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Economics of Small Tea Farming System (STFS): An in-depth Study of North Bengal, India

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ABSTRACT

The study was conducted to find out the pattern of labour engagement (both family and hired labour), price realization of different type of small tea growers and economic analysis of the small tea growing system. Small tea growers of Jalpaiguri and Uttar Dinajpur district of West Bengal were selected purposively. The present study mainly considered primary data for analysis and a small amount of secondary data was also collected from records of Confederation of Indian Small Tea Growers' Association (CISTA) and Self-Help Group (SHG) registers. It has been found that there is a variation in price of green leaves in both districts and higher rates are observed in the month of March. SHGs with own processing units were found to fetch higher prices compared to other units because of their collective bargaining power, absence of middlemen and owing co-operative processing units. Number of such SHGs, with processing units were found in Jalpaiguri district whereas, Uttar Dinajpur district recorded no SHG with own processing units. The economic analysis also presented a clear picture about fixed and operational cost, gross return with or without dividend and benefit cost ratio.

INTRODUCTION

India is the second largest producer and exporter of tea in the world after China since 2014 (Anonymous, 2015). It is also the world's largest consumer of tea, uses nearly one third of the global output (Basu et al., 2011). It was forecasted from the last baseline survey that India's tea industry is expected to grow from its current turnover of Rs. 19,500 crores to Rs. 33,000 crores by the end of 2015 (Executive Summary of Study on Domestic Consumption of Tea in India, 2018). Presently, tea is being cultivated in 14 states across the country. The major contributors are Assam and West-Bengal in North India and Tamil Nadu, Kerala and Karnataka in South India. The Indian tea industry has harvested its highest tea crop of 1,350 million kg in 2019, wherein North India itself has contributed 1,124 million kg. Tea cultivation on small holding was initiated (1930's) beyond the traditional tracts of cultivation in Nilgiris of Tamil Nadu. In the late 1980's or early 1990's this cultivation practice spread to the unconventional tea producing states of India like Assam and West Bengal. The Tea Board of India (TBI) formally adopted the concept of Small Tea Grower (STG) during the eighth five-year plan (Hannan, 2008). The small tea growers now have the half of the total share in the country's tea output with West Bengal's *Terai* region. This part of India is contributing the highest share of 73.6 per cent, whereas Tamil Nadu contributes 61.2 per cent only (Share of small tea growers in harvest, 2019). There are 37,365 such small tea growers (around 33711 ha area) in West Bengal (State Wise Tea Growers, 2019), contributing around 91 million kgs of production, and 43 per cent of West

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Bengal's total tea production (357 million kg). In West Bengal, history of small tea growing started from North-Bengal area, transforming traditional pineapple fields into tea plantation. These Small Tea Growers (STGs) being small and marginal category of farmers having limited resources were considered to be the most vulnerable group in the system (Baruah & Taparia, 2004) and small tea growing system is gradually emerging as a promising sector and being substitutable to the traditional crop production system. The present study was conducted with objective of assessing the employment generation through tea cultivation and to analyze the benefit cost ratio of the tea growing system.

METHODOLOGY

Random sampling was employed to select the respondents. 100 respondents from each district from the study areas were selected randomly of which 50 respondents associated with SHG and 50 respondents with non-SHG. So, altogether 200 small tea growers (100 SHG and 100 non-SHG growers) were chosen randomly from the two districts that was Jalpaiguri and Uttar-Dinajpur. Hence, the study was conducted in high concentrated, small tea growing districts of Jalpaiguri and Uttar Dinajpur of West Bengal. Wherein, the state and the districts were selected purposively for the study. The respondents were selected purposively as per the recommendation made by the personnel of CISTA (Confederation of Indian Small Tea Growers Association. Focused group discussion and individual interview method with structured schedule are used for primary data collection and CISTA records and SHG registers are referred for secondary data collection. Collected data were than analyzed to find out the benefit cost ratio with and without dividend. Regression analysis was also done. An attempt has also been made to find out the dividend received by the small tea growers from various stakeholders. Here, dividend means the extra profit/remuneration gained by the SHG members due to their own processing units or lack of middlemen in their value chain system.

RESULTS AND DISCUSSION

Employment generation scenario in the small tea growing system (STGS)

The section represents findings regarding employment generation scenario in small tea growing systems through labour engagement round the year interms of mandays per acre per year. As a consequence of the emergence of such a system, it was found that local laborer were being engaged in different activities so, migration to other areas has been reduced (Chowdhury, 2016; Laskar, 2015). Table 1 depicted the operation wise labour days engaged in the small tea sector per acre per year. From the figure, it is found that highest man days needed in plucking operations which is a round the year activity. 164.15 man days on an average out of total of 301.76 man days required per year was engaged in plucking. Second largest operation in respect of labour requirement is irrigation (46.31) followed by fertilization (36.50) and spraying (35.75). It is depicted that on an average under direct manual labouring activities, family labour contributes only 10.75 man days per acre per year. Family labour engaged maximum in case of weeding (3.10) and minimum in case of plucking activities (0.35). Hired labour engagement observed to be higher in plucking activities (163.80) followed by irrigation activities (45.08) but it is observed lowest in post-harvest operation (collecting, storing and disposal of harvested green leaves activities).

Table 1. Labour Requirement (Men days per acre per year)

Operation	Family labour	Hired labour	Total
Operation based direct manual labour			
Fertilizer application	2.92	33.58	36.50
Irrigation activities	1.23	45.08	46.31
Weeding work	3.10	8.35	11.45
Spraying activities	1.25	34.50	35.75
Plucking	0.35	163.80	164.15
Post harvest operation	1.90	5.70	7.60
Sub-Total	10.75	291.01	301.76
Overall management and supervision			
All the activities	39.74	0	39.74
Grand Total	50.49	291.01	341.50

Actual contribution of the family workforce was found to be in management and in the overall supervision of the garden. The unprofitability of traditional crops has forced them into tea cultivation and has given them the opportunity to transform themselves from job seekers to job providers. They have oriented themselves as entrepreneurs from mere cultivator peasants. The satisfaction and gratification associated with tea growing system might also be a strong factor for sustenance of this system. Figure 1 reveals a clear picture about the number of man days required at different stages of plantations. Minimum labour requirement was observed in the 2nd year age of plantation (257.50) and maximum requirement was found to be in the 12th year of plantations (321.88). The regression equation clearly shows that there is an increasing trend of man days requirement/ac/yr. R^2 value indicates the variability which is due to variation of age of the tea garden.

The Table 2 depicted month wise labour requirements for the small tea sector of North-Bengal. The highest labour requirement was observed in the month of October and lowest in the month of February. The low labour requirement was found in the first two months of the year because this is found to be the lean period of leaf production hence, plucking activities during this period remains almost negligible. Only some maintenance works like weeding, cleaning etc. are found to be done during this time which requires

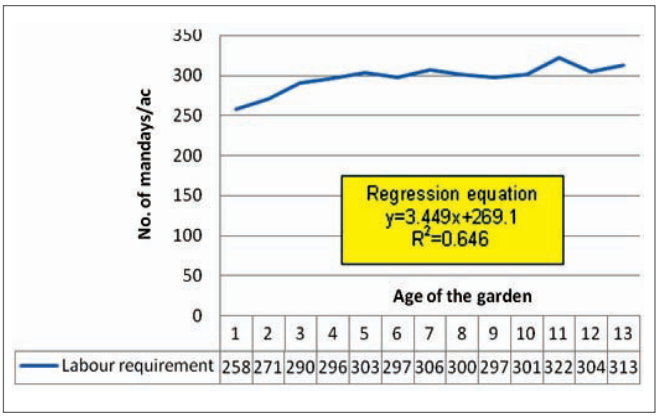

Figure 1. Labour requirement at different ages of the tea garden

Table 2. Month wise labour requirement/acre/year

Month	No. of labours / acre/year
January	15.33
February	14.23
March	24.53
April	25.88
May	31.49
June	32.35
July	33.67
August	32.88
September	32.95
October	35.53
November	24.69
December	19.57

less man days. New flashes start from March-April; labour requirement thus found to start increasing during this time however during September-October, the leaf yield as well as labour requirement to pluck them found to be the highest. It has also been observed that requirement for labour remains high during the months of May to October. October being the lean period requires lower man days which found to remain low up to the month of February. Plucking was found to be the indicator of labour requirement and almost 60 per cent labourer were found to be engaged in plucking activities throughout the year. The results are in line with Kadavil (2012); Laskar (2015), who opined that quality tea production is one of the most, labour (65% of total input cost) intensive activities.

Price realization trend during the year

Table 3 illustrates the rate of variation of green leaves in both the districts. It is shows that the rate of the green leaves was found to be high in the month of March in both the districts. In all the cases under observation high rates managed by SHGs with own processing units compared to SHGs without any processing unit reason being the absence of middleman in the process of marketing. The data also revealed that the price of green leaves of Jalpaiguri district was higher than the those of Uttar-Dinajpur district and same fact was also being reported by Tea Board of India (2007). This might be due to the reason that in Uttar-Dinajpur district, farmers are not much quality conscious. It was also observed that the SHGs are getting higher rate for tea leaves due to the power of collective bargaining as well as direct marketing, avoiding middlemen brokerages because of the possession of own processing units by the SHGs. Regarding the tea leave harvesting round the year, November and December months have recorded the lowest yield for both Jalpaiguri and Uttar Dinajpur districts. It may be due to the seasonal variations as less growth of green leaves observed during winter season. Furthermore, the Table 3 Shows that the maximum rate for green leaf (Rs. 22.25/kg) was fetched in the month of March by SHG members of Jalpaiguri district with own processing units, whereas SHGs without own processing units could fetched Rs. 21.67/kg, almost similar to non-SHG members fetching Rs. 21.00/kg for the green leaves. The results could establish that farmers having own or cooperative processing unit have the highest control over value chain and also could able to maintain better quality of green leaves as well as could control market rate. This result is in line with Mansingh & Johnson (2012); Hazarika & Borah (2013); Chowdhury (2016). Baruah (2003) enlightened that SHGs with own brand name can also enjoy fair price realization.

Economic analysis of the system

The ultimate aim of any tea cultivation system is to gain economic surplus from it. The study has also attempted to analyze the small tea growing system from the economic point of view find out the profit growers could gain out of it. The Table 4 presents the fixed and operational cost, gross return with or without dividend as well as the B:C ratio. Dividend here indicates the extra remuneration earned by the respondents (mainly SHGs) due to the possession of own processing units and marketing of the processed tea. From this table only fixed cost is observed in the first year, *i.e.* Rs. 47,400/ acre which was incurred for different activities required for the establishment of the garden like cost of land preparation, purchase of seedlings and sowing operation. It was also observed that the operational cost varied from the third year to 12th year. Maximum operational cost was found to be Rs. 71,148 i.e. during the 12th year the garden whereas minimum was observed in third year i.e. Rs. 60, 570/acre. In case of dividend, first year it was found to be nil because of no production, maximum dividend of Rs. 17,958/acre was observed in the 10th year of plantation. The minimum dividend i.e. Rs. 13,726/acre has been seen in the third year because of the minimum leaf production. Thus, it can be said

Table 3. Rate of green tea leaves in Jalpaiguri and Uttar Dinajpur district (Rs/kg basis)

Months	Jalpaiguri			Uttar Dinajpur*	
	Non-SHG	SHG without own processing unit	SHG with own processing unit	Non-SHG	SHG without own processing unit
January	9.50	10.08	10.75	8.12	7.83
February	10.00	9.83	10.50	8.00	7.83
March	21.00	21.67	22.25	16.90	16.23
April	15.50	15.93	16.50	14.93	14.63
May	16.75	16.87	17.13	14.90	14.67
June	15.75	16.05	16.25	14.38	13.87
July	12.85	12.98	13.50	11.37	11.52
August	11.10	11.08	11.35	9.37	9.32
September	11.85	11.27	12.63	9.52	9.52
October	11.75	11.92	12.00	9.73	9.07
November	9.55	9.70	10.63	8.17	7.77
December	7.80	9.15	9.08	7.77	7.50

*in Uttar Dinajpur, there was no SHG with own processing unit

Table 4. Economic analysis of small tea growing system

Age of the garden (Yr.)	Fixed Cost (Rs./acre)	Oper. Cost (Rs./acre)	Dividend (Rs./ac)	Gross return without dividend (Rs./acre)	Gross return with dividend (Rs./acre)	B/C ratio without dividend	B/C ratio with dividend
1	47400.00	61740.00	0.00	0.00	0.00	NA	NA
2	0.00	61740.00	14400.00	86400.00	100800.00	1.40	1.63
3	0.00	60570.00	13726.00	82356.00	96082.00	1.36	1.59
4	0.00	65274.00	13880.00	83280.00	97160.00	1.28	1.49
5	0.00	65508.00	14316.00	85896.00	100212.00	1.31	1.53
6	0.00	65025.00	15064.00	90384.00	105448.00	1.39	1.62
7	0.00	65283.00	15818.00	94908.00	110726.00	1.45	1.70
8	0.00	65715.00	17172.00	103032.00	120204.00	1.57	1.83
9	0.00	66210.00	16592.00	99552.00	116144.00	1.50	1.75
10	0.00	68370.00	17958.00	107748.00	125706.00	1.58	1.84
11	0.00	67986.00	15952.00	95712.00	111664.00	1.41	1.64
12	0.00	71148.00	14780.00	88680.00	103460.00	1.25	1.45
13	0.00	68820.00	14750.00	88500.00	103250.00	1.29	1.50
14	0.00	65271.00	15484.00	92904.00	108388.00	1.42	1.66

that the dividend was found to be decreasing after the 10th year of plantation due to the decreasing production trend after the 10th year (Figure 2).

Table 4 depicts that the maximum and minimum gross return without dividend has been observed in the 10th year i.e. Rs. 1,07,748/ acre and in the third year i.e. Rs. 82,356/acre respectively. In case of the gross return with dividend maximum return of Rs. 1,25,706/ acre was observed in the 10th year and minimum return i.e. Rs. 96,082/acre was observed in the third year of the plantation. In case of B:C ratio without dividend, maximum ratio i.e. 1.58 was observed in the 10th year of the plantation, followed by 1.57 in 8th and 1.50 in 9th year age. From the age of 8th year to 10th year of small tea plantations, B:C ratio without dividend was found to be the maximum and minimum in the 12th year of plantation. On the other hand, B:C ratio with dividend was found to be maximum i.e. 1.84 in 10th year of plantation followed by 1.83 in the 8th year of plantation and minimum 1.45 in 12th year of plantation. A similarity was observed in these two kinds of B:C ratios as both remained high in 8th to 10th year of age of plantation and was found to below in the 12th year of plantation (Figure 3).

The trend line for operational cost and B:C ratio generalizes the picture with regression line depicted that there is an increasing trend of operational cost over the years with a base cost of Rs. 60, 831/ year/ acre and an incremental cost of Rs. 563.20/ year/ acre (Figure 3). The R^2 value (65.2% variability in operational cost)

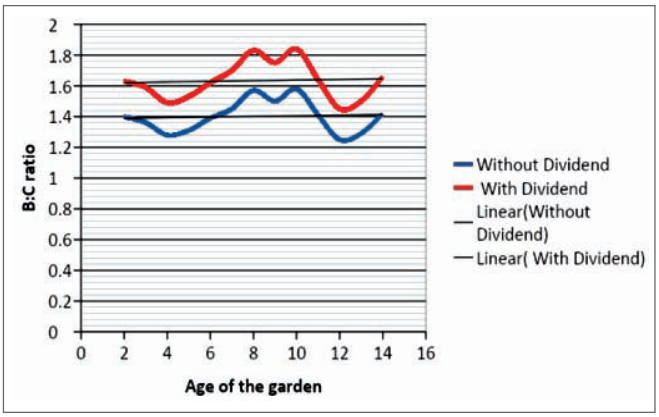

Figure 3. B:C ratio with and without dividend (Age wise)

explains that it happened due to the variation in the age of the garden. In case of the B:C ratio, no variation over the ages of the garden was found. Though yield increases with the age of the garden, B:C ratio was found to be more or less same due to high operational cost. Value of R^2 also supported the fact that there is actually no change in B:C ratio over the ages of the garden. This result is in line with Yogish (2017) indicated B:C ratio varies as per the age of the garden for plantation crops.

The Figure 4 is a graphical representation of the cumulative net profits (with or without dividend) found over the age of the

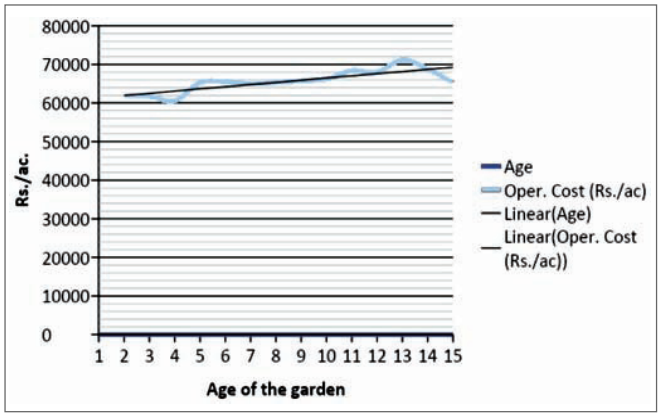

Figure 2. Age wise variation in operational cost

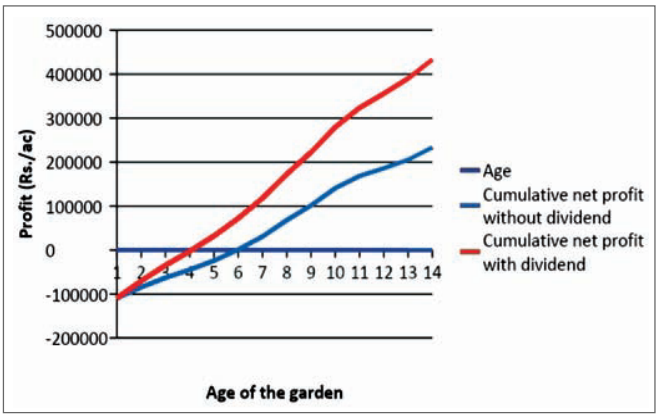

Figure 4. Cumulative profit trend in small tea sector

gardens. It was found that the cumulative net profit with dividend starts from 4th year and profit without dividend starts from 6th year onwards. Cumulative net profit touches approximately Rs. 4,50,000 per acre after 14th years of the age of the garden in case of with dividend and without dividend only Rs. 2,50,000 per acre. It was observed that the dividend usually comes from their processing units (on cooperative basis) hence, its' establishment might be an important policy implication for profit maximization of the small tea growers of North Bengal.

CONCLUSION

Farmers of Uttar Dinajpur and Jalpaiguri districts have adopted small tea growing system as an economically beneficial option over other existing cropping systems. This tea growing system is found to be capable of generating huge employment prospects as it requires high man-days round the year. It could be a highly viable enterprise among the farm families of North Bengal if the Tea Boards of India and other intervening institutions would extend their support in the form of training regarding the set-up of co-operatives or community processing units and spreading awareness about the quality parameters of green leaves. Facilitation should be extended to them to get high remunerative prices for green harvests as well as for processed tea leaves. Hence, if the lean period is taken care of, this system can be adopted by the small and marginal farmers as a profitable venture for livelihood generation and farm diversification.

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