

Value Chain Analysis of Organic Tea: Dibrugarh district of Assam

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Abstract:- Assam's biggest contribution to the world is Tea. A new dimension of tea cultivation in Assam is shifting of the small tea growers towards organic tea cultivation. Quality organic orthodox tea is fetching good price in the international market. However, an ideal value chain system is prime need to percolate this increased benefit to the grass to the growers. The main purpose of this study was to evaluate value chain of organic orthodox tea in Dibrugarh district of Assam. The study was based on primary data collected from 60 organic tea growers as well as secondary data from various published and unpublished sources. The study showed that the ownership of organic tea cultivation was male dominated. Most of the growers were young and well educated. They were skilled in organic tea cultivation with long service experiences. The average per farm area under tea cultivation was 1.33 hectares of which 0.96 hectare was under organic tea cultivation. The yield of tea leaves per hectare was 11250kg for organic tea and 16500 kg for in-organic tea. The average price realized by the growers for organic tea (Rs. 35.00/kg) was more than double as compared to in-organic tea. The net return from organic tea cultivation (Rs. 293675.00/ha) was more than in-organic tea cultivation (Rs. 103175.00/ha). Most of the growers processed their own tea leaves and sold it locally. Almost 90 percent of orthodox tea produced in the study area was sold in the local and national market and only 10 percent was exported to abroad. The prevailing marketing system in the study area for organic tea was not an efficient system as only 20 percent of produces moved through the most efficient channel and the highest quantity of produces (45%) moved through the least efficient channel. The major problems faced by the market intermediates were lack of proper transportation and poor infrastructure which caused a delay in the supply of the order. There is tremendous scope to enhance the income of organic tea grower's through an efficient value chain system.

Keywords:- Organic Orthodox Tea, Organic Certification, Value chain, Net Return, Marketing Efficiency.

I. INTRODUCTION

The agriculture system in India has endured brisk transformations over the past 30 years, i.e., after the economic reforms introduced in the 1990s. The advent of integrated agriculture, stocks, and value chain are one of the most remarkable phenomena in the Indian market. Increasing concentration on processing, marketing, and export is being observed in all the segments of the chain. The conventional method of food production is occupied by operations in a manner of manufacturing processes, with better organization among the farmers, exhibitor, marketer, dealer, and other shareholders in the supply chain of agriculture (Kumar et al. 2011). In the past few years government is also interested in the development and upliftment of the organic farming culture in the country with the policies such as Organic Farming Policy 2005, Paramparagat Krishi Vikas Yojana(PKVY) and some specific policies and project are there for the development of organic farming and organic tea sector in the region such as Organic Tea Development Project (56TH ANNUAL REPORT 2009-2010). It aims at establishing scientific package of practices for organic tea, harmonization of certification parameters and identification of market potential for organic tea and development of marketing strategies for organic tea in the global market.

A new commence is 'Mission Organic Value Chain Development for North Eastern Region' (MOVCDNER). Their main strategy is an expansion of validating organic production in a supply chain way to connect growers with consumers and to assist the growth of all the supply chain which begins from inputs, seeds, certification, to the establishment of facilities for assembling, manufacturing markets and label building enterprise. Agriculture sector still contributes about 17-18 % share in the national Gross Domestic Product (GDP) (Indian Economic Survey18). Assam is emphasizing on agriculture sector as it acts as the backbone for its economy. The agricultural division is giving employment to not less than 50% of the rural people. Assam's biggest contribution to the world is tea. Assam manufactures a number of first-class and high-cost teas in the world.

Besides, China having its own tea variety (*Camellia sinensis*), Assam is also one place in the world that has its particular range of tea, called (*Camellia assamica*). (https://en.wikipedia.org/wiki/Economy_of_Assam#cite_note-Asomor_Arthaniti_1-3). The tea was grown in the tea estates and those were owned by the big companies. Due to this the small tea growers start facing heavy competition from the big tea estates. Therefore, slowly many of the small tea growers have been shifting towards organic tea farming which helps them in generating more income. Organic tea has a high demand in the international market. But, there is a lack of coordination, regular feedback, transparency of benefit-sharing, and efficient marketing systems that are necessary for efficient and sustainable supply chain growth of traditional tea. Quality organic orthodox tea is fetching good market price in the international market. However, the price of green leaf is lower which brings less income to the tea producers. The tea producers often demand the actual price of tea green leaves and sometimes plan for strike or bandha. There are some unanswered questions, why tea growers are not receiving the reasonable price of green tea leaves? What kind of value chain is present there in tea? Who are the players in the chain and who are service providers? What are their roles in promoting tea value? Why do people shift toward organic tea cultivation? The main purpose of this study is to evaluate supply chain of organic orthodox tea from authorized organic tea and non-authorized tea producers in Dibrugarh district of Assam.

II. MATERIALS AND METHODS

The major orthodox tea-growing districts in Assam are Jorhat, Dibrugarh, Dhemaji, Golaghat, Charaideo, Lakhimpur, Majuli, Sivasagar, and Tinsukia,. Presently the area is extended to include Sonitpur, KarbiAnglong, and Nagaon district. For this study Dibrugarh, the biggest traditional tea producing district of Assam was purposively selected. A list of all the tea growers of Dibrugarh district having owned tea gardens was prepared with the help of concerned authority and personnel which included both certified and non-certified tea growers. From this list, certified tea growers from Chabua, Joypur, Moran, Tengakhat, and Tingkhong areas under Dibrugarh district were selected using random sampling technique for this study. Data were collected from a total of 60 tea growers using face-to-face interviews with semi-structured questionnaires. The primary data were entered in MS-excel and analysis was done using simple statistical tools like average and percentage. Illustrative statistics reasoned statistical tools and supply chain depiction was used to complete the objectives.

III. RESULTS AND DISCUSSION

A. Socio-Economic characteristics of tea growers

A gender distribution study among the organic tea growers showed that in the study area, among the tea growers 98.33% were male and 1.67% were female.

Age is considered as an important element in deciding the outline of the tea growers. As it can be seen in Table 1, among the sample respondents, 60 percent of the sample respondents were in the age group of 40-50 years, 23 percent were in the age group of 30-40 years and 11.67 percent were in the age group of 50-60 years. Another 3.33 percent were in the age group of less than 30 years. The rest 1.67 percent were in the age category of more than 60 years. The analysis showed that most of the organic tea growers in the study area were in the age bracket of 30-50 i.e. young and middle age. These groups of growers were found more concerned about their profit and they adopted organic tea cultivation over conventional tea cultivation to increase their profit level.

The level of education is an important factor determining the adaptability of the method of tea plantation. Hence, an understanding of the level of education of the sample tea growers was considered essential, and accordingly an attempt was made to explore it. As it could be seen, among the sample respondents, 35 percent were graduates. Another 25 percent of the tea growers were 10+2 level education completed. There were 23.33 percent respondents who completed metric level education, while 8.33 percent were at just secondary level and another 6.66 percent had a primary level of education. The remaining 1.67 percent was illiterates. Thus, from the analysis, it can be concluded that the majority of the sample respondents were well educated. These people understand the benefits and importance of organic tea. They also had better knowledge of the market trend.

The period of experience is another important factor for determining farm practices. In the study area 26.67 percent respondents had less than 5 years of working skills, 68.33% respondents had 5-10 years of working skills and 5% of the respondents had more than 10 years of working skills in the organic tea farming. Thus, from the investigation it can be inferred that most of the test respondents were highly skilled in organic farm operations. Because of their experience, they know the problems under organic cultivation and to mitigate them with their indigenous knowledge without any chemical usage. The producer in the study area had organic certification from different certification agencies. Among all, 28.33 percent of the respondents were having a full certification while 8.33 percent of the respondents were under conversion, means; they applied for certification but did not get the full certification. In general, full certification is issued only 3 years after application. About 63 percent of the respondents did not have any certification, yet they were doing organic tea cultivation as they did not use any chemical i.e. organic by default.

Gender	No of respondents (N=60)
Male	59 (98.33)
Female	01 (1.67)
Age group	
Less than 30	2 (3.33)
30-40	14 (23.00)
40-50	36 (60.00)
50-60	7 (11.67)
60 and above	1 (1.67)
Educational status	
Illiterate	1 (1.67)
Primary	4 (6.66)
Secondary	5 (8.33)
Metric	14 (23.33)
10+2	15 (25.00)
Graduation	21 (35.00)
Experience	
Less than 5	16 (26.67)
5-10	41 (68.33)
More than 10	3 (5.00)
Certification	
Certified	17 (28.33)
Under conversion	5 (8.33)
Not Certified	38 (6.34)

Table 1: Gender distribution study of the organic tea growers of the study area

B. Land use pattern of Tea growers

The total area of the respondents was 122.39 hectares of which area under tea cultivation was 79.73 hectares that contributed 65.14 percent of the total area. Out of the total area under Tea cultivation, 57.72 hectares were under organic tea cultivation. The tea leaf produced from these areas was either processed by the farmers themselves or sold to the farmer's group to produce final organic made tea. In the remaining 22.01 hectares tea cultivated area also tea was cultivated by the growers organically, but tea leaf produced in these area were not processed by the farmers

themselves or by the farmer’s group and was sold to the big tea factories. For this reason, these areas were considered as the area under in-organic tea. Besides Tea, 27.66 percent (33.86 hectares) of the land was used for field crops and horticultural crops. The land used for other purposes such as, construction of home building , sheds, etc. was 7.19 percent (8.8 hectares). The average per farm area under tea cultivation in the study was 1.33 hectares of which 0.96 hectare was under organic tea cultivation and 0.37 hectare was under in-organic cultivation of tea.

Particulars	Area (Ha)		% of Total
	Total of all respondents	Per farm	
Area under organic tea	57.72	0.96	47.16
Area under in-organic tea	22.01	0.37	17.98
Total area under tea	79.73	1.33	65.14
Plantation and horticultural crops	33.86	0.56	27.67
Land used for other purpose	8.8	0.15	7.19
Total	122.39	2.04	100.00

Table 2: Utilization of land under tea and other crops

C. Production and Productivity of Green Tea leaf

The quantity of green leaf plucked along with the average yield per hectare and per farm in the sample farms were calculated and are presented in table 3.

Table shows that, in the study area, the yield of organic tea leaves per hectare was 11250.00 kg and the yield of inorganic tea leaves per hectare was 16500.00 kg. The production of green leaf per farm was 6105.00 kg in case of inorganic and 10800.00 kg in case of organic tea.

Category	Planted area(ha)	Total green Leaf plucked (kg)	Production of green leaf per ha (kg)	Production of green leaf per farm
In-Organic tea	22.01	363165.00	16500	6105.00
Organic tea	57.72	649350.00	11250	10800.00
Total	79.73	1012515.00	12,699.30	16905.00

Table 3: Production and Productivity of Green Tea leaves in sample farms

D. Cost and Return of Green tea leaf (GTL)

The details of the cost incurred, and return received from the green leaf by the small organic tea growers in the study area throughout the research term are presented in Table 4.

Particulars	Inorganic tea	Organic tea
Average Yield of GTL/ ha (kg)	16500.00	11250.00
Average Sale Price/kg (in Rs.)	15.00	35.00
Gross Income/ha (in Rs.)	247500.00	393750.00
Total cost/ha (in Rs.)	144325.00	100075.00
Net Income/ha (in Rs.) *	103175.00	293675.00
Benefit Cost Ratio**	1.71	3.93
Cost of production/kg of green leaf	8.76	6.36
Return /kg of green leaf	6.24	28.64

Table 4: Cost and Return of Green tea leaf (GTL)

Note: * Net income over variable cost and ** Benefit-cost ratio over variable cost

The price for green tea leaves throughout the year found varied in case of inorganic tea leaf. The maximum price for the one kg of green leaves was Rs. 25.00 while the minimum price for one kg of green leaves was Rs 8.00 to 10.00. But in the case of the organic tea, the tea leaves price was found constant throughout the year and on average the tea growers got Rs. 35.00 for one kg of tea leaves. The average price realized for the inorganic tea by the sample respondents stood at Rs.15/- which was far below the average price realized for organic tea. The total cost of cultivation of green leaf in case of inorganic tea was Rs. 144325.00 per hectare while in case of organic tea it was found to be Rs. 100075.00 per hectare i.e. Rs. 44250.00 less than inorganic tea. The net return over variable cost was worked out to be Rs. 103175.00 per hectare for the inorganic tea and Rs. 293675.00 per hectare for organic tea cultivation. The net return per hectare was more in case of organic cultivation. This was because of less cost of cultivation and premium price received by the organic growers for their tea leaf. The Benefit-cost (variable cost) ratio was found 1.71 for inorganic tea leaf and 3.93 for organic tea leaf. The calculation of cost and return per kg basis showed that in case of inorganic tea the return per kg of the leaf was Rs. 15.00 against the production cost of Rs. 8.76 per kg of green leaf, while the return per kg of organic tea leaf was Rs. 35.00 against the production cost of Rs. 6.36 per kg. So, it can be concluded that though the production and productivity were less in the case of organic tea cultivation, the returns were higher in the case of organic tea.

E. Value chain analysis of orthodox tea

The value chain idea was started and publicized by Michael Porter in 1985 (Competitive Advantage) and it was critical tasks on the fulfillment of a combative plan to attain greater business performance Feller, Shunk& Callarman, 2006). In case of Dibrugarh orthodox tea, consumers of international markets are willing to pay more prices with the minimum acceptable pesticides residues due to consciousness to fitness of human. The current value chain of orthodox tea split the employees or staff personnel into two series like backward and forward linkages (Figure 1).

In backward linkages, tea growers were accepting inputs from agro- vets, tea nurseries, vermin compost producers; training and technical assistance for organic certification from KVK's, Toklai, Tea board and labors from local level. The tea growers had horizontal relationship/integration for the production of quality green tea leaves. The small farmer's group like Prithvi collects green tea leaves and transport to processing Units. In connecting the ingoing and outgoing arrangements, the orthodox tea manufacturers tried to have standard processing, categorize, grading, packaging, and labeling. The upright connection of green tea leaf farmers with local merchants and manufacturers was fine; the social association of traditional tea processors was alright. Thus, the service of private sector was inspiring. The role of Government of Assam was not clear in support services and policy issues for organic tea.

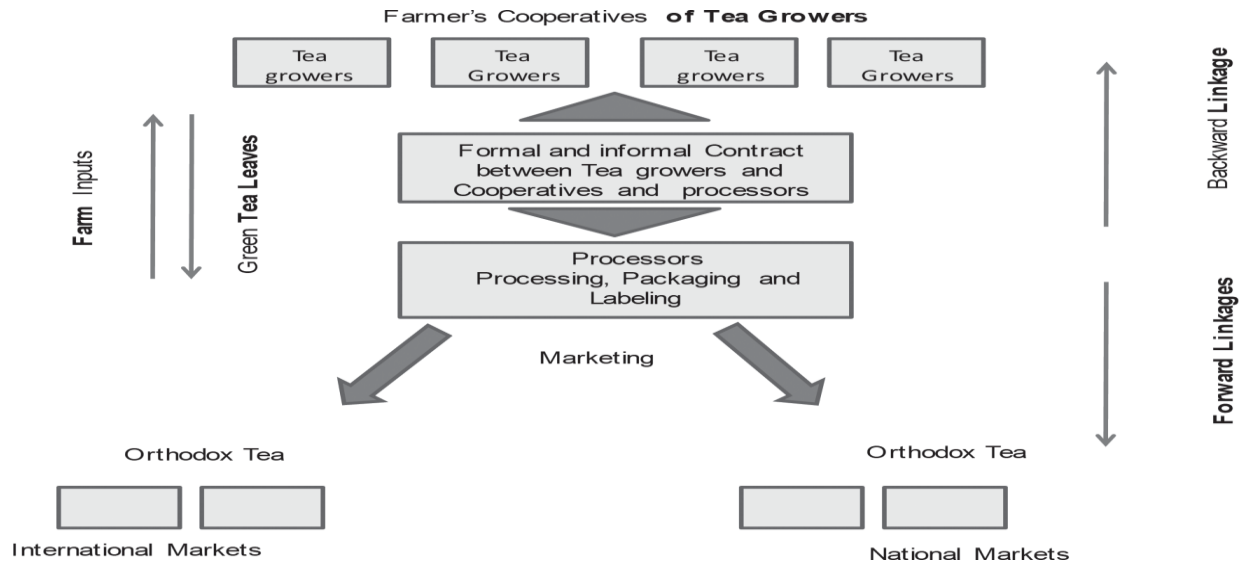
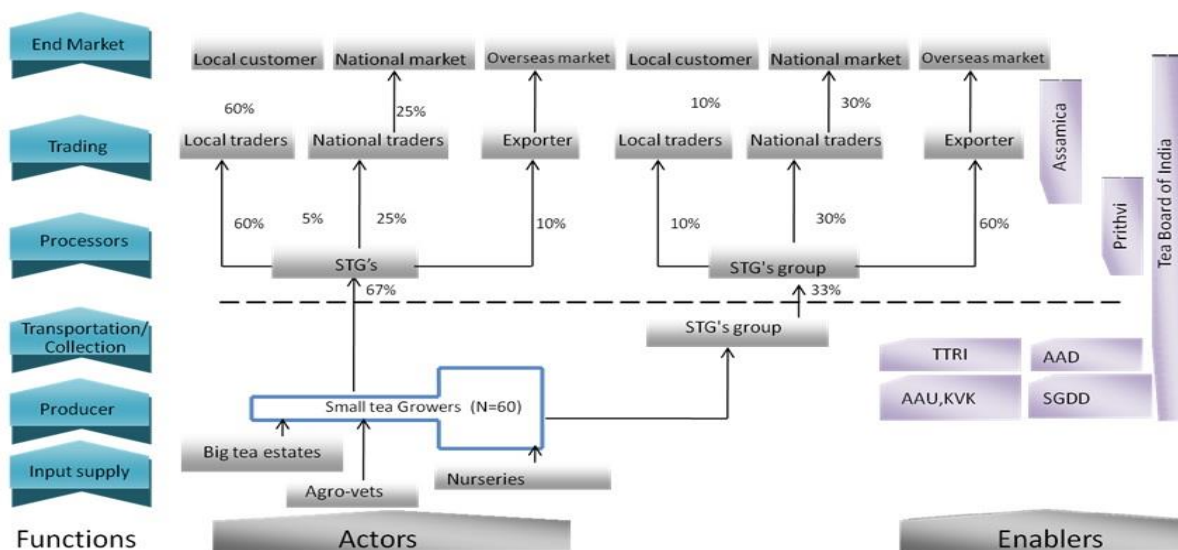


Fig. 1: Backward and forward Linkages in orthodox tea

F. Orthodox tea value chain mapping

The orthodox value chain map shows four levels of mapping such as functions, activities, major workforce, and enabler. In this value chain map, production of green tea leaves was done by tea producers, trading of green tea leaves was done by local traders and cooperatives; and processing and marketing was done by Small Farmers Group Cooperative as they had their own small processing units. There were small and medium processing unit involved in manufacturing green and black orthodox tea, packaging, labeling, and selling local and national retailers; processing factories that processed orthodox tea by gathering green tea leaves from tea growers and green tea leaves from their own

garden; processing factories which simply gathered green tea leaves from tea producers and processed orthodox tea for exporting to international markets. The main enablers providing the support to the tea growers were, All Assam small tea grower association, Tea board of India, Toklai tea research center, Tea department Assam Agricultural University and Krishi Vigyan Kendra (KVK) which had been working to develop and disseminate different technologies in tea cultivation and processing. Similarly, cooperatives and small tea growers' groups were facilitating the collective selling of tea. The small tea growers group was also found to involve in getting the organic certification at lower fees with minimal paperwork.



Note: STG= Small Tea grower's, TTRI= Toklai Tea Research Institute, AAD= Assam Agriculture Department, AAU= Assam Agricultural University and SGDD= Small Grower Development Directorate

Fig. 2: Orthodox tea value chain map

G. Orthodox tea Markets

In the study area, orthodox tea production pockets, and processing industries were concentrated along the Joypur, Moran, Tengakhat, and Tingkhong. Almost 90 percent of orthodox tea produced in the study area were mainly sold in the local and national market. Only 10 percent of total orthodox tea produced in the area was exported to abroad.

H. Marketing channel, cost, margin and price spread for Made Tea

The organic made tea in Dibrugarh district was sold through middlemen namely, farmers group cum processor, local traders, exporter, wholesalers, and retailers. The major marketing channels identified were,

Channel I : Tea growers cum processor – Consumer.

In this channel, the small tea growers in the study area produced and processed the tea leaves by themselves and the made tea was directly sold to the final consumers. The gross price received by the processor was Rs 1200.00 per kg of made tea while the total marketing cost of the channel was Rs 350.00 per kg of made tea. The net price received by the processor was Rs 850.00 per kg of made tea, the lowest among all three channels. The price spread was Rs 350.00 the lowest among all the three channels because no middleman was involved in the channel. This channel had the highest share of producers in consumer’s rupee (70.83%) and the marketing efficiency of the channel was found to be 2.42. The channel was found as the most efficient channel among all the channels in the study area. However, the channel was not much effective as we could see from table 10 that only 20 percent of the total produce passed through this channel.

Channel II: Farmers group cum processor-District/National trader – Wholesaler – Retailer – Consumer.

In this channel, processing part was done by the farmer’s group. The total marketing cost incurred by the different marketing intermediates in the channel was Rs 540 per kg of made tea and total marketing margin was Rs 705 per kg of made tea. The price spread observed in the channel was Rs 1245 per kg of made tea. The producer’s share in consumer rupee was 48.75. The net price received by the

producer in this channel was Rs 975 per kg of made tea. The efficiency of this channel was 0.62 and 35 percent of the product in the value chain moved through this channel as shown in table 11.

Channel III: Farmers group cum processor - Exporter – Wholesaler (Importer) – Consumer (Abroad).

There were different marketing intermediaries involved in the channel like Farmers group cum processor, exporter, wholesaler (abroad), and consumer. Through this channel, the product was mainly exported to the international market. The net price received by the producer was Rs 1675 per kg of made tea. The share of processors in consumer rupee in this channel was 27.92 percent only. The marketing efficiency of Channel was very poor because of its higher marketing cost i.e. Rs.1850 per kg of manufacture tea which was almost three times more than Channel II and six times more than channel I. But this channel was the most effective channel as 45 percent of the produce moved through this channel.

Thus it can be said that the prevailing marketing system in the study area for organic tea is not an efficient system as only 20 percent of produces move through the most efficient channel and the highest quantity of produces(45%) move through the least efficient channel.

Sl. No.	Particulars	Channel-I (Rs. /kg)	Channel- II (Rs. /kg)	Channel-III (Rs. /kg)
1	Gross price received by Processors	1200	1500	2200
2	Marketing cost and Processing cost	350	350	350
3	Marketing margin	-	385	585
4	Net price received	850	975	1675
5	Price paid by the end-user	1200	2000	6000
6	Total Processing and Marketing cost	350	540	1850
7	Total Marketing margin	-	705	2885
8	Price spread	350	1245	4735
9	Producers share in consumers rupee (Rs)	70.83	48.75	27.92
10	Marketing Efficiency: ME=(V/I)- 1	2.42	0.62	0.27
11	Effectiveness	20	35	45

Table 5: Marketing Cost, Marketing Margin, Price Spread and Efficiency in Different Channels

IV. CONCLUSIONS

In the study area, organic orthodox tea cultivation and processing is emerging as a lucrative business for earning foreign currencies by exporting to international markets for which many of the skilled, educated youths are attracted to take this venture as their profession. The net return from organic tea cultivation (Rs. 293675.00/ha) was more than inorganic tea cultivation (Rs. 103175.00/ha). The Benefit-cost (variable cost) ratio was found 1.71 for inorganic tea leaf and 3.93 for organic tea leaf. This was because of less cost of cultivation and premium price received by the organic growers for their tea leaf. However, all the growers in the study area were confronting with several technical like certification of organic tea, social and marketing constraints. Most of the growers processed their own tea leaves and sold it locally. They had fewer links with national distributors and international exporters. There were few small farmers group which processed their product collectively and sold to the international market through exporters. But, still 90 percent of orthodox tea produced in the study area was sold in the local and national market and only 10 percent was exported to abroad. The prevailing marketing system in the study area for organic tea was not an efficient system as only 20 percent of produces moved through the most efficient channel and the highest quantity of produces (45%) moved through the least efficient channel. Some players of the value chain were doing their work properly. But there was no support from the government institute. No financial Institute was extending active support to help the small tea growers. The major problems faced by the market intermediates were lack of proper transportation and poor infrastructure which caused a delay in the supply of the order. Hence, there is tremendous scope to enhance the tea grower's income from organic orthodox tea cultivation through an efficient value chain system. Furthermore, a simple and faster organic certification system along with proper monitoring and evaluation by concerned government agencies will be helpful for smoothing the value chain and export of certified orthodox tea from Assam.

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