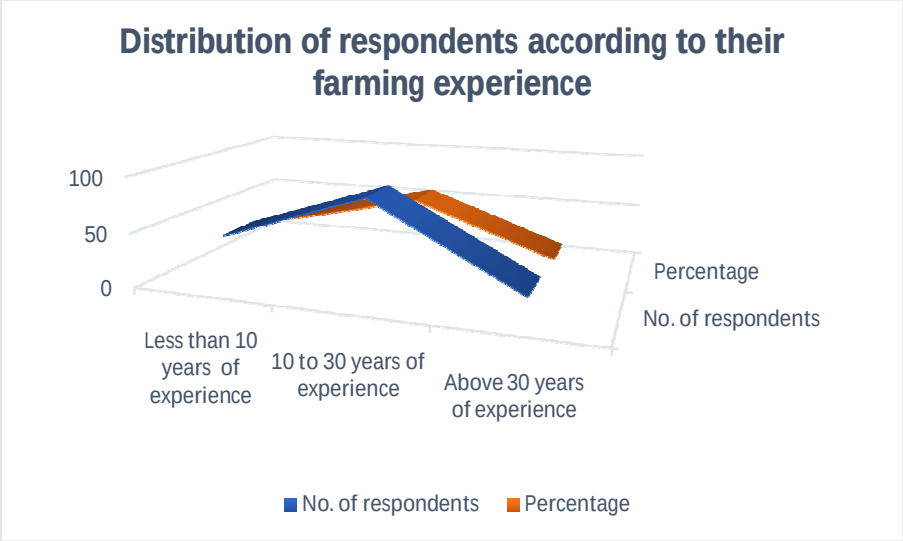


Figure 4: Distribution of respondents according to their farming experience

Social Participation

Social participation refers to an individual's involvement in societal activities and organizations for the betterment of society.

Table 7: Distribution of respondents according to their social participation

(n=150)

S. No.	Category	No. of respondents	Percentage
1.	Not the member of any organization	54	36
2.	Member of organization	96	64
Total		**150**	**100.00**

As shown in Table 7, a significant proportion of respondents (64%) were members of social organizations in the district. Social participation can help individuals address local issues, stay informed about the latest technologies and government schemes, and contribute to community development.

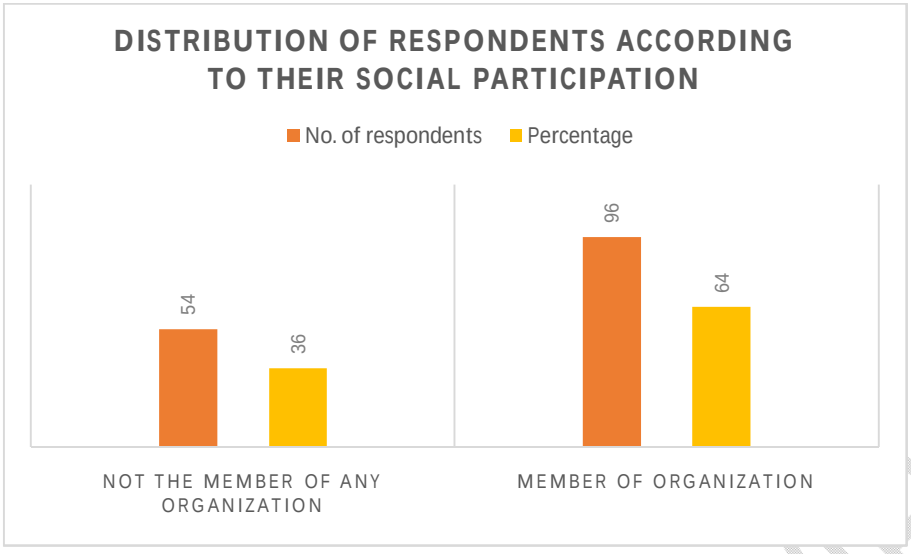


Figure 5: Distribution of respondents according to their social participation

Social Status

Social status refers to an individual's position within society.

Table 8: Distribution of respondents according to their social status

(n=150)

S. No.	**Category**	**No. of respondents**	**Percentage**
1.	Low	13	8.67
2.	Medium	98	65.33
3.	High	39	26.00
Total		**150**	**100.00**

As shown in Table 8, the majority of respondents (65.33%) belonged to the medium social status category, followed by the high social status category (26.00%). The results indicate that individuals from medium and high social status groups were more likely to adopt social forestry practices, potentially due to their willingness to take risks and adopt new technologies and innovations.

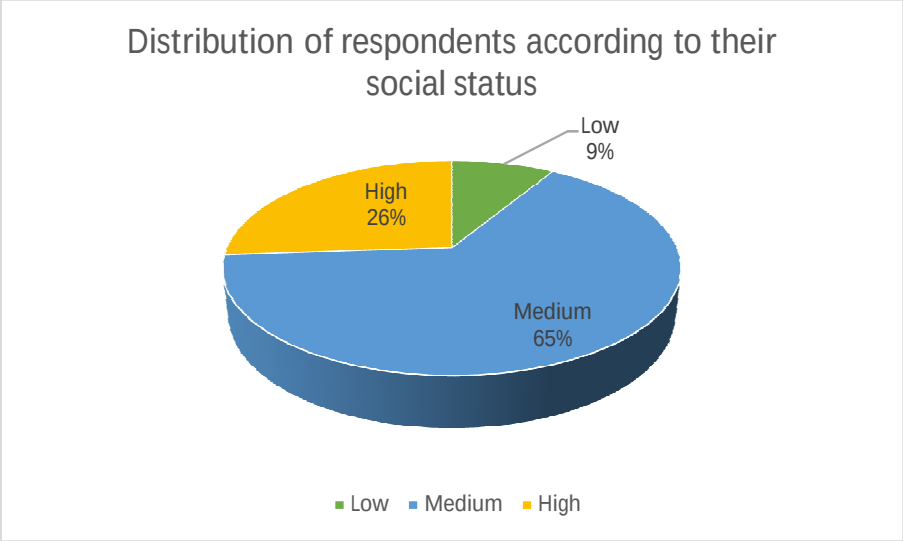


Figure 6: Distribution of respondents according to their social status

Economic Status

Economic status refers to an individual's position in society based on factors such as income, assets, and occupation.

Table 9: Distribution of respondents according to their economic status

(n=150)

S. No.	**Category**	**No. of respondents**	**Percentage**
1.	Low	7	4.67
2.	Medium	99	66.00
3.	High	44	29.33
Total		**150**	**100.00**

As shown in Table 9, most respondents (66%) belonged to the medium economic status category, followed by the high economic status category (29.33%). This suggests that individuals with medium and high economic status were more likely to adopt social forestry practices, potentially due to their financial capacity and willingness to invest in sustainable practices.

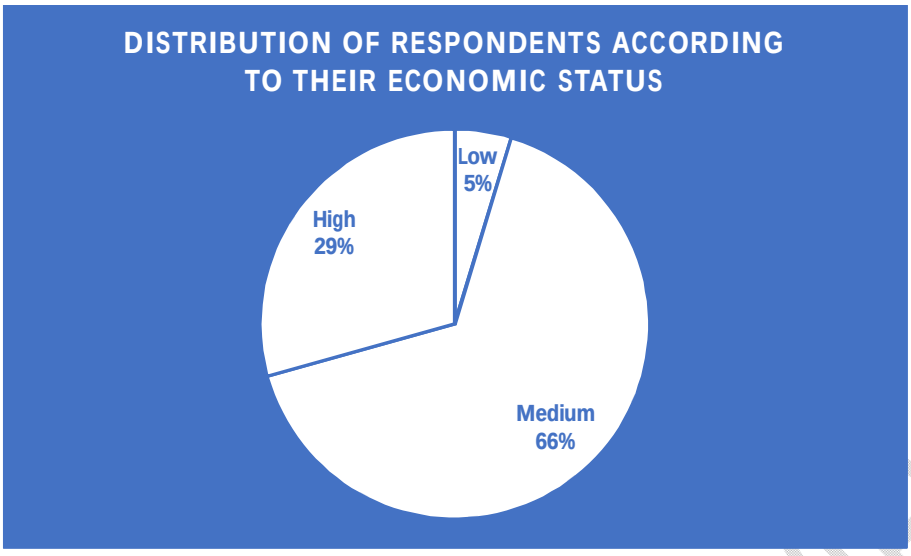


Figure 7: Distribution of respondents according to their economic status

Extension Contact:

Extension agents, such as extension personnel, scientists, para-extension professionals, fellow farmers, and friends, play a crucial role in disseminating information through various extension methods and approaches.

Table 10: Distribution of respondents according to their extension contact

(n=150)

S. No.	Category	No. of respondents	Percentage
1.	Low	8	5.33
2.	Medium	40	26.67
3.	High	102	68.00
Total		**150**	**100.00**

As shown in Table 10, the majority of respondents (68%) had high levels of extension contact, followed by 26.67% with medium levels and 5.33% with low levels. This suggests that respondents were well-connected with extension agents and other information sources.

Mass Media Exposure:

Mass media, including radio, television, and newspapers, is a powerful tool for reaching a large number of farmers with timely and accurate information.

Table 11: Distribution of respondents according to their mass media exposure

(n=150)

S. No.	Category	No. of respondents	Percentage
1.	Low	11	7.33

2.	Medium	72	48.00
3.	High	67	44.67
Total		**150**	**100.00**

As indicated in Table 11, 48% of respondents had medium levels of mass media exposure, followed by 44.67% with high levels and 7.33% with low levels. Most respondents (93%) had access to radio and television. This suggests that mass media played a significant role in disseminating information to farmers.

Communication Behavior

Communication behavior significantly influences farmers' knowledge and attitudes toward adopting new technologies. It is assessed through extension contact and mass media exposure.

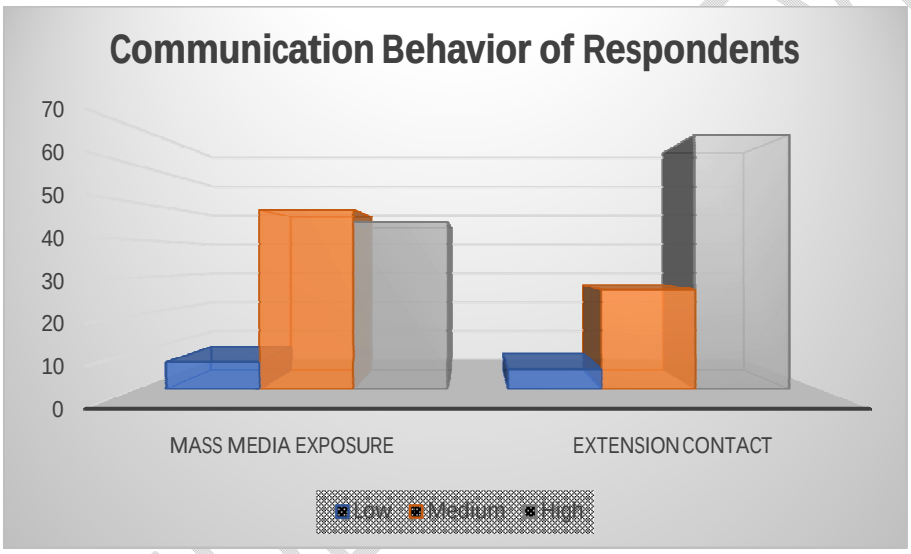


Figure 8: Distribution of respondents according to their communication behaviour

In the context of the study, it's observed that a significant majority of respondents had high levels of extension contact. This suggests that personal interaction with extension agents is still a primary source of information for farmers. However, mass media exposure, particularly through radio and television, also plays a significant role in disseminating information to a wider audience. By combining the strengths of both extension contact and mass media exposure, it is possible to create a more effective and sustainable agricultural extension system.

Risk Preference

Risk preference refers to an individual's tendency to choose between options with varying levels of risk and reward.

Table 12: Distribution of respondents according to their risk preference

(n=150)

S. No.	Category	No. of respondents	Percentage
1.	Low	4	2.67
2.	Medium	90	60.00
3.	High	56	37.33
Total		**150**	**100.00**

As shown in Table 12, a majority of respondents (60%) exhibited a medium level of risk preference, followed by 37.33% with a high level of risk preference. Only a small proportion (2.67%) displayed a low level of risk preference.

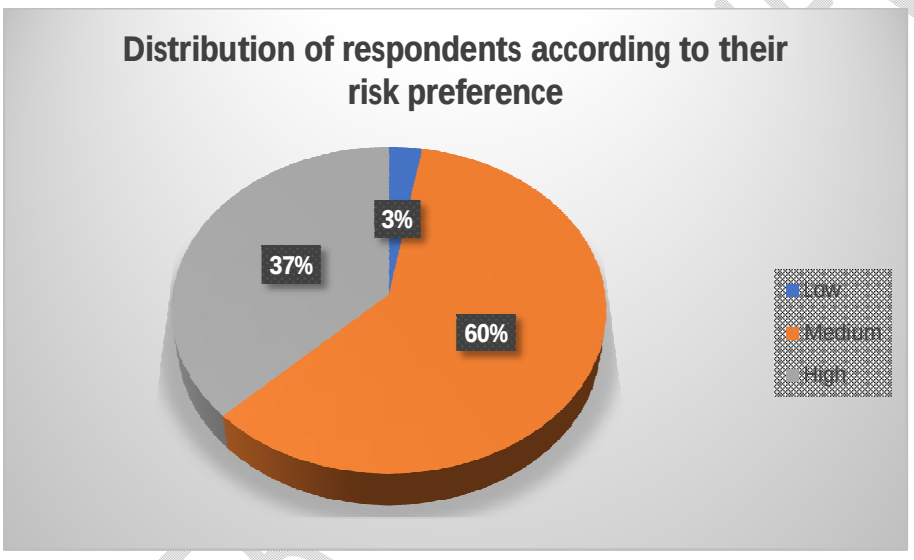


Figure 9: Distribution of respondents according to their risk preference

The decision to plant forest trees, which often involves long-term investments and uncertain returns, indicates a willingness to take risks. This finding suggests that a significant proportion of farmers in Thanjavur district are open to adopting innovative practices, even if they involve some degree of risk.

Social Benefits Created Through Social Forestry Programme

A focus group discussion with 18 farmers revealed the following social benefits of the social forestry program:

- **Free and Subsidized Seedlings:** All respondents received free seedlings, while 18% procured them at a subsidized rate, encouraging wider tree plantation.
- **Increased Access to Resources:** The program enhanced the availability of fodder and fuelwood, reducing reliance on traditional sources and improving household energy security.

- **Employment Opportunities:** While initial stages of plantation required significant labor, the long-term impact on employment was less pronounced.
- **Improved Microclimate:** Trees provided shade and cooler environments, mitigating the effects of heatwaves and creating more comfortable living conditions.
- **Enhanced Recreational Spaces:** Tree plantations offered recreational areas for children, promoting physical and mental well-being.
- **Biodiversity Conservation:** The program contributed to biodiversity conservation by providing habitats for birds and small animals.

Overall, the social forestry program has had a positive impact on the lives of local communities in Thanjavur district. It has not only provided tangible benefits like fuelwood and fodder but has also contributed to a more sustainable and resilient environment.

5. Conclusion

The implementation of social forestry programs in Thanjavur district has yielded significant social and environmental benefits. The study revealed that the majority of beneficiaries were middle-aged farmers with medium to high levels of education and economic status. The program has contributed to increased access to resources, improved livelihoods, and enhanced environmental quality.

However, challenges such as the initial labor-intensive nature of plantation and potential conflicts with agricultural practices need to be addressed. To maximize the benefits of social forestry, it is crucial to strengthen extension services, provide adequate incentives, and promote community participation.

By addressing these challenges and continuing to invest in social forestry initiatives, Thanjavur district can further enhance its ecological sustainability and socio-economic development.

Disclaimer (Artificial intelligence)

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the editing or language check of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1. Gemini

References

Bhatt, B.P. and Mishra, L.K. (2003) Production potential and cost benefit analysis of agrihorticulture agroforestry systems in North-East India. J. Sustain, Agric., 22 : 99-108.

Government of India (1976). Report of the National Commission on Agriculture, Forestry Part-IX, New Delhi.

Government of India (1973) The National Commission on Agriculture Report

Karyawan, K.A.; Rachmawati, I. and Sinaga, M. (1996). Perception of an participation in social forestry development of people living in the vicinity of forests on Rote Island, Bulletin-Penelitian - Kehutanan - Kupang, Indonesia, 1(1): 34-42.

Kumar, R., Gupta, P.K. and Gulati, A. (2004) : Viable agroforestry Models and their economics in Yamunanagar District of Haryana and Haridwar District of Uttranchal, Indian For, 130, 131-148.

Mohammed, N., Haque, F. and Koike, M. (2008) The role of participatory Social Forestry in the enhancement of the socio-economic condition of the rural poor : a case study of Dhaka Forest Division in Bangladesh. Forest Trees and Livelihood, 19(1).

Narain, P., Gupta, S.R., Sindhwal, N.S. and Joshie, P. (1997) Agroforestry for soil and water conservation in the western Himalayan valley region of India Runoff, Soil and nutrient losses. Agrofor. Syst., 39 : 175-189.

Pandey, D.N. (1996) Beyond vanishing woods: Participatory survival options for wildlife, forests and people, Himanshu/CSD, New Delhi, p. 222.

Rakatama, A., & Pandit, R. (2020). Reviewing social forestry schemes in Indonesia: Opportunities and challenges. Forest Policy and Economics, 111, 102052.

Salvador Luna-Vargas, Mario del Roble Pensado-Leglise, Carlos Rosano-Peña and André Luiz Marques-Serrano, 2024, Socio-Eco-Efficiency in Agroforestry Production Systems: A Systematic Review Sustainability 16, 8589. https://doi.org/10.3390/su16198589

Singhal, R.M. and Kumar, V. (1997). An analysis of some socioeconomic implications influencing people's participation in Silvi-pastoral systems of a micro-shed in Garhwal Himalaya, The Indian Forester, 123(2) : 136-141.

Sood, K.K. (2006) The influence of Household Economics and Farming Aspects on Adoption of Traditional Agroforestry in Western Himalaya. Mountain Res. And Dev., 26(2): 124-130.

S.S. Negi, (1986) A Handbook of Social Forestry, International Book Distributor, Dehradun, India

Sumathi, P. and Alagesan, V. (1998). A correlation analysis between the characteristics of respondents with their awareness and adoption behaviours of IPM in groundnut, Jl. ofExt. Edn., 9(3) : 2143-2144. Suyanto,, Y. (1995). Implementation of social forestry as an alternative by the Indonesian State Forest Enterprise, Duta-Rimba, 20(179-180) : 8-13.