



Performance of Self Help Groups (SHGs) of Small Tea Growers (STGs)¹

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¹We acknowledge the inputs from Prof. Vinoj Abraham, Dr. Tirtha Chatterjee, Ms. Jyothi, Ms. Rucha Takle, Ms. Niranjana. Prof. Vinoj and Dr. Tirtha collaborated with us and provided very important inputs during field work and survey preparation. Ms. Niranjana handled the field survey and supervision. Ms. Jyothi assisted in our data collection efforts. Ms. Rucha Takle helped us with preliminary data analysis. We also acknowledge the comments received from the Shri Muthukumar, Executive Director of Zonal Office, Coonoor of the Tea Board, India and the Development Officer R Uma Maheswari for their comments throughout the project and during the presentation of our draft work on the 5th June 2026 held at the Centre for Development Studies (C Thiruvananthapuram.

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Executive Summary

- Small Tea Growers (STGs) dominate tea production in the Nilgiris, with over 50,000 growers cultivating more than 36,000 hectares, making the region the core hub of smallholder tea in South India.
- We present the findings from survey of 438 households in the three blocks – Kundha, Kotagiri, and Connoor of the Nilgiris District conducted in 2023. Of this, 351 are STGs and remaining are agricultural labour households. The findings in this report are primarily based on the responses by STGs.
- The survey aimed to assess the self-help groups (SHGs) of STGs and the extent of mechanisation in the study region. The survey also explores the relationship between gender relations and mechanisation in the households.
- Tea cultivation remains the primary livelihood for 73 percent of households, indicating high dependence on a single income source and vulnerability to price and cost fluctuations.
- Despite being profitable, tea cultivation faces increasing pressure from rising labour and input costs, particularly fertiliser and plucking wages, which significantly affect margins.
- Labour-intensive operations, especially plucking, account for a major share of total costs, with clear gender wage disparities and increasing labour scarcity in certain blocks.
- Mechanisation levels remain low, with only about 17 percent of growers adopting machines for plucking, reflecting continued reliance on manual labour.
- Adoption of machinery is strongly driven by rising labour costs and institutional support, with SHG membership increasing adoption probability by about 10 percent.
- Significant regional disparities exist, with Kundha showing higher productivity, profitability, wage rates, and mechanisation compared to Kotagiri and Coonoor.
- Self-Help Groups (SHGs) play a crucial role in aggregation and marketing, with over 96 percent of growers benefiting from collective leaf collection and improved market access.
- However, SHGs face key challenges, including low access to training (less than 18 percent), uneven leadership participation, and continued dependence on intermediaries.
- Gender roles remain highly segmented, with women concentrated in labour-intensive tasks, though decision-making within households is largely joint, indicating gradual progress towards gender inclusivity.

1. Introduction

The tea sector in India has undergone notable structural changes, with Small Tea Growers (STGs) emerging as a significant contributor to total tea production. Despite their increasing share, STGs continue to face a range of challenges, including stagnant tea prices, rising cost of cultivation, declining consumption trends, and labour shortages (Pal & Sarkar, 2024; Gupta et al., 2025). These issues have placed considerable pressure on the profitability and sustainability of smallholder tea cultivation.

In response to these challenges, collective approaches have gained importance as a means of strengthening the resilience of small growers. Among these, the formation of Self-Help Groups (SHGs) has emerged as a key institutional mechanism to support STGs. Promoted by the Tea Board of India, SHGs aim to improve financial inclusion, enhance access to credit, facilitate input procurement, enable collective marketing, and provide a platform for training and extension services. Such group-based approaches are expected to reduce individual vulnerabilities through decreasing transaction costs and improving the bargaining power in the value chain. Consequently, we expect these approaches to improve the overall socio-economic conditions of STGs.

Given that SHGs have been in operation for a considerable period, there is a need to assess their performance and understand their role in improving the efficiency and sustainability of tea cultivation. Evaluating their functioning, economic impact, and contribution to addressing key challenges faced by STGs is therefore essential. The present study is based on primary data collected from STGs in the Nilgiris district of Tamil Nadu using a structured survey schedule designed in accordance with the study objectives.

1.1 Evolution and Current Status of Small Tea Growers in the Nilgiris

Small tea cultivation in the Nilgiris has a long historical presence, dating back to the early twentieth century. Unlike the plantation systems of North India, which were largely owned and managed by British agencies, tea cultivation in South India evolved under Indian ownership. During the Great Depression of the 1930s, a sharp decline in international tea prices led to regulatory interventions such as the International Tea Agreement (1933) and the Tea Control Act (1933), which imposed export quotas and restricted expansion of large plantations. While these measures constrained large estates, they indirectly encouraged the

growth of smaller independent producers in regions like the Nilgiris, where small growers began supplying green leaf to emerging processing units.

The post-independence period saw further structural shifts. The abolition of the managing agency system in 1970 and the subsequent loss of traditional export markets, particularly in the United Kingdom, altered trade dynamics. However, the establishment of trade relations with the erstwhile USSR in the late 1970s provided a significant export outlet for South Indian tea. During this period, bought leaf factories (BLFs) expanded, creating new market linkages and encouraging the proliferation of small tea growers.

The most rapid expansion of smallholder tea cultivation occurred during the 1990s. Favorable price conditions, particularly between 1996 and 1998, incentivized large-scale entry into tea cultivation. As a result, the area under tea in the Nilgiris increased significantly from about 26,237 hectares in 1990 to over 60,000 hectares by 2000. By the early 2000s, small tea growers had become a dominant force, contributing nearly 40 percent of South India's tea production. However, this growth was followed by a prolonged decline in tea prices due to global oversupply and changing trade patterns, particularly after the collapse of the USSR. The fall in auction prices, especially pronounced in South Indian markets such as Coonoor, adversely affected small growers' incomes and led to cost-cutting practices that impacted productivity and sustainability.

In the contemporary period, small tea growers continue to play a crucial role in the tea economy of the Nilgiris. According to the latest assessment by Tea Board during 2025, Tamil Nadu has a total of 50,748 small tea growers, of which 50,744 are located in the Nilgiris district alone. These growers cultivate approximately 36,449.60 hectares of tea area, highlighting the overwhelming concentration of smallholder tea cultivation in this district. This underscores the importance of the Nilgiris as the principal hub of small tea production in South India. Despite their significant contribution, small tea growers face persistent challenges, including price volatility, rising input costs, labour shortages, and unequal value distribution within the supply chain. These structural issues have reinforced the need for institutional mechanisms such as Self-Help Groups (SHGs), cooperatives, and producer organizations to enhance bargaining power, improve market access, and ensure sustainable livelihoods.

1.1.1 Tea Value Chain in the Nilgiris

The tea value chain in the Nilgiris is characterized by a multi-layered structure involving diverse actors, ranging from STGs at the production level to auctions and final buyers at the market end. STGs form the foundation of this value chain, constituting the largest segment of producers. Although officially defined as growers possessing less than 10.12 hectares (25 acres), the average holding size in practice is much smaller, around 0.7 hectares, reflecting the highly fragmented and smallholder nature of tea cultivation in the region. This small scale of operation constrains their ability to achieve economies of scale, invest in value addition, or access formal credit and technical expertise, thereby increasing their vulnerability within the value chain.

At the farm level, tea is harvested as green leaf, which is highly perishable and must ideally be processed within 3–6 hours to maintain quality. Given the dispersed nature of smallholdings and the lack of adequate transportation and storage infrastructure, most STGs are unable to directly supply their produce to factories. This creates a critical role for intermediaries, commonly known as leaf agents. Agents collect green leaf from growers, aggregate the produce, and transport it to processing factories. Their role extends beyond logistics, as they often provide advance payments to growers during lean periods, creating a relationship of financial dependency. This dependency, combined with their control over aggregation and transport, gives agents significant influence in price determination, often to the disadvantage of growers.

Processing constitutes the next stage of the value chain, where green leaf is converted into made tea. In the Nilgiris, three main types of factories operate: Bought Leaf Factories (BLFs), estate factories, and Industrial Cooperative (INDCO) factories. BLFs are private entities that procure leaf primarily from STGs through agents or, to a lesser extent, directly from societies. Estate factories process tea from their own plantations but may also procure from smallholders. In contrast, INDCO factories function as cooperative institutions where member-growers supply green leaf and share in the benefits of processing and marketing. However, except in the cooperative model, the relationship between STGs and factories remains largely transactional and market-driven, with limited integration or value-sharing.

An important institutional intervention in the value chain has been the formation of SHGs, which aim to aggregate small growers, improve collective bargaining, and facilitate direct linkages with factories. Despite these efforts, overlaps persist, as growers often sell through

multiple channels (agents, societies, and cooperatives) depending on immediate financial needs and market conditions. The final stage of the value chain involves marketing and sale of made tea, primarily through auction systems and private sales. The Coonoor Tea Trade Association (CTTA) auction, established in 1963, and the TEASERVE auction platform, initiated in 2003, serve as key market institutions where prices are determined through competitive bidding based on quality. While auctions provide transparency in price discovery, a significant proportion of tea is also sold through private channels, particularly by larger estates and branded players.

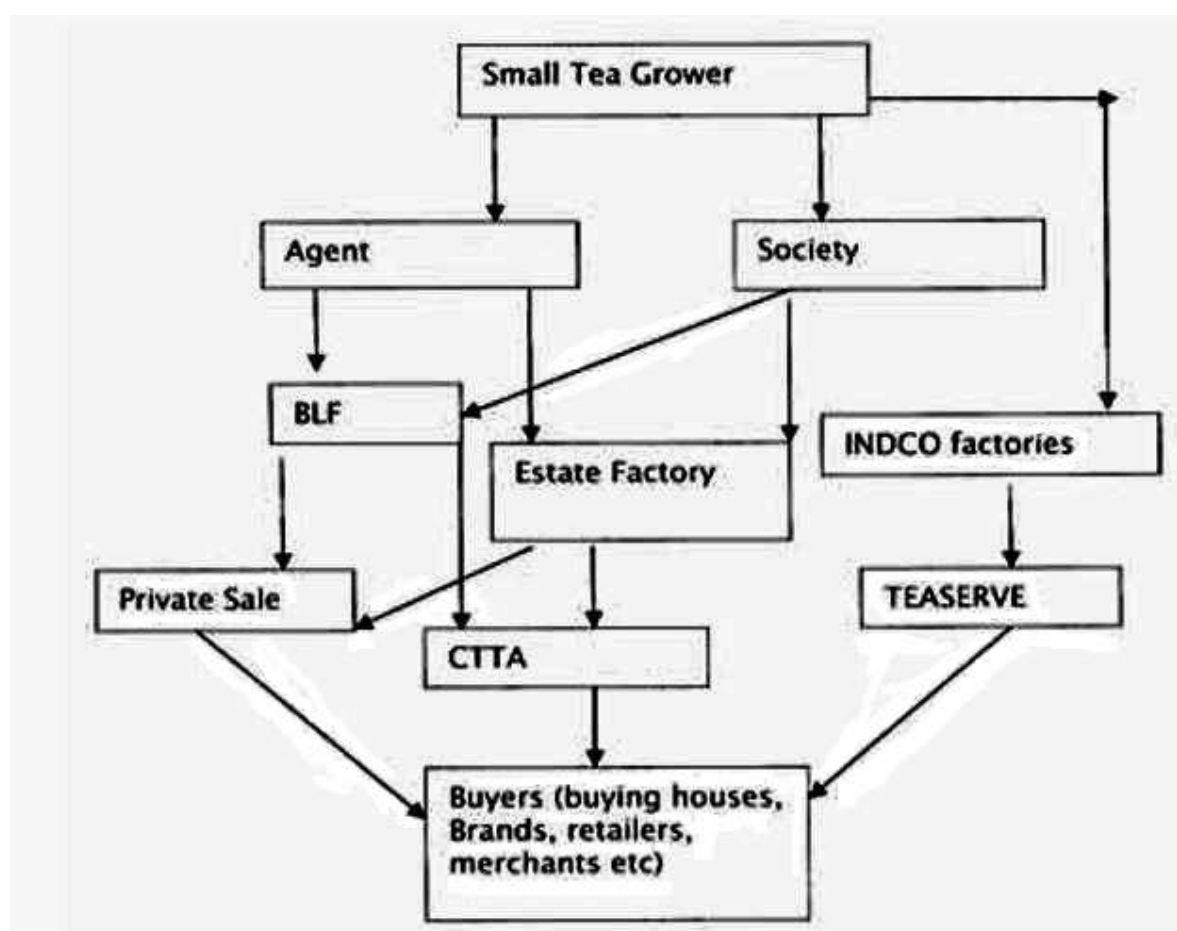


Figure 1 Value Chain of STGs in Nilgiris

(Source: NRPPD Discussion Paper No. 20 by Mansingh & Johnson, 2012)

1.2. Primary Producing Societies (SHGs) among STGs

The concept of organizing STGs into collective institutions gained policy prominence during the Tenth Five-Year Plan period (2002–07), when the Tea Board of India introduced the cluster-based approach through the formation of Primary Producing Societies (PPS), commonly referred to as Self-Help Groups (SHGs). These societies, registered under State

Societies Registration Acts as well as with the Tea Board, were envisioned as village-level institutions aimed at enhancing economies of scale, strengthening market linkages, and improving the overall bargaining power of small growers.

The emergence of SHGs marked a significant institutional innovation in the tea sector, particularly in response to the fragmented and unorganized nature of smallholder production systems. By aggregating producers at the village or cluster level, SHGs sought to address key structural constraints such as limited access to formal credit, dependence on intermediaries, low price realisation, and weak integration into the formal value chain. The collective approach enabled small growers to pool resources, coordinate production and marketing activities, and access extension services more effectively.

Empirical evidence from these initiatives indicates that SHGs have played an important role in improving the visibility and participation of small growers within the tea value chain. A large proportion of members, ranging from 50 percent in Kerala to over 94 percent in West Bengal supplied green leaf through societies, highlighting the effectiveness of SHGs as aggregation and marketing platforms (Hannan, 2013). Moreover, growers associated with SHGs generally realized better prices for green leaf compared to those operating outside the society framework. However, the performance of SHGs has not been uniform across regions. Considerable inter-state variation exists in terms of membership size, operational scale, and institutional effectiveness.

A key challenge identified is the continued dependence of small growers on leaf agents, primarily due to advance payments received during lean seasons and the limited capacity of societies to supply sufficient quantities of green leaf to Bought Leaf Factories (BLFs). The mismatch between the processing capacity of BLFs and the relatively low volume supplied by SHGs has contributed to the persistence of intermediaries in the supply chain. Additionally, constraints such as absence of processing facilities, inadequate adoption of scientific cultivation practices, and weak institutional capacity further limit the effectiveness of SHGs.

Nevertheless, the strengths of SHGs lie in their collective organization, enhanced bargaining power, and ability to supply quality green leaf in bulk. In some regions, particularly in parts of West Bengal, SHGs have successfully established their own tea processing units with support from the Tea Board, thereby moving up the value chain. Over time, several institutional mechanisms such as Cooperative Processing Factories (CPFs), Bought Leaf

Factories (BLFs), the Confederation of Indian Small Tea Growers Associations (CISTA), and the Small Growers Development Directorate (SGDD) have emerged to support the smallholder sector.

2. Objectives of the Study

The present study aims to evaluate the performance of Self-Help Groups (SHGs) and their role in enhancing the livelihoods and sustainability of Small Tea Growers (STGs) in the Nilgiri district of Tamil Nadu. The specific objectives are:

- ✓ To analyse the socio-economic profile and livelihood characteristics of small tea growers.
- ✓ To examine the economics of tea cultivation, including yield, cost structure, wage dynamics, and profitability.
- ✓ To assess the role of Self-Help Groups (SHGs) and identify the determinants of machinery adoption among small tea growers.

3. Data and Survey design

The present study is based on primary data collected from Small Tea Growers (STGs) in the Nilgiris district of Tamil Nadu in the year 2023. A structured survey schedule was designed in line with the specific objectives of the study to capture comprehensive information on socio-economic characteristics, cultivation practices, institutional participation, and mechanisation. The total sample comprises 438 respondents, distributed across three major tea-growing blocks: Kotagiri (138), Coonoor (161), and Kundha (139). Among the total respondents, 351 are tea growers, of which 347 own tea land and 24 cultivated tea on leased-in land. The remaining respondents are primarily engaged as agricultural wage labourers, providing an important comparative perspective on labour dynamics within the tea sector.

A multi-stage sampling approach was adopted for the selection of respondents. In the first stage, the Nilgiris district was purposively selected due to its prominence in small tea cultivation. In the second stage, three key blocks, Kotagiri, Coonoor, and Kundha, were selected based on their significant concentration of small tea growers and the presence of active Self-Help Groups (SHGs). In the final stage, respondents were selected from these blocks using appropriate sampling techniques to ensure representation across different socio-economic categories.

4. Results

This section provides the findings related to the objectives of the study. First, we present a brief overview of the sample respondents. Then, we present the economics of tea cultivation among the STG study sample. We then analyse the participation and functioning of SHGs in the study villages. This section then presents the findings related to adoption of machines for tea cultivation. The final sub-section presents the findings related to gender relations in the sample households.

4. 1. Socio-economic profile of sample respondents

The gender composition of respondents reveals a predominance of male participation across all three blocks. 61.9% of respondents are male, while 37.8% are female, and a negligible 0.2% identify as transgender. The age distribution reveals that the majority of respondents belong to the economically active middle-aged group. Overall, 41.7% of respondents fall within the 45–59 years category, followed by 26.8% in the 60–74 years group. Across all three blocks, this trend remains consistent, indicating an aging population of tea growers. The proportion of younger respondents (15–29 years) is very low at 3.4%, with slightly higher representation in Coonoor (4.4%). The limited involvement of youth in tea cultivation may pose challenges for the long-term sustainability of the sector, particularly in terms of labor availability, innovation, and succession in farming activities.

Regarding marital status, a large majority of respondents are married (74.8%) across the study area, followed by widowed individuals (16.7%) and unmarried respondents (8.3%). The proportion of divorced individuals is negligible. The prevalence of married individuals indicates stable household structures, which may positively influence labour availability and participation in SHG activities. The educational profile of respondents indicates moderate levels of educational attainment. The largest proportion (37.3%) has completed high school education, followed by higher secondary education (23.4%) and graduate and above (18.7%). Block-wise variations reveal that Kotagiri and Coonoor have a slightly higher proportion of respondents with high school education, while Kundha shows a relatively higher share of graduates (20.5%). The proportion of respondents with no formal schooling is relatively low (6.2%), suggesting improved access to basic education in the region. This level of education is likely to facilitate better adoption of improved agricultural practices, participation in training programs, and effective functioning of SHGs.

The religious composition of the sample is homogeneous, with 99.5 percent of respondents identifying as Hindu, and only minimal representation from Muslim and Christian communities. This homogeneity is consistent across all three blocks and reflects the socio-cultural characteristics of the tea-growing regions. Regarding social categories, Other Backward Classes (OBCs) constitute the majority (77.6 percent) across the study area, followed by Scheduled Castes (22.2 percent), with negligible representation from Scheduled Tribes.

Table 1 Socio-Economic Characteristics

		Kotagiri		Coonoor		Kundha		All Blocks	
		N	Percent	N	Percent	N	Percent	N	Percent
Gender	Male	79	57.7	95	59.4	96	69.1	270	61.9
	Female	58	42.3	65	40.6	42	30.2	165	37.8
	Trans	0	0.0	0	0.0	1	0.7	1	0.2
	Total	137	100.0	160	100.0	139	100.0	436	100.0
Age	15-29	3	2.2	7	4.4	5	3.6	15	3.4
	30-44	39	28.3	26	16.3	31	22.3	96	22.0
	45-59	56	40.6	66	41.3	60	43.2	182	41.7
	60-74	33	23.9	50	31.3	34	24.5	117	26.8
	75+	7	5.1	11	6.9	9	6.5	27	6.2
	Total	138	100.0	160	100.0	139	100.0	437	100.0
Marital Status	Unmarried	9	6.5	18	11.3	9	6.5	36	8.3
	Married	99	71.7	113	71.1	114	82.0	326	74.8
	Widowed	29	21.0	28	17.6	16	11.5	73	16.7
	Divorced	1	0.7	0	0.0	0	0.0	1	0.2
	Total	138	100.0	159	100.0	139	100.0	436	100.0
Education	No Formal Schooling	12	8.8	9	6.0	5	3.8	26	6.2
	Class 1 to 4	1	0.7	6	4.0	6	4.5	13	3.1
	Class 5 to 7	9	6.6	16	10.7	7	5.3	32	7.7
	High School	51	37.2	59	39.6	46	34.8	156	37.3
	11 & 12	36	26.3	27	18.1	35	26.5	98	23.4
	Graduate & above	25	18.2	26	17.4	27	20.5	78	18.7
	Diploma	3	2.2	6	4.0	6	4.5	15	3.6
	Total	137	100.0	149	100.0	132	100.0	418	100.0
Religion	Hindu	138	100.0	159	98.8	139	100.0	436	99.5
	Muslim	0	0.0	1	0.6	0	0.0	1	0.2
	Christian	0	0.0	1	0.6	0	0.0	1	0.2
	Total	138	100.0	161	100.0	139	100.0	438	100.0

Caste Category	SC	31	22.5	42	26.1	24	17.3	97	22.2
	ST	0	0.0	0	0.0	1	0.7	1	0.2
	OBC	107	77.5	119	73.9	114	82.0	340	77.6
	Total	138	100.0	161	100.0	139	100.0	438	100.0

Block-wise analysis reveals that OBC dominance is highest in Kundha (82.0 percent), while SC representation is relatively higher in Coonoor (26.1 percent). This distribution indicates that small tea cultivation are largely concentrated among OBC communities, with moderate inclusion of SC households. The caste composition further reveals a strong concentration of respondents belonging to the Badagas community (87.5 percent), with the remaining 12.5 percent belonging to other castes. This dominance is particularly pronounced in Coonoor (97.5 percent). The prevalence of a single community suggests strong social cohesion and trust, which are essential for the effective functioning of cooperative institutions. However, it may also limit inclusiveness and participation from other social groups.

Table 2 Principal Income Source of the Household

Particulars	Kotagiri		Coonoor		Kundha		All Blocks	
	N	Percent	N	Percent	N	Percent	N	Percent
Tea cultivation	92	67.7	104	66.2	116	86.6	312	73.1
Other crop cultivation	3	2.2	1	0.6	2	1.5	6	1.4
Agricultural labour	12	8.8	35	22.3	11	8.2	58	13.6
Animal husbandry	2	1.5	0	0.0	1	0.8	3	0.7
Casual labour	12	8.8	4	2.6	1	0.8	17	4.0
Business/Self Employment	2	1.5	1	0.6	0	0.0	3	0.7
Salaried Employment	13	9.6	9	5.7	1	0.8	23	5.4
Others	0	0.0	3	1.9	2	1.5	5	1.2
Total	136	100.0	157	100.0	134	100.0	427	100.0

An analysis of the principal source of household income highlights the central role of tea cultivation in the livelihoods of respondents. Overall, 73.1 percent of respondents depend primarily on tea cultivation, with the highest dependence observed in Kundha (86.6 percent), followed by Kotagiri (67.7 percent) and Coonoor (66.2 percent). This indicates that Kundha is more specialized in tea production compared to the other two blocks. In addition to tea cultivation, 13.6 percent of respondents rely on agricultural labour, with a notably higher

share in Coonoor (22.3 percent), suggesting relatively greater livelihood diversification in this block. Other sources of income include salaried employment (5.4 percent), casual labour (4.0 percent), and marginal contributions from business/self-employment and animal husbandry (0.7 percent each). A small proportion (1.2 percent) reported other sources of income. The limited diversification of income sources indicates a high degree of dependence on tea cultivation, which exposes households to risks such as price volatility, climate variability, and production uncertainties. However, the presence of supplementary income sources, particularly in Coonoor, suggests adaptive strategies adopted by some households to enhance income stability.

4.2. Economics of tea cultivation

4.2.1. Studies on Cost of Production in Tea Cultivation

Understanding the cost of production in the small tea sector has remained a critical yet under-explored area in tea economics, particularly due to the dual nature of production involving ‘green leaf’ at the farm level and ‘made tea’ at the factory level. Unlike estate plantations where production and processing are integrated, the smallholder sector operates in a fragmented manner, making cost estimation more complex and less standardized across regions.

Historically, the Tea Board of India undertook techno-economic surveys to estimate cost structures across tea-growing regions. However, such systematic efforts have not been continued in recent decades, resulting in a significant gap in updated and comparable cost data. One of the earliest comprehensive attempts to estimate the cost of green leaf production was undertaken by the Institute of Cost and Works Accountants of India in collaboration with the Tea Board of India around 2006. The study reported that the cost of production per kg of green leaf varied across states, ranging from ₹5.07 in Tripura to ₹7.62 in Himachal Pradesh. In South India, the cost was estimated at ₹5.33 per kg in Tamil Nadu and ₹6.31 per kg in Kerala, reflecting regional variations in productivity, input use, and labour conditions (Tea Board of India, 2006; CEC, 2007; Hannan, 2007, 2013).

Region-specific estimates for the Nilgiris have been provided by the Krishi Vigyan Kendra (KVK), Coonoor, based on ideal cultivation practices. According to these estimates (around 2007), the cost of production was approximately ₹6.00 per kg for seedling tea (with a yield of 3200 kg per acre) and ₹5.75 per kg for clonal tea (with a higher yield of 5000 kg per acre).

These studies also highlighted the dominance of labour and input costs in total expenditure, with plucking alone accounting for nearly 50 percent of total cost, followed by manure (around 15–20 percent) and pest control (10–22 percent). Together, these components constituted nearly 80 percent of the total cost of cultivation, indicating the highly labour-intensive and input-driven nature of tea production (CEC, 2007; Hannan, 2007, 2013).

Field-based assessments further reinforce these findings. A study by Mansingh and Johnson (2012), based on field data from the Nilgiris, estimated the cost of green leaf production at around ₹7 per kg during the early 2010s. The cost structure included plucking (₹2.5/kg), manure (₹2/kg), maintenance (₹1.5/kg), and transportation or carrying costs (₹1/kg). The study also noted that over the previous two decades (1990s–2010s), the cost of production in the Nilgiris had generally remained within the range of ₹5–₹7 per kg. Importantly, it highlighted that the average price realization for many small growers, particularly those associated with cooperative institutions such as INDCO, was also around ₹7 per kg, indicating that growers often operated at or near the break-even point, with limited profit margins.

Despite these efforts, a major limitation across studies is the lack of consistency in methodology, coverage, and time periods, which makes comparability difficult. Most estimates are based on ideal or recommended practices rather than actual field conditions, and many do not account for variations in labour use, input intensity, and management practices across locations. Additionally, the absence of regular, updated cost studies by institutional agencies has limited the ability to track changes in cost dynamics over time.

4.2.2 Cost and Returns of Tea Cultivation: Evidence from the Present Study

Tea cultivation is a labour-intensive and input-driven agricultural activity, where profitability depends on a combination of productivity, input costs, labour availability, and price realisation. Small tea growers, in particular, face increasing pressure from rising input and labour costs, making it essential to examine the economics of cultivation in detail. This chapter analyses the yield, cost structure, wage dynamics, and profitability of tea cultivation across the selected blocks.

The average yield is highest in Kundha (4832.3 kg/acre), followed by Coonoor (4686.1 kg/acre) and Kotagiri (4277.1 kg/acre), indicating relatively better productivity in Kundha. Price realisation also shows some variation, with Kundha receiving the highest average price

(₹17.2/kg), while Kotagiri and Coonoor receive ₹16.6/kg and ₹16.0/kg respectively. As a result of higher yield and price, gross revenue per acre is highest in Kundha (₹83,116), followed by Coonoor (₹74,977.4) and Kotagiri (₹70,999.9). At the aggregate level, the average yield across all blocks is 4612.7 kg/acre, with an average price of ₹16.6/kg, resulting in an average revenue of ₹76,570.6 per acre (Table 3).

Table 3 Block-wise Yield, Price and Revenue of Tea Cultivation (per acre)

Block	N	Yield (kg/acre)	Price (Rs/kg)	Revenue (Rs./acre)
Kotagiri	93	4277.1	16.6	70999.9
Coonoor	108	4686.1	16.0	74977.4
Kundha	106	4832.3	17.2	83116.0
All Blocks	307	4612.7	16.6	76570.6

The wage structure for tea cultivation activities shows clear variations across gender, activities, and blocks (Table 4). Overall, male labourers receive higher wages than female labourers across all activities and blocks, reflecting gender-based wage differentials in the tea sector. The average daily wage for female labour ranges from ₹283 in Coonoor to ₹367 in Block 3, while male labour wages range from ₹436 in Coonoor to ₹490 in Block 1.

Across activities, plucking and weeding constitute major labour operations, with female labour predominantly engaged in these tasks at relatively lower wage rates. Female wages for plucking are lowest in Coonoor (₹268) and highest in Kundha (₹363), while weeding wages are highest in Kundha (₹400). Pruning activities involving female labour are limited, with reported data only in Block 2. Male labour is more involved in relatively skill-intensive and input-related activities such as fertiliser application, pesticide spraying, and pruning. Among these, pesticide application commands the highest wages, particularly in Coonoor (₹600), indicating the specialised nature of the task. Similarly, pruning wages are relatively high in Kotagiri and Coonoor, though significantly lower in Block 3.

Block-wise comparison indicates that Kundha generally exhibits higher wage rates for both male and female labour, especially for plucking and weeding, which may be attributed to labour scarcity or higher demand. In contrast, Coonoor consistently records lower wage rates for female labour, suggesting relatively abundant labour supply or lower bargaining power.

The labour costs constitute a significant component of tea cultivation, with notable gender disparities and inter-block variations. These wage differences have important implications for

cost of cultivation and may also influence the adoption of mechanisation, particularly in response to rising labour costs.

Table 4 Block-wise Wage Rates for Tea Cultivation Activities (Rs./day)

Activities	Kotagiri	Coonoor	Kundha
Hired Female			
Fertiliser	400	300	375
Plucking	313	268	363
Pruning		210	
Weeding	310	325	400
Average female wage	317	283	367
Hired Male			
Fertiliser	512	429	474
Pesticide		600	500
Plucking	456	400	513
Pruning	500	533	250
Weeding	480	434	467
Average male wage	490	436	474

The cost structure of tea cultivation is dominated by fertiliser and labour-related expenses (Table 5). Fertiliser accounts for the largest share of total cost, amounting to ₹14,213.94 (55.1%) in Kotagiri, ₹13,379.2 (44.2%) in Coonoor, and ₹10,026.0 (37.8%) in Kundha. Plucking, being highly labour-intensive, constitutes another major cost component, with expenses of ₹8,941.1 (34.6%) in Kotagiri, ₹8,796.0 (29.1%) in Coonoor, and ₹12,433.4 (46.9%) in Kundha, indicating particularly high labour dependence in Kundha. Other components such as weeding, pruning, and pesticide application contribute smaller shares but remain essential for maintaining productivity. The total cost of cultivation is highest in Coonoor (₹30,263.8 per acre), followed by Kundha (₹26,509.9) and Kotagiri (₹25,811.14). Despite relatively lower costs in Kotagiri, its lower productivity results in comparatively lower returns.

Profitability analysis shows that tea cultivation is economically viable across all blocks, though with notable variation (Table 6). Kundha records the highest profit of ₹56,606.1 per acre, followed by Kotagiri (₹45,188.76) and Coonoor (₹44,713.6). The relatively lower profit in Coonoor, despite higher yields than Kotagiri, can be attributed to its significantly higher

cost of cultivation. In contrast, Kundha's superior profitability is driven by a favourable combination of higher yield, better price realisation, and relatively efficient cost management.

A clearer picture of efficiency emerges from the per unit analysis. The cost of production per kg is lowest in Kundha (₹5.49 per kg), compared to ₹6.04 in Kotagiri and ₹6.46 in Coonoor. Similarly, profit per kg is highest in Kundha (₹11.71), followed by Kotagiri (₹10.57) and Coonoor (₹9.54). This indicates that Kundha not only generates higher total output but also operates more efficiently in terms of cost per unit of production. These estimates should be interpreted with caution, as they exclude the imputed cost of family labour, leading to an underestimation of total production cost and overestimation of profitability. Additionally, variations in price realization, reliance on self-reported data, and the omission of fixed costs and temporal fluctuations may limit the accuracy and comparability of the results.

The findings demonstrate that while tea cultivation remains profitable, its sustainability is increasingly influenced by labour market conditions and input costs. Higher wage rates, particularly for plucking operations, significantly contribute to rising costs and may encourage the adoption of labour-saving technologies. At the same time, inter-block differences highlight the role of local conditions in shaping economic outcomes. Therefore, improving productivity, enhancing input use efficiency, and reducing labour dependency through appropriate interventions are essential for sustaining profitability among small tea growers.

Table 5 Block-wise Cost of Tea Cultivation (per acre)

Components	Kotagiri		Coonoor		Kundha		All Blocks	
	Rs./acre	%	Rs./acre	%	Rs./acre	%	Rs./acre	%
Bush clearing	1131.2	4.4	931.7	3.1	0.0	0.0	645.2	2.5
Fertiliser	14213.94	55.1	13379.2	44.2	10026.0	37.8	10492.4	41.4
Pesticide	0.0	0.0	2236.0	7.4	1114.2	4.2	2691.2	10.6
Plucking	8941.1	34.6	8796.0	29.1	12433.4	46.9	7438.7	29.4
Pruning	100.0	0.4	2431.1	8.0	1523.5	5.7	2063.5	8.1
Irrigation	0.0	0.0	310.6	1.0	0.0	0.0	268.8	1.1
Weeding	1424.9	5.5	2179.2	7.2	1412.8	5.3	1725.1	6.8
Total Maintenance cost	25811.14	100.0	30263.8	100	26509.9	100	25324.9	100

Table 6 Block-wise Cost, Revenue and Profit from Tea Cultivation (per acre)

Block	Cost (Rs./acre)	Revenue (Rs./acre)	Profit (Rs./acre)
Kotagiri	25811.14	70999.9	45188.76
Coonoor	30263.8	74977.4	44713.6
Kundha	26509.9	83116	56606.1
All Blocks	25324.9	76570.6	51245.7

4.3. Participation of growers in SHGs

The distribution of respondents among Self-Help Groups (SHGs) reveals a significant concentration within a few predominant societies in each block. The distribution of members across blocks indicates that Kundha accounts for the largest share (38.5%), followed by Coonoor (32.1%) and Kotagiri (29.4%), suggesting relatively higher SHG participation in Kundha. The analysis of the year of joining SHGs shows that a majority of respondents joined during the period 2011–2020 (51.15%), indicating a significant expansion phase of SHG formation during this decade. This trend is particularly pronounced in Kundha, where a large proportion of members (54) joined during this period. A substantial proportion of members (31.34%) have joined after 2021, with Coonoor showing the highest recent enrolment (35 members), reflecting a growing interest and expansion of SHGs in recent years. In contrast, only a small percentage of respondents (2.15%) reported joining SHGs before 2000, indicating that SHG formation among small tea growers is largely a recent phenomenon (Table 7).

Table 7 Block-wise Distribution of SHG Membership

Particulars	Kotagiri	Coonoor	Kundha	All Blocks
Number of Members	64 (29.4)	70 (32.1)	84 (38.5)	218 (100)
Year of Joining SHG				
Up to 2000	1	6	7	14 (2.15)
2001–2010	27	11	12	50 (15.36)
2011–2020	35	22	54	111 (51.15)
2021 onwards	5	35	11	51 (31.34)
Total	68	74	84	226 (100)

The performance of Self-Help Groups (SHGs) across the selected blocks presents a mixed

picture, reflecting both strengths in institutional functioning and gaps in member participation and capacity building (Table 8). One of the key indicators of internal governance, leadership participation shows considerable variation across blocks. It is relatively high in Coonoor (77.0%) and moderate in Kotagiri (57.1%), indicating active involvement of members in decision-making processes. However, in Kundha, leadership participation is extremely low (2.6%), suggesting limited engagement of members in leadership roles and possible concentration of decision-making within a few individuals. In contrast, SHGs demonstrate strong performance in terms of core operational functions, particularly leaf collection. An overwhelming majority of respondents across all blocks reported that societies collect green leaves, with participation levels reaching 100 percent in Kotagiri, 94.3 percent in Coonoor, and 96.4 percent in Kundha. This indicates that SHGs are functioning effectively as aggregation institutions, facilitating market access for small tea growers.

However, the extent of dependence on SHGs for marketing varies significantly across regions. In Kotagiri, all respondents (100%) supply their entire produce through SHGs, reflecting complete reliance on these institutions. This dependence declines in Coonoor (81.7%) and further in Kundha (55.4%), suggesting the existence of alternative marketing channels and a relatively weaker integration of growers with SHGs in Kundha. This partial dependence may also reflect differences in price competitiveness or service efficiency across SHGs. Satisfaction with price realisation remains moderate across all blocks, with 59.7 percent of respondents in Kotagiri, 58.8 percent in Coonoor, and a relatively higher 69.2 percent in Kundha expressing satisfaction. While this indicates that SHGs provide a reasonably stable marketing platform, the moderate levels of satisfaction point to potential limitations in ensuring remunerative prices for growers. A critical area of concern is the provision of training and extension services. The proportion of respondents reporting access to training is notably low, particularly in Kotagiri (4.7%), and remains limited even in Coonoor (20.5%) and Kundha (27.7%). The overall average stands at only 17.8 percent, highlighting a significant gap in capacity-building efforts. This lack of training may constrain improvements in productivity, quality, and adoption of improved practices among small tea growers.

Table 8 Performance Indicators of SHGs across Blocks

Particulars	Kotagiri		Coonoor		Kundha		All Blocks	
	N	Percent	N	Percent	N	Percent	N	Percent
Leadership participation	36	57.1 (	47	77.0	2	2.6	85	42.1
Society collects leaves	67	100.0	66	94.3	80	96.4	213	96.8
Members supplying all leaves	66	100.0	58	81.7	46	55.4	170	77.3
Satisfied with Price	40	59.7	40	58.8	54	69.2	134	62.9
Training provided	3	4.7	15	20.5	18	27.7	36	17.8
Number of responses								

Note: Percent represent the proportion of respondents reporting “Yes” to each indicator, calculated based on the total number of respondents within each block (Percent = (N / Total respondents in that block for that activity) × 100)

Table 9 Block-wise Distribution of SHG Operational Practices

Particulars	Kotagiri		Coonoor		Kundha		All Blocks	
How much charge does the society charge per kg for leaf collection?								
kg	N	Percent	N	Percent	N	Percent	N	Percent
0.2-0.5	25	43.1	26	43.3	44	67.7	95	51.9
1-2	15	25.9	30	50.0	17	26.2	62	33.9
3-5	18	31.0	4	6.7	4	6.2	26	14.2
Total	58	100.0	60	100.0	65	100.0	183	100.0
How much weight does the society reduce per bag when weighing								
kg	N	Percent	N	Percent	N	Percent	N	Percent
>1	11	17.5	6	8.6	3	4.1	20	9.7
1	39	61.9	31	44.3	7	9.5	77	37.2
1.35 to 1.7	0	0.0	3	4.3	10	13.5	13	6.3
2	12	19.0	30	42.9	44	59.5	86	41.5
2.5 to 3	1	1.6	0	0.0	10	13.5	11	5.3
Total	63	100.0	70	100.0	74	100.0	207	100.0
Does the society do sorting/grading of leaves at the collection centre								
Yes/No	N	Percent	N	Percent	N	Percent	N	Percent
Yes	46	76.7	36	69.2	63	85.1	145	78.0
No	14	23.3	16	30.8	11	14.9	41	22.0
Total	60	100.0	52	100.0	74	100.0	186	100.0
During January to December 2022, did the society reject any of your leaves								
Yes/No	N	Percent	N	Percent	N	Percent	N	Percent
Yes	3	4.5	12	18.2	23	31.5	38	18.5
No	63	95.5	54	81.8	50	68.5	167	81.5
Total	66	100.0	66	100.0	73	100.0	205	100.0

Note: Percentages indicate the proportion of respondents in each category to the total number of respondents within each block

The table 9 presents the operational practices of Self-Help Groups (SHGs) across Kotagiri, Coonoor, and Kundha blocks with respect to leaf collection charges, weighing practices, sorting/grading, and rejection of green leaves. In terms of leaf collection charges, a majority of respondents reported that SHGs charge between ₹0.2–0.5 per kg (51.9%), with this category being particularly dominant in Kundha (67.7%). In contrast, Coonoor exhibits a relatively higher concentration in the ₹1–2 per kg range (50.0%), suggesting comparatively higher service charges in this block. Only a limited proportion of SHGs charge higher rates of ₹3–5 per kg (14.2%), indicating that lower charges are more prevalent across the study area. With regard to weighing practices, the most commonly reported deduction is 2 kg per bag (41.5%), especially in Kundha where it accounts for 59.5 percent of respondents. This is followed by 1 kg deduction (37.2%), which is more prominent in Kotagiri (61.9%) and Coonoor (44.3%). The presence of higher deductions (above 2 kg) in certain cases suggests variability in weighing practices across SHGs. The analysis of sorting and grading practices indicates that a substantial majority of respondents (78.0%) reported that SHGs undertake sorting and grading of leaves at the collection centres. This practice is most prevalent in Kundha (85.1%), followed by Kotagiri (76.7%) and Coonoor (69.2%), reflecting relatively better quality control mechanisms in place. In relation to rejection of leaves, the majority of respondents (81.5%) indicated that their leaves were not rejected during the reference period. However, rejection rates are comparatively higher in Kundha (31.5%) and Coonoor (18.2%) than in Kotagiri (4.5%), which may be indicative of stricter quality standards or variations in leaf quality across these blocks.

4. 4. Machine adoption among small tea growers

The analysis of machinery usage among small tea growers indicates that overall adoption remains low across activities, with only 17.44 percent of respondents using machines for plucking, 10.91 percent for pruning, and 10.48 percent for bush clearing, reflecting a continued reliance on manual labour. However, notable inter-block variations exist, with Kundha exhibiting relatively higher adoption, particularly in plucking (43.27%) followed by Coonoor, while Kotagiri shows negligible usage. The predominance of diesel-operated machines and the widespread reliance on rented equipment suggest limited capital investment and constrained access to owned machinery. These descriptive patterns are reinforced by the results of the probit regression analysis (Table 10), which identifies key determinants of machinery adoption.

The probit model, estimated with a binary dependent variable (1 = adoption, 0 = non-adoption), is statistically significant (Wald $\chi^2 = 55.03$, $p < 0.01$) and demonstrates good explanatory power (Pseudo $R^2 = 0.379$). The results indicate that institutional participation and labour market conditions are central to machinery adoption decisions. Membership in SHGs has a positive and statistically significant influence at the 5 percent level, increasing the likelihood of adoption by about 10.4 percent. This indicates that collective institutions play an important role in easing access to information, credit, and shared resources, thereby facilitating the uptake of labour-saving technologies.

Table 10 Determinants of Machinery Adoption for Tea Leaf Plucking

Variables	Coefficient	Robust SE	Marginal Effects	(dy/dx)
Age	0.013	0.008	0.002	0.001
Education	-0.041	0.040	-0.006	0.006
Number of Women	0.277*	0.130	0.039*	0.019
Inherited Tea Garden (Generational Status)	0.073	0.337	0.010	0.047
Land Size	-0.013	0.025	-0.002	0.004
SHG Membership	0.732**	0.241	0.104**	0.035
Women's Wages (Plucking)	0.013***	0.004	0.002***	0.000
Coonoor	1.367***	0.482	0.141***	0.053
Kundha	2.229***	0.447	0.361***	0.053
Constant	-7.574***	1.543		

Model Statistics: Number of observations = 236, Wald $\chi^2 = 55.03$ ($p < 0.01$), Pseudo $R^2 = 0.379$

Note: Dependent variable: Machine adoption (1 = Yes, 0 = No)

Robust standard errors are used

Reference category for block: Kotagiri

*, **, *** indicate significance at 10%, 5%, and 1% levels respectively

Rising labour costs also emerge as a key driver. The wage rate for women engaged in plucking shows a strong positive effect, with each ₹1 increase in wages raising the probability of machinery adoption by about 0.2 percent. Although the incremental effect appears small, cumulative increases in wages substantially strengthen the economic incentive to substitute labour with machines. Household labour dynamics further influence adoption decisions. An increase in the number of women in the household raises the probability of adopting machinery by 3.9 percent, suggesting that higher labour involvement, particularly in activities like plucking, encourages growers to reduce drudgery through mechanisation.

Significant regional differences are also evident. Compared to Kotagiri, growers in Coonoor are 14.1 percent more likely to adopt machinery, while those in Kundha show a much higher likelihood, with adoption probability increasing by 36.1 percent. These variations reflect location-specific factors such as labour scarcity, wage differentials, terrain conditions, and better exposure to extension services or institutional support. In contrast, variables such as age, education, landholding size, and generational status do not have a statistically significant effect, indicating that adoption decisions are less influenced by individual characteristics and more by economic pressures and institutional linkages.

4.5. Gender dimensions in tea cultivation

The distribution of tea cultivation activities by gender across the Kotagiri, Coonoor, and Kundha blocks (Table 11) illustrates a distinct division of labour between men and women, with notable regional differences in participation levels. In all three blocks, men predominantly undertake technical, managerial, and decision-making roles. In Kotagiri, a substantial majority of tasks such as manure application (90.1%), fertilizer application (88.4%), bush clearing (89.8%), pruning (92.0%), and the operation of motorized tools (94.9%) are executed by men. This pattern is similarly observed in Coonoor, where male involvement is particularly pronounced in labour hiring (80.9%) and marketing (77.1%). In Kundha, while men still dominate these activities, their participation is relatively lower, suggesting a more equitable distribution of tasks. In contrast, women are primarily engaged in labor-intensive and routine tasks, notably weeding, plucking, and the use of non-motorized tools. In Kotagiri, women are responsible for 69.6% of weeding and 73.0% of plucking activities. This pattern continues in Coonoor, where women contribute 56.3% to weeding and 64.0% to plucking. In Kundha, although women remain significantly involved in these activities, their participation decreases slightly, with a corresponding increase in joint participation. A significant observation is the higher rate of joint participation in the Kundha block compared to Kotagiri and Coonoor. Activities such as crop selection (20.8%), irrigation (22.7%), PPM (22.5%), and the use of motorized tools (20.3%) exhibit relatively higher joint involvement. This trend indicates a movement towards more shared responsibilities between men and women in this block.

The analysis of gender-specific decision-making patterns within the Kotagiri, Coonoor, and Kundha blocks (Table 12) reveals that household and social decisions are predominantly made collaboratively by both men and women. This indicates a relatively cooperative

decision-making framework among Small Tea Grower households. In all three blocks, joint decision-making is prevalent across nearly all domains, including household maintenance, children's education, family size, contraception use, and healthcare expenditure. In Kotagiri, joint participation ranges from approximately 56 to 66 percent across various decisions, while in Coonoor, it remains between 52 and 59 percent. Notably, Kundha exhibits the highest level of joint decision-making, with activities such as children's education (70.9%), family size (74.1%), and contraception use (73.4%) demonstrating strong collective involvement. Women's participation in decision-making is moderate yet significant, particularly in areas related to household welfare. In Kotagiri and Coonoor, women assume a relatively larger independent role in decisions such as household maintenance (26.1% and 26.3%) and children's education. In Kundha, although the proportion of decisions made solely by women is comparatively lower, their role within joint decision-making appears more pronounced. Men's independent decision-making role is comparatively limited, especially in family-related matters. However, men have a relatively higher share in decisions involving economic and external aspects such as migration, tourism and travel, disaster management, and the purchase of fixed assets. In Coonoor and Kundha, men's participation is more pronounced in these domains, indicating their continued influence in financially significant and outward-oriented decisions. A key observation is that the Kundha block demonstrates a more inclusive and balanced decision-making pattern, with higher joint participation and relatively lower dominance of any single gender. This suggests a shift towards greater gender cooperation and shared responsibility in both household and socio-economic decisions.

Table 11 Gender roles of tea cultivation activities across blocks

Particulars	Kotagiri				Coonoor				Kundha			
	Men	Women	Jointly	Total	Men	Women	Jointly	Total	Men	Women	Jointly	Total
Selection of crop	92 (81.4)	7 (6.2)	14 (12.4)	113 (100.0)	93 (78.2)	15 (12.6)	11 (9.2)	119 (100.0)	80 (61.5)	23 (17.7)	27 (20.8)	130 (100.0)
Manure application	100 (90.1)	6 (5.4)	5 (4.5)	111 (100.0)	99 (82.5)	13 (10.8)	8 (6.7)	120 (100.0)	82 (63.6)	22 (17.1)	25 (19.4)	129 (100.0)
Fertilizer application	99 (88.4)	9 (8.0)	4 (3.6)	112 (100.0)	100 (84.0)	11 (9.2)	8 (6.7)	119 (100.0)	79 (62.7)	23 (18.3)	24 (19.0)	126 (100.0)
Weeding	28 (25.0)	78 (69.6)	6 (5.4)	112 (100.0)	42 (35.3)	67 (56.3)	10 (8.4)	119 (100.0)	56 (41.5)	53 (39.3)	26 (19.3)	135 (100.0)
Bush clearing	97 (89.8)	4 (3.7)	7 (6.5)	108 (100.0)	90 (75.6)	21 (17.6)	8 (6.7)	119 (100.0)	82 (60.7)	29 (21.5)	24 (17.8)	135 (100.0)
PPM	85 (81.0)	7 (6.7)	13 (12.4)	105 (100.0)	93 (78.2)	16 (13.4)	10 (8.4)	119 (100.0)	71 (59.2)	22 (18.3)	27 (22.5)	120 (100.0)
Irrigation	46 (83.6)	5 (9.1)	4 (7.3)	55 (100.0)	68 (76.4)	14 (15.7)	7 (7.9)	89 (100.0)	66 (60.0)	19 (17.3)	25 (22.7)	110 (100.0)
Plucking	11 (9.6)	84 (73.0)	20 (17.4)	115 (100.0)	26 (18.7)	89 (64.0)	24 (17.3)	139 (100.0)	44 (29.9)	74 (50.3)	29 (19.7)	147 (100.0)
Marketing	76 (69.1)	7 (6.4)	27 (24.5)	110 (100.0)	91 (77.1)	17 (14.4)	10 (8.5)	118 (100.0)	90 (67.2)	19 (14.2)	25 (18.7)	134 (100.0)
Pruning	103 (92.0)	2 (1.8)	7 (6.3)	112 (100.0)	98 (83.8)	12 (10.3)	7 (6.0)	117 (100.0)	83 (63.4)	24 (18.3)	24 (18.3)	131 (100.0)
Hiring of labour	70 (64.2)	14 (12.8)	25 (22.9)	109 (100.0)	93 (80.9)	13 (11.3)	9 (7.8)	115 (100.0)	80 (61.1)	26 (19.8)	25 (19.1)	131 (100.0)
Use of non-motorised tools	8 (7.3)	90 (82.6)	11 (10.1)	109 (100.0)	39 (33.6)	69 (59.5)	8 (6.9)	116 (100.0)	48 (42.1)	42 (36.8)	24 (21.1)	114 (100.0)
Use of motorised tools	94 (94.9)	1 (1.0)	4 (4.0)	99 (100.0)	96 (83.5)	12 (10.4)	7 (6.1)	115 (100.0)	78 (66.1)	16 (13.6)	24 (20.3)	118 (100.0)

Note: “Jointly” refers to activities performed by both men and women together; Figures in parentheses indicate percentages to the total number of responses for each activity

Table 12 Gender-wise Decision-Making Pattern in Household and Social Matters across Blocks

Particulars	Kotagiri				Coonoor				Kundha			
	Men	Women	Jointly	Total	Men	Women	Jointly	Total	Men	Women	Jointly	Total
Household maintenance	24 (17.4)	36 (26.1)	78 (56.5)	138 (100.0)	35 (21.9)	42 (26.3)	83 (51.9)	160 (100.0)	16 (11.5)	29 (20.9)	94 (67.6)	139 (100.0)
Education of children	23 (16.8)	31 (22.6)	83 (60.6)	137 (100.0)	34 (21.7)	31 (19.7)	92 (58.6)	157 (100.0)	21 (14.9)	20 (14.2)	100 (70.9)	141 (100.0)
Number of children	23 (16.9)	30 (22.1)	83 (61.0)	136 (100.0)	33 (21.0)	31 (19.7)	93 (59.2)	157 (100.0)	22 (15.8)	14 (10.1)	103 (74.1)	139 (100.0)
Contraception usage	25 (18.1)	32 (23.2)	81 (58.7)	138 (100.0)	35 (22.3)	30 (19.1)	92 (58.6)	157 (100.0)	18 (12.9)	19 (13.7)	102 (73.4)	139 (100.0)
Expenditure on health care	26 (18.8)	30 (21.7)	82 (59.4)	138 (100.0)	37 (23.3)	31 (19.5)	91 (57.2)	159 (100.0)	17 (12.1)	26 (18.6)	97 (69.3)	140 (100.0)
Women stepping out of house	27 (19.6)	32 (23.2)	79 (57.2)	138 (100.0)	35 (22.0)	31 (19.5)	93 (58.5)	159 (100.0)	18 (12.7)	30 (21.1)	94 (66.2)	142 (100.0)
Marriage of children	26 (19.0)	29 (21.2)	82 (59.9)	137 (100.0)	35 (22.2)	31 (19.6)	92 (58.2)	158 (100.0)	28 (20.1)	22 (15.8)	89 (64.0)	139 (100.0)
Migration	26 (19.0)	29 (21.2)	82 (59.9)	137 (100.0)	38 (23.9)	31 (19.5)	90 (56.6)	159 (100.0)	37 (26.6)	21 (15.1)	81 (58.3)	139 (100.0)
Tourism & travel	26 (18.8)	29 (21.0)	83 (60.1)	138 (100.0)	35 (22.0)	33 (20.8)	91 (57.2)	159 (100.0)	38 (27.0)	22 (15.6)	81 (57.4)	141 (100.0)
Managing a disaster	27 (19.4)	30 (21.6)	82 (59.0)	139 (100.0)	35 (22.0)	31 (19.5)	93 (58.5)	159 (100.0)	38 (27.1)	19 (13.6)	83 (59.3)	140 (100.0)
Whom to vote	20 (14.5)	27 (19.6)	91 (65.9)	138 (100.0)	34 (21.4)	31 (19.5)	94 (59.1)	159 (100.0)	34 (22.8)	25 (16.8)	90 (60.4)	149 (100.0)
Purchase of Jewellery	23 (16.8)	31 (22.6)	83 (60.6)	137 (100.0)	36 (22.6)	32 (20.1)	91 (57.2)	159 (100.0)	32 (21.6)	29 (19.6)	87 (58.8)	148 (100.0)
Purchase of fixed assets like land, house, etc.,	23 (17.0)	26 (19.3)	86 (63.7)	135 (100.0)	44 (27.7)	31 (19.5)	84 (52.8)	159 (100.0)	39 (27.3)	17 (11.9)	87 (60.8)	143 (100.0)

Note: “Jointly” refers to activities performed by both men and women together; Figures in parentheses indicate percentages to the total number of responses for each activity

5. Conclusion and Policy Implications

The present study provides a comprehensive assessment of the performance of Self-Help Groups (SHGs) among Small Tea Growers (STGs) in the Nilgiris district of Tamil Nadu, with evidence drawn from 438 respondents across Kotagiri, Coonoor, and Kundha blocks. The findings highlight that SHGs have emerged as an important institutional mechanism supporting small tea growers, particularly in facilitating collective marketing, improving access to services, and strengthening livelihood security. At the same time, the analysis reveals important structural, economic, and institutional challenges that need to be addressed to enhance their effectiveness.

The socio-economic profile of respondents indicates that tea cultivation is dominated by middle-aged farmers, with relatively low participation of youth. This aging demographic raises concerns regarding the long-term sustainability of the sector. The predominance of male respondents, along with moderate levels of education, suggests that while there is potential for adoption of improved practices, greater inclusion of women and youth could strengthen innovation and continuity in tea cultivation. The heavy dependence on tea as the primary source of income further exposes households to risks arising from price fluctuations and cost increases. From an economic perspective, tea cultivation remains profitable across all blocks, with Kundha demonstrating relatively higher productivity, better price realization, and greater profitability. However, rising labour and input costs, particularly for fertilisers and plucking pose significant challenges. Wage disparities between male and female labour persist, and the increasing cost of labour is emerging as a critical factor influencing farm profitability. These pressures underline the need for cost-reducing strategies and productivity-enhancing interventions.

The performance of SHGs presents a mixed outcome. On the positive side, SHGs are highly effective in performing core functions such as green leaf collection and aggregation, ensuring market access for small growers. A large proportion of members rely on SHGs for marketing, especially in Kotagiri, indicating strong institutional integration. Moreover, moderate levels of satisfaction with price realization suggest that SHGs provide a relatively stable marketing channel. However, several limitations are evident. Leadership participation is uneven across blocks, with particularly low engagement in Kundha, indicating potential issues in governance and inclusiveness. Training and extension services remain inadequate, with less than one-fifth of respondents reporting access to such support. This gap constrains

improvements in productivity, quality, and technological adoption. Operational issues such as variability in collection charges, weighing practices, and leaf rejection also point to inconsistencies in SHG functioning, which may affect member trust and efficiency.

Mechanisation among small tea growers remains limited, reflecting continued dependence on manual labour. Nevertheless, the econometric analysis clearly demonstrates that SHG membership plays a significant role in promoting machinery adoption. Rising labour costs, particularly women's wages, also act as a strong driver of mechanisation. This highlights the potential of SHGs as platforms for facilitating access to shared machinery and promoting labour-saving technologies, especially in labour-scarce contexts.

The gender analysis reveals a clear division of labour, with women primarily engaged in labour-intensive activities such as plucking and weeding, while men dominate technical and managerial roles. Despite this, decision-making patterns within households are largely joint, particularly in Kundha, indicating a positive trend towards shared responsibility. However, the limited role of women in leadership positions within SHGs and technical activities suggests the need for greater gender inclusion and empowerment initiatives.

The study concludes that SHGs have made significant contributions to strengthening the small tea sector in the Nilgiris by enhancing market access and fostering collective action. However, their full potential remains underutilized due to gaps in governance, training, inclusiveness, and technological support. Strengthening SHGs through capacity-building programs, improving transparency in operations, promoting inclusive leadership, and facilitating access to mechanisation can substantially enhance their effectiveness. In addition, targeted efforts to engage youth, empower women, and improve price realization mechanisms are essential for ensuring the long-term sustainability and resilience of small tea growers in the region.

There are various policy implications that follow from our study. Improving the sustainability and efficiency of tea cultivation requires a strong policy focus on mechanisation, cost reduction, and institutional strengthening. Promoting mechanisation through capital subsidies, low-interest credit, and the establishment of custom hiring centres is essential to address rising labour costs, particularly in plucking operations. In this context, SHGs can play a crucial role as institutional platforms for shared access to machinery, dissemination of technology, and collective investment in labour-saving equipment. As we find, SHG memberships is a strong predictor of mechanisation in our study region.

At the same time, strengthening extension services to improve input use efficiency can help reduce production costs and enhance productivity. Building the institutional capacity of SHGs through regular training, leadership development, and financial management support is equally important to improve governance, participation, and overall effectiveness. Ensuring transparency and standardisation in SHG operations, particularly in leaf collection charges, weighing practices, and quality control, can further enhance trust and efficiency. We find wide variations in governance and operations related to SHGs in the study villages. Lack of proper framework and guidelines even among the Tea Board officials may be one of the reasons for such variations. Publication of successful case studies might also help in better functioning of SHGs.

In addition, policies should focus on strengthening market linkages by enabling SHGs to engage in collective marketing, direct sales to factories, and value addition activities, thereby improving price realisation for growers. Reducing dependence on intermediaries through the promotion of direct procurement channels can enhance the bargaining power of small tea growers. Given the observed regional variations, policy interventions should be location-specific, taking into account differences in labour availability, terrain, and institutional performance. Encouraging greater participation of women in SHG leadership and technical roles through targeted training and empowerment initiatives can improve both equity and productivity. Mechanisation could lead to displacement of women labour and the infrastructure and training ecosystem should aim to avoid or reduce such displacement. The training programmes targeted at women for plucking leaves needs to be intensified and the Tea Board should play an active role in expansion of these programmes.

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National Research Programme on Plantation Development (NRPPD)

NRPPD at CDS undertakes policy-oriented research on socio-economic aspects of India's plantation sector. The programme is funded by the Ministry of Commerce & Industry, Government of India.

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