A COMPARATIVE STUDY OF SMALL TEA CULTIVATION IN ASSAM AND NAGALAND WITH SPECIAL REFERENCE TO TITABAR SUBDIVISION (ASSAM) AND MOKOKCHUNG DISTRICT

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CERTIFICATE

This is to certify that the thesis entitled, ***"A Comparative Study of Small Tea Cultivation in Assam and Nagaland with Special reference to Titabar Subdivision (Assam) and Mokokchung District"*** submitted by *Sri. Debojit Konwar* towards the degree of Doctor of Philosophy embodies the result of his own work. To the best of my knowledge the data and facts recorded in the study are based on his own research work.

I therefore, recommend that this thesis may place before the examiners for evaluation for the award of the Ph. D degree of the University.

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2017

I, *Debojit Konwar* hereby declare that the subject matter and the content of the thesis, ***"A Comparative Study of Small Tea Cultivation in Assam and Nagaland with Special reference to Titabar Subdivision (Assam) and Mokokchung District"*** is not on the basis of award of previous degree to me and the best of my knowledge anybody else that the thesis has not been submitted by me for any research degree in any other university or institution.

This is being submitted to the Nagaland University for the award of Doctor of Philosophy in Economics.

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The present study seeks to examine the key role of small tea cultivation in generating income and employment in rural areas. The study is an attempt to explore the socio-economic issues of small tea cultivators and highlight theoretically and empirically their background. The study also includes conceptual issues related to the research work to focus the identification of each problems and prospect of small tea cultivation in the state of Assam and Nagaland.

The present study reveals that the financial problem is one of the critical problems of the small tea cultivators. Another problem faced by small tea cultivators in the both states is lack of scientific inputs. Despite these constrains, the small tea cultivation has witnessed the moderate growth and playing a vital role in the development of rural areas.

At the very outset, I take the privilege of offering my deep sense of gratitude and sincere appreciation to my benevolent supervisor Prof. M. K Sinha, Department of Economics, Nagaland University, Lumami for his valuable supervision and guidance in completion of the study.

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Abbreviation Used in the Study:

STG	: Small Tea Grower
AASTGA	: All Assam Small Tea Growers Association
ANSTGA	: All Naga Small Tea Growers Association
STAP	: Small Tea Advisory Programme
STGAC	: Small Tea Growers Advisory Cell
TRA	: Tocklai Research Association
SHG	: Self Help Group
FAO	: Food and Agricultural Organization
GNP	: Gross National Product
NETA	: North Eastern Tea Association
ASSTG	: Anchalik Samities of Small Tea Growers
HH	: Households
BCR	: Benefit Cost Ratio
KCC	: Kisan Credit Card
SIRD	: State Institute Rural Development
DRDA	: District Rural Development Authority
NABARD	: National Bank for Agriculture and Rural Development
CTC	: Crush Tear and Curl
NER	: North Eastern Region
WWW	: World Wide Web
IANS	: Indo Asian News Service
ITA	: Indian Tea Associatio

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A COMPARATIVE STUDY OF SMALL TEA CULTIVATION IN ASSAM AND NAGALAND WITH SPECIAL REFERENCE TO TITABAR SUBDIVISION (ASSAM) AND MOKOKCHUNG DISTRICT

CHAPTER-1

1.01 Introduction:

The discovery of indigenous tea bushes in Assam by Major Robert Bruce in 1823 led to the origin of tea industry in India. The industry, that was developed "to meet the needs of the people of the British Isles", now holds both in the industrial and trade structure of our country as a place of pride and a place of primacy.

Tea is a pleasant in-expensive, safe, virtually calorie and sodium free beverage that is enjoyed by people across the globe. It is also a dietary source of biologically active compounds that help prevent a wide variety of diseases. In today's stressful world, tea plays a pivotal role in improving the quality of human health especially since consumers in developed countries are becoming more and more health conscious. Scientific progress in the field of tea and health too has been remarkable in the past two decades. Extensive research on tea shows that tea has anti bacterial, antiviral, anti cryogenic and anti carcinogenic properties. Recent studies also show that poly phenols in tea can lower the risk of cardio-vascular diseases. In fact black and green teas have attributes that can lower the risk of several chronic diseases.

Tea is the second largest consumed beverage, only next to water, in the world. According to statistics from the Food and Agricultural Organization (FAO) of the United Nations, production and consumption of tea has steadily been increasing. The worldwide production of tea in 2005 reached up to 3.50 million tons. The main tea producing countries are China, India, Kenya, Sri Lanka, Turkey, Indonesia, and

Vietnam, which accounted for 26.68, 26.49, 9.38, 9.05, 5.87, 4.73, and 2.97 per cent, respectively of output of total global tea production in 2005.

The worldwide tea consumption in 2005 reached up to 3.36 million metric tons. From 2001 to 2005, world consumption increased to 12.59 per cent. Over the past decade, world tea consumption has increased by 2.25 per cent annually. India is the largest tea consuming country, accounting for 22.52 per cent of the total world consumption in 2005 followed by China at 20.09 per cent. The Russian federation, Japan, Pakistan, the United Kingdom, and the United States accounted world consumption for 5.36, 4.47, 3.99, 3.81, and 2.98 per cent, respectively.[1]

India has been producing tea commercially for over 150 years with over one third of the world tea production. India is the second largest tea producing country. It exports over 40 per cent of its total production to different countries. There are over 13,900 tea estates in India- large and small, spread over the north-east, the south India and the north-west.[2]

Tea is one of the most important plantation crops of India for which the country can take a lot of pride. This is mainly because of its pre-eminence as a foreign exchange earner and its contribution to the country's G.N.P. In all aspects of tea production, consumption and export, India has emerged as the world leader, mainly because, it accounts for 28 per-cent of global production. It contributes 13 per cent towards the world trade. It is perhaps the only industry where India has retained its leadership over the last 150 years. Tea production in India has a very interesting

[1] Ho Chi-Tang, Jen-Kum Lin, Feridoon Shaidi (eds): *Tea and Tea Products; Chemistry and Health-Promoting Properties*, CRC Press Tylor & Fracis Groups Boca Roton, London, New York.2009.p-5.

[2] Bora P C & A Deka: "The Tea Industry in India", *Global Advances in Tea Science*, Aravali Books International (P) Ltd New Delhi, 1999, p-43.

history on it. The commercial cultivation of tea in India, as a source of beverage started in 1839 after its discovery in upper Assam by Charles Alexander Bruce (1793-1871). Thereafter, there was a rapid expansion of tea cultivation in Assam and other state of India. Presently in India tea is grown in two distinct regions of the country, viz., North- East India and South India. The North-East Indian tea growing areas cover the Brahmaputra and Barak Valleys of Assam, Dooars, Terai and Darjeeling in Bengal and Tripura in South India, the major tea growing areas are Tamilnadu, Kerala, and Karnataka. Tea is also cultivated in a small way near Ranchi in Jharkhand Dehradun in Uttaranchal and Kangra region of Himachal Pradesh. Tea has also successfully introduced in non traditional areas of Arunachal Pradesh, Nagaland, Meghalaya, Mizoram, Sikkim and Orissa.

India is the Second largest producer of tea *(Camellia sinensis*)**,** the largest consumer and forth largest exporter (after Sri Lanka, Kenya and China) in the world. Tea in India is grown in 5.09 lakh hectares of land and the production of tea has increased from 285 million Kg in 1951 to 986.43 million Kg in 2007 registering an annual compound growth rate 1.57 per cent. India's current tea production has almost quadrupled from a level of 255 million kgs. in 1947. Per capita domestic tea consumption has also grown multi-fold since the early 1950's figure of around 200 grams to 700 grams today. Four fifth of the tea produced in India is consumed domestically. Tea in India is grown in 10.56 lakh hectares of land. Tea is grown by 160,000 small and large tea growers under a gross area of over half a million hectares.[3]

[3] Ali Shamima Yasmin: *A study on performance of Small Tea Growers' Self-Help groups in Assam*; An unpublished M.S.C Thesis submitted to Assam Agricultural University, 2009 pp, 1-3.

The tea industry besides earning a sizeable amount of foreign exchange provide gainful employment to a large section of population, directly as well as indirectly in various operations such as growing, manufacturing and marketing of tea etc. Tea Industry contributes substantial revenue to the state as well as central Government in terms of cess, agricultural income tax and land revenue besides earning considerable amount of valuable foreign exchange in tune of Rs 1200 corers for the country.[4]

On an average during the past two decades (During 1991-2010) in the production front India contributed 28 percent of the world tea production, closely followed by China 25 per cent, Sri Lanka 9 per cent being green tea producer and Kenya 9 per cent and overall approx. 23 per cent of world tea is produced by the other countries (as depicted in Fig. 1.01).

India is the largest producer of black tea as well as the largest consumer of tea in world (Table 1.01). Currently, India produces 23 per cent of total world production and consumes about 21 per cent of total world consumption of tea nearly 80 per cent of the produced is consumed within India. Over the last 20 years India's world ranking as an exporter has come down from number 1 to number 4 in the face of stiff competition from Sri Lanka, Kenya and China.

The largest tea producers India and China drink away most of their own production and share only a small fraction of exportable tea. Sri Lanka and Kenya on the other hand share only 7 per cent and 5 per cent tea growing areas but are world leaders in exports meeting 20 per cent each of world export needs.[5]

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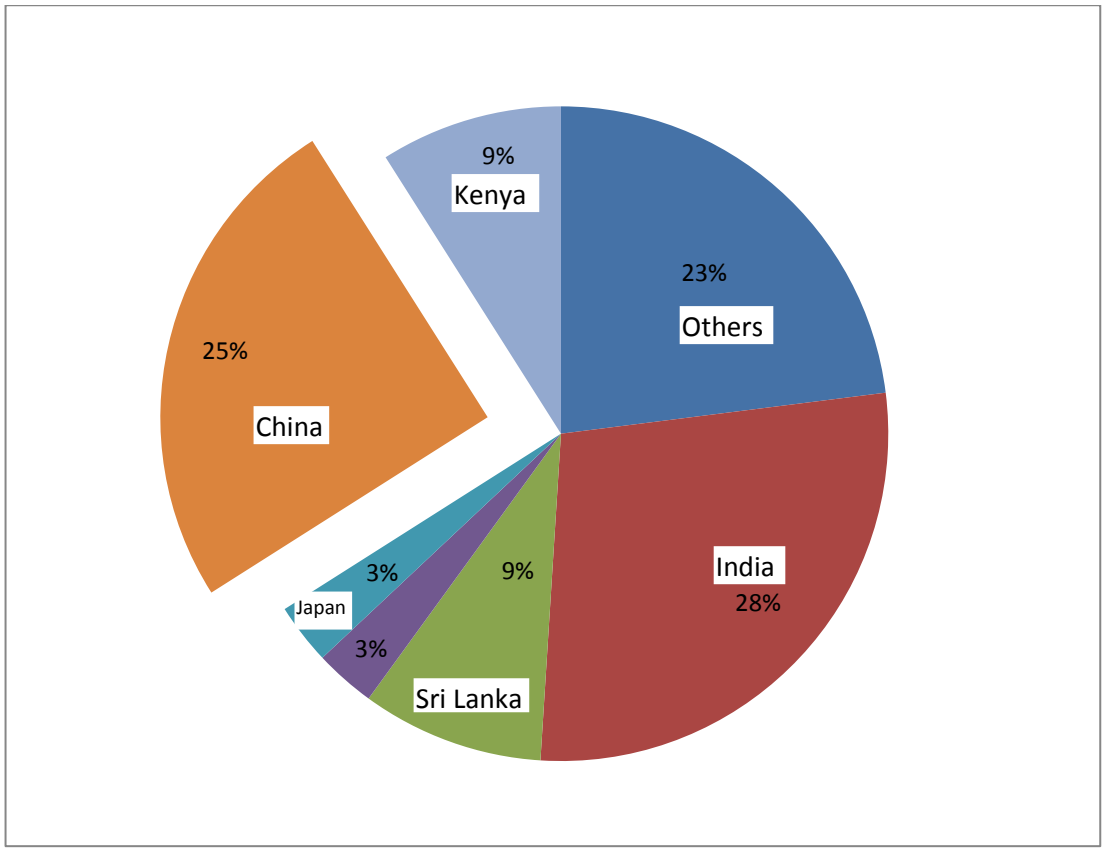
[4] *Loc.cit:* p-3.

[5] Majunder A B. Bera and A. Rajan: "Tea Statistics: Global Scenario" *International Journal of Tea Science* vol. 8(1), 2011-2012, pp 121-124.

Fig. 1.01: Percentage Share of Tea Production in Major Tea Producing Countries of the World (Average of 1991 - 2010).



Source: Indian Journal of Tea Science (IJTS) January, 2012.

Table 1.01: Present Status of Indian Tea in Global Position.

	World	**India**	**Rank**	**Share (Per cent)**
Area under tea (million ha)	3.94	0.58	2nd	15
Production (million kg)	4162	966	2nd	23
Yield (kg/ha)	1143	1668	--	--
Export (million kg)	1738	193	4th	11
Consumption (million kg)	3980	837	2nd	21

Source: Indian Journal of Tea Science (IJTS) January, 2012.

The Indian tea industry is facing stiff competition from other tea producing countries of the world. The cost of production of tea in India is higher in comparison to other countries. For a number of years, the industry has been unable to generate sufficient resources to put back into the estate, and undertake long-term development programmes. It has also failed to counter the marketing strategies of other beverages available and produced in the country. It appears that slowly Indian tea is losing ground in the international arena. To regain its competitive edge, up-gradation of research facilities, cheaper finance and aggressive marketing are urgently required.[6]

The Indian tea industry has number of critical problems and finding it increasingly difficult, to make two ends meet primarily due to increasing cost of production on one hand and declining price on the other hand. To take care of two aspects, it is important to have a multi pronged strategy so that tea industry becomes vibrant and sustainable. There has been a significant demand and supply imbalance in the recent times due to increase in availability of tea by way of increase in domestic production especially of plain varieties, declining rate of growth of domestic consumption and decline of the exports due to loss of protected market. Now the solution to low price realisation lies on reduction in cost of production through increase in productivity, production of tea through quality planting materials and optimisation of processing technologies and development of technology for the bio products and valuable addition as well as sustainability. All these issues are being looked into from different prospective.[7]

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[6] Baroowah G P: *Tea legend life and livelihood of India*, L.B.S. Publications Panbazar Guwahati Assam 781001, 2006, pp 31-32.

[7] Hazarika M: "Agro Diversification in Tea Industry; Recommendation and Proceeding" first Workshop organised among stake holders at Dibrugarh. Presented by Dr Tapan Dutta Hony, Agri. Advisor to Hon'ble Chief Minister of Assam, February 2, 2005.

Table 1.02: State wise and Month wise Production of Tea for the year 2014.

State/Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2014
Assam Valley	1.09	0.40	14.70	24.59	42	66.57	88.10	91.47	82.01	88.82	43.55	18.26	561.56
Cachar	0.42	0.05	0.83	2.58	3.56	5.89	6.28	8.10	6.71	7.61	4.82	2.56	49.41
Assam	**1.51**	**0.45**	**15.53**	**27.17**	**45.56**	**72.46**	**94.38**	**99.57**	**88.72**	**96.43**	**48.37**	**20.82**	**610.97**
Dooars	1.21	0.73	10.16	7.98	13.18	22.28	24.90	26.98	26.40	26.61	17.88	10.85	189.16
Terai	2.05	0.59	9.48	4.41	7.88	14.41	16.82	17.98	17.88	17.39	13.91	8.99	131.79
Darjeeling	0.00	0.00	0.26	1.02	0.58	1.19	1.43	1.44	1.08	0.99	0.41	0.11	8.51
West Bengal	**3.26**	**1.32**	**19.90**	**13.41**	**21.64**	**37.88**	**43.15**	**46.40**	**45.36**	**44.99**	**32.20**	**19.95**	**329.46**
Others	0.19	0.02	0.70	1.50	2.09	3.09	3.44	3.87	3.46	3.22	2.19	1.00	24.77
North India	**4.96**	**1.79**	**36.13**	**42.08**	**69.29**	**113.43**	**140.97**	**149.84**	**137.54**	**144.64**	**82.76**	**41.77**	**965.20**
Tamil Nadu	11.78	9.99	12.86	11.82	16.81	21.41	18.06	10.50	13.91	17.09	13.80	11.76	169.79
Kerala	4.90	3.49	4.20	4.11	8.16	8.06	5.37	3.38	5.26	7.63	5.66	5.36	65.58
Karnataka	0.42	0.45	0.46	0.57	0.8	0.74	0.51	0.28	0.62	0.71	0.69	0.49	6.74
South India	**17.10**	**13.93**	**17.52**	**16.50**	**25.77**	**30.21**	**23.94**	**14.16**	**19.79**	**25.43**	**20.15**	**17.61**	**242.11**
All India	**22.06**	**15.72**	**53.65**	**58.58**	**95.06**	**143.64**	**164.91**	**164.00**	**157.33**	**170.07**	**102.91**	**59.38**	**1207.31**

Source: Tea Board Statistics 2014 (Quantity Million Kg).

Table 1.03: State wise and Month wise Production of Tea for the year 2015 (E).

State/Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Jan-Oct
Assam Valley	0.77	0.21	11.42	32.16	55.34	57.49	84.68	84.27	85.06	85.69	497.09
Cachar	0.41	0.06	0.45	2.37	4.26	5.22	6.22	6.56	5.93	6.89	38.37
Assam	**1.18**	**0.27**	**11.87**	**34.53**	**59.60**	**62.71**	**90.90**	**90.83**	**90.99**	**92.58**	**535.46**
Dooars	1.10	1.13	7.79	9.01	18.27	18.94	23.99	24.66	22.92	26.32	154.13
Terai	1.76	0.84	6.43	6.38	13.63	15.33	18.21	17.50	15.29	16.50	111.87
Darjeeling	0.00	0.00	0.23	1.22	0.95	0.85	1.44	1.48	1.03	0.95	8.15
West Bengal	**2.86**	**1.97**	**14.45**	**16.61**	**32.85**	**35.12**	**43.64**	**43.64**	**39.24**	**43.77**	**274.15**
Others	0.14	0.01	0.75	2.03	2.78	3.10	3.53	3.42	3.28	3.24	22.28
North India	**4.18**	**2.25**	**27.07**	**53.17**	**95.23**	**100.93**	**138.07**	**137.89**	**133.51**	**139.59**	**831.89**
Tamil Nadu	11.37	9.51	11.38	17.77	18.14	17.32	14.07	12.21	13.60	14.83	140.20
Kerala	5.34	4.07	4.80	6.52	7.27	6.70	4.10	4.63	4.35	3.05	50.83
Karnataka	0.45	0.37	0.51	0.60	0.69	0.76	0.40	0.42	0.56	0.59	5.35
South India	**17.16**	**13.95**	**16.69**	**24.89**	**26.10**	**24.78**	**18.57**	**17.26**	**18.51**	**18.47**	**196.38**
All India	**21.34**	**16.20**	**43.73**	**78.06**	**121.33**	**125.71**	**156.64**	**155.15**	**152.02**	**158.06**	**1028.27**

Source: Tea Board Statistics 2015(E) (Quantity Million Kg).

Assam is situated in the North-Eastern part of India and is best known for its lush green garden of teas which is popularly called as 'Tea the green gold' and "pride of Assam. Since its beginning about more than one hundred and seventy years back, the tea industry has become a part of Assam's way of life with major contributions in the socio economic sphere of the state. Assam has been experiencing a production growth rate of` 2.46 per cent annum during the period, 1954-2001 in Indian Tea Industry. The area expansion was 0.83 per cent whereas productivity growth was 0.88 per cent per annum during the same period. Assam has area 2.70 lakh hectares under tea in the year 2002 which constitute 52.77 per cent of all India average. During 2007, the production of tea in Assam was 511.98 million kg which accounted for 53.16 per cent of the country's total production and 14.68 per cent of the total world tea production. Tea industry in Assam is the mainstay of the state's economy with a turnover of Rs. 2,030 corers annually. The tea industry in India provides employment generation to around 1.3 million people. In Assam, it provides livelihood to over 6 lakh people directly and about 18 lakh people indirectly.[8]

Tea is a way of life of Assam webbed in to its culture and tradition. Tea is a culture in Assam, steeped in the history of the State giving shape to what it is today. It influences on economic growth and social progress of the state is so immense, the distinct characteristics so unique and popularity of Assam tea is such universal that the name Assam is synonymous to Assam Tea to the outside of the country. Out of the three cultivated races of tea, the large leaf Assam type (camellia assamica, Masters), is indigenous to the state of Assam, which has distinct high quality characteristics. The origin of tea is almost South East Asia in the region of South China and Assam.

[8] Ali Shamima Yasmin: *Op cit*, p-2

It is an age old custom of the people of Assam to offer '*tamul pan*' (pieces of areca nut and betel leaf) and a cup of tea to any guest visiting the household. Offering tea in customary in any social or religious congregation. It is essential for entertaining guests. Tea is a part of daily life-drinking endless cups of the beverage. It was traditionally drunk in utensils made of brass or even in cut bamboo pieces. Tea was served earlier and drunk as liquor without addition of milk and with or without sweetener like *gur* (jiggery), but even these years, tea with milk and sugar gained popularity. There is hardly any family in Assam who does not drink tea in morning or evening hours sitting together discussing various household matters. In any marriage or religious ceremony continuous supply of tea to the invitees is a must. Thus its role in family and social bonding is enormous. Tea lovers call it as the state drink' of Assam and moves are underway to getting official recognition for it and subsequently as the national drink'.[9]

Though Assam is the pioneer state in respect to development of tea industry in India yet, there is a huge potential for growing tea even in non traditional areas of North-Eastern regions. The standing committee on Commerce Ministry in its report submitted in April 1995 emphasised the urgent need to expand tea cultivation to entire North Eastern states as the climate and soil conductive for this purpose.[10]

The people of Nagaland like other hill tribes have been drinking tea since time immemorial and even today tea happens to be most preferred beverage among the Nagas. The hill tribes in NE India use shifting cultivation for their livelihood and Nagaland is no exception. Keeping in mind the unfavourable impact of

[9] Baruah Pradip: "Tea Drinking Origin Prospect Habits with special References to Assam its Tribes, and Role of Tocklai"; *Science and Culture*, Sept-Oct, 2011, pp 365-372.

[10] Dhar P K: *The Economy of Assam Including Economy of India.* Kalyani Publication, New Delhi, 2013, p-558

jhum cultivation on ecology and environment some forward looking Nagas took up organised tea cultivation way back in the late seventies as an alternative means of livelihood. Late **Mr.Sashimeren Aier** (Rtd Development Commissioner) was the pioneer of tea cultivation in Nagaland. However tea cultivation was popular among the common farmers since 1990's. Some entrepreneurs with never say die attitude however did not give up and carried on with their obsession of growing tea in Nagaland. They pulled all their resources available with them and continued with their endeavour. Today, several parts of Nagaland i.e.Mokokchung, Zunheboto, Mon, Tuensang, Dimapur, Phek etc grow some sizable amount of tea.[11] The State Government and Tea Board officials pointed out that tea cultivation can be a suitable alternative to jhum cultivation in Nagaland and the abandoned jhum land can be transformed in to eco-friendly tea plantation. As per statistics available with the state Agricultural Department, about 800 acres of land in Mon and 300 acres in Mokokchung district have been brought under tea cultivation and per hectare production of tea in some areas of Nagaland are more than that in Assam. However, there is only one tea factory in the state located in Mokokchung district. Where the factory fed by plantation of small tea growers of neighbouring districts like Zunheboto and Wokha besides Mokokchung. While the major bulk of green leaves are exported to Assam at a low price.[12] It is quite encouragement to the growers that the second tea factory is established recently in Tizit town under Mon district.

[11] Kibami D. Hukiye: "Small Tea Grower's of Nagaland: Prospects and Challenges", Presidential speech of All Nagaland Small Tea Growers Association. Speech presented at Confederation of Indian Small Tea Grower's Association held at Guwahati March 21, 2012.

[12] *Livelihood and Employment Opportunities in Nagaland: Sectoral Issue: A thematic Report*, A GoI UNDP project 2009, p-24.

1.02 Origin of Tea and Development in Assam and Nagaland:

There are many old legends behind the origin of tea. Tea is a time immemorial crop and it has been cultivated for so long that its home as a wild plant is a matter of speculation. Its origin is shrouded in the mists of legend apocryphal history of doubtful authenticity. The word "tea" is not to be found in the Bible, the works of Shakespeare or any other publication in English previous to the latter half on the 17th century. No classic names either for plant or the beverage are to be found in Tamil, Sanskrit, Japanese, Hebrew, Greek or Latin. The importance of tea as an international beverage assuming global dimension belongs to the era of Western expansion in the East, after the sixteenth century.[13]

According to one version prevalent in China, " The good king drank water from a pot in to which leaves from a wild, bush had fallen while the water was on boils and savoured the first cup of Tei, Significantly the Chinese tea garden workers called it "chai", which is probably the origin of the world cha " in India. Another story says, "Chinese travellers carried it from North-East India to China 500 years ago for its medicinal values" yet another version says that the founder of the Zen Buddhism cult saint Bodhidharma, once fell asleep during his meditation when he awoke, he was embarrassed that he decided to cut off his eyelids as an act of penance, "Cast to the ground the severed eyelids grew in to a tea plant which, when brewed could banish sleep." Thus, tea became beverage forever.[14]

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[13] Manoharan S: *Indian tea, strategy for development*, S. Chand & Co. (PVT) Ltd. Ram Nagar New Delhi 1974, pp 1-2.

[14] Baroowah G P: *Op cit,* p-26.

Tea drinking originated in China about 3,000 years ago and was cultivated in South - East China at first the word 'Tea' is derived from 't' 'e' of the China Fukien dialect. In Cantonese, tea is known as 'ch' 'a'. Another legend associates tea with Shen Nung, a 2737 B. C. Chinese emperor. While on hunting trip in wild forest some tea leaves carried by the wild fell in to his boiling water pot and he discovered the properties of the leaves on drinking unknowingly.

Tea first authentic reference to tea is found in an ancient Chinese dictionary which was revised about the year 350 A.D. by P'o a Chinese scholar. Tea leaves were boiled at that time to prepare a medicinal decoction. The first book exclusively on tea was published in 780 A.D. by Lu. Yu. The book 'ch'a Ching or Tea classic in three volumes is divided into ten parts, each describing various kinds of tea, cultivation and manufacturing methods etc, and given information on the tea growing district of China.[15]

Use of tea as a beverage commenced towards the end of sixth century in China. Thereafter, tea grew in popularity and the Government levied a duty on tea in 783 A. D. Tea was reported to be a common beverage of China in Ninth century by an Arabian traveller who went there. The habit of drinking tea later spread to Japan and spread to other parts of the world only in the middle of the seventeenth century.

Tea plants (*Camellia sinensis* (L) O. Kuntze, Family: Theaceae) were discovered growing wild in Assam way back 1823. The indigenous people of Assam were drinking tea in their own method of preparation for its medicinal properties since time immemorial. The credit for discovery of tea in Assam goes to three persons- Beesa Gaum, a tribal head of an upper Assam village, an Assamese working with the

[15] Baruah P: *The Tea Industry of Assam Origin and Development*, E B H Publishers, Guwahati Assam 781001, 2008, p-23.

British, the famous patriot, Maniram Dewan and Robert Bruce, and English infantry officer. However, there still exists some controversy about the discoverers of tea in Assam. Mr. Robert Bruce is widely recognized as the discoverer of tea in Assam. However, the plants did not get recognition as indigenous tea plant till 1834. Originally tea seeds brought from China were tried in Assam for cultivation. But tea plants were found to be growing wildly in Assam and the tea made from them were found to be quite good. Till that time China was the sole tea manufacturing country in the world and when the East-India company's trade monopoly was ended in 1833. The company turned its attention to find an alternative source for its supply of tea and the discovery of tea in Assam came as a welcome relief to them.[16]

The discovery of indigenous tea in Assam in 1823 led to the origin of tea industry in India. However, the Kolkota Agricultural Society differs from the above opinion. It has consistently held that in the early 1700's, the ships of the East India Company frequently brought the tea plant by the way of curiosity Col Kyd a resident of Kolkata and the famous botanist saw tea plants growing in his garden in 1780 this information was sent to Sir Joseph Bank and in 1782 his garden was handed over to Botanical Garden of Kolkata. In 1788, Sir Joseph Bank recorded the existence of indigenous tea growing wild in Coochbihar and Rangpur district of Bengal and suggested to cultivation of this plant. The wild tea in Coochbehar confirmed the first discovery of indigenous tea in India.[17]

Major Robert Bruce, an adventurer and trader in 1823, came to know about the existence of tea in Assam he supposedly saw tea plants growing widely in

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[16] Baruah P: *Ibid,* p-1.

[17] Banarjee G D & Srijeet Banarjee: *Tea Industry A Road Map Ahead*, Abhijeet Publications, New Delhi, 110094, 2008, pp 11-12.

some hills near Rangpur (present Sivasagar). Robert Bruce with permission with East India Company made an agreement with Singpho chief Beesa Gaum to supply him some tea plant and seed during his next visit in the following years. Major Robert Bruce died in 1824 before he could collect the tea plant. But he must have confided his agreement with the Singpho chief to his younger brother Charles Alexander Bruce before his death (Beesa is a Singpho Village near Mergherita in upper Assam's Tinsukia District). It was a Singpho chief who supplied seed and tea plants to C. A. Bruce which was sent by Bruce to Kolkata (Botanical garden) for verification. This clearly shows that the Singpho were not only familiar with tea plant but were making and drinking tea from antiquity.

There is a controversy regarding the real discoverer of Assam tea plant. According to some sources the tea plant of Assam was discovered by a local Assamese noble man Maniram Dewan. It is almost certain that Moniram Dewan told Major Bruce about tea growing wildly in Assam and took him to the areas where tea was growing and also introduced the Singpho chief. But the involvement of Maniram Dewan with tea discovery of Assam could not be established without sufficient proof and the British also did not give credit to him for his act of the discovery of tea in Assam.

The specimen tea seed was sent to the Botanical garden by C. A. Bruce for verification earlier. The Botanist confirmed that the specimens are the family of camellia but not the same species. Meanwhile British trade relations with China became uncertain and considering the feasibility of starting tea cultivation in their Eastern colonies a tea committee was formed in 1834 by Lord William Bentinck the Governor General of India to advice on possibility of commercial cultivation of tea in India. The years 1834 was a momentous year of the history of tea as if gave shape to

the eventual development of tea industry in Assam. In 1935 a group of scientist was deputed to Assam to evaluate the prospect of tea cultivation in Assam. Consequently the survey of land settlement was completed. Later, in 1836, C. A. Bruce was appointed as the superintendent of tea forest and he performed some outstanding works on tea during his tenure. He tried to develop the Chinese variety in Assam in four tea gardens in upper Assam but failed. The indigenous variety thrived well. He also started tea nursery of indigenous variety in upper Assam. The East India Company established tea gardens in Assam as both land and climate were suitable for tea cultivation.

Thus Major Robert Bruce was the real discoverer of Assam tea who collected tea plants from Singpho chief died in 1824 but passed the information to his brother C. A. Bruce. Later, C. A. Bruce was awarded a medal by English Society of act of his route in discovery of Assam tea presented through Agriculture and Horticulture Society of Bengal. Ironically the persons who did not receive any award posthumously were Major Robert Bruce and Maniram Dewan.

Until the end of 1839, various tracts of tea and nurseries were owned by East India Company. Thereafter, commercial interest moved on the first privately owned tea company, the Assam Company was established in February 12 of 1839 and it was in fact the very beginning of whole tea industry outside China. By 1962, fifty seven private and five public companies were operating in the Brahmaputra Valley. Thus within a period of about 25 years, from the appointment of tea committee by Governor General of India the tea industry of Assam made a big headway. At present tea is only single largest organized agro-based industry of Assam and playing a dominant role in the economy by contributing bigger share to the state income.

Indian tea in world market always enjoyed a premium over tea and Assam is a major state producing good quality of tea. Assam has been endowed with rich natural resource, the Brahmaputra and its tributaries bring silt in the reason which made the soil very fertile for tea cultivation.

When the tea planting started in Assam about 1835 seed was brought from China, but tea was also found in Assam valley growing in rows, evident from planted previously by Assamese people. This tea was called Assam indigenous and many estates were planted with seed from it. Later on tea was found growing apparently wild in the **Naga Hills**, in Manipur, in Lushai Hills and Burma. These plants were considered superior to the Assam indigenous. In 1880 the Stiefelhagen brothers put out the first tea seed garden in Cachar with seed brought from Manipur.[18]

The history of "Naga Tea" dates back to days of the British Raj when the Konyaks had impressed them by serving the red concoction from Mon area. However the practice of growing tea was limited within home gardens and domestic use. For the last couple of years though farmers have been including tea as a major cash crops and some of them were even going exclusive on tea cultivation. Since 1995 the area under tea cultivation substantially increased said the senior secretary of the Wastelands and Horticultural Department. There are more than 1000 small tea growers in Nagaland and the number of small tea growers is increasing. The speed of switching to tea from mixed crops has been accelerating since 1995.[19]

The people of Nagaland like other hill tribes of North-East India have been drinking tea since time immemorial. Even today tea happens to be most preferred beverage among the Nagas. The soil characteristic, the climate, the rain fall etc

[18] Harler C R: "Tea Manufacture in C.R Harler Way", *Assam Review & Tea News*, vol. 96, No-6, August-2009, p-19

[19] WWW.One India.Com News: "Naga Tea Fetches Record Price", August 28, 2006.

provide the ideal conditions for growing tea in Nagaland. Keeping in view of the unfavourable impact of jhum cultivation on ecology and environment some forward looking Nagas took up organised tea cultivation way back in the late seventies as an alternative means of livelihood. Late Mr. Sashimeren Aier (Rtd. Development Commissioner) was such a pioneer. Mr Toluvi Kibami (Rtd. CCDU/ Chief Engineer, PHED) initiated tea cultivation in the 1990's. It is reported that some tea manufactured in the late seventies were valued at as high as Rs 200/ per kg. This was an indication that Nagaland has the potential for high quality teas. However, that was all what was heard about Nagaland teas. Even today i.e. after 40 years, tea growing in Nagaland has almost remained a non sector.[20]

For a Konyak family, the tea also known as "khalup" occupies an important place. No visitor or guest is allowed to leave their house without having tea (khalup). On an average a Konyak family consumes 1-2 kg of tea in a month, which cost them about Rs 400-800/ a month in the market. The lower Konyak area of Tizit was a hot spot of lumbering and flourishing valley for setting up timber mills in the eighties. With the timber resources the entire valley was consumed but now the tea firms have replaced the timber mills. People here have embraced the tea crop which provides them with promising source of livelihood.[21] With the capacity to produce their own crops for consuming and to sell surplus crop commercially, farmers in the area are on the verge of their own "Tea Revolution".

1.03 Emergence of Small Tea Cultivation in Assam and Nagaland:

Small tea cultivation has been proliferated by a considerable amount in the last few years and now started contributing significantly to tea production.

[20] Kibami D. Hukiye: *Op cit.*
[21] Morung Express.Com: "Tea Revolution in Tizit Region", *The Morung Express*. June 30, 2015.

However, there is no agreed definition of small tea growers. According to Tea Board and Department of Tea Husbandry and Technology of Assam Agricultural University Jorhat, a small tea grower is that whose land under tea cultivation does not exceed 10 hectares (75 Bighas). According to Government of Assam, one can be considered as a small tea grower if his area under tea cultivation does not exceed 4.02 hectares. The same definition of small tea grower has been accepted "Small Tea Grower's Advisory Programme" (STAP) of the Department of Tea Husbandry and Technology, Assam Agricultural University Jorhat which has been sponsored by the Tea Board of India. The NABARD also accept the definition of STAP. However, All Assam Tea Growers Association (AASTGA) submitted a memorandum to the Govt of Assam in 1993 to increase the area under tea cultivation from 30 Bighas to 250 Bighas for small tea growers. Such demand of the Association is yet to be approved by the Government.

Although India has been continuing to be the largest producer of tea in the world, it has however been losing its primacy due to increasing internal consumption, and sluggish growth of production. Currently, India produces 23 per cent of total world production (which was 38.9 % in 1971 and 29.90% in 1996) and consumes about 21 per cent of total world consumption of tea, nearly 80 per cent of the tea production is consumed within India. Over the past 20 years India's world ranking as an exporter has come down from number 1 to number 4 in the face of stiff competition from Sri Lanka and China. Therefore, to regain the past, small tea cultivation may be the one alternative to increase the productivity of tea.

[World India Rank Share (%) Area under tea (million ha) 3.940.582 n d 15 Production (million kg) 41629662nd 23Yield (kg/ha) 11431668- Export (million kg) 17381934th 11 Consumption (million kg) 39808372 nd21**][22]**

Tea production in the organised sector is declining in India due to ageing bushes and little investment and the country have lost 50 million kg of tea in the past 10 years. At the same time it is rising in small holdings which account for nearly 28 per cent of the total tea cultivation area and 26 per cent of the country's total production. The Tea Board of India Executive Director Rakesh Saini told IANS on 7th August 2012. According to him 1,686 big gardens (organised sector) produce 723 million kg from 416,027 hectares of tea yearly accounting more than 74 per cent of countries total production. Saini said the number of small tea growers in the country would be around 250,000 producing 257 million kg of tea from 162-431 hectares annually accounting more than 26 per cent of countries total tea production. The contribution of small tea growers is the largest in Assam followed by West Bengal, Tamilnadu, Kerela, Tripura, Arunachal Prodesh, Himachal Prodesh Mizoriam, Meghalaya and Bihar. He said the domestic consumption of the beverage is rising although per capita consumption in India is less than other countries.**[23]**

Over the last few years the tea industry in India has gone through structural changes with the emergence of small tea growers producing 25 to 30 per cent of countries total output. Around 1.58 lakhs of small tea planters are engaged in tea cultivation and their contribution is estimated to produce 50 per cent of countries output in the next 5 to 7 years. Tea cultivation in small holdings in Assam became popular day by day and attracting the educated unemployed youth including women,

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[22] Majunder A, B Bera and A Rajan: *Op cit,* p-124.
[23] *The Assam Tribune,* (IANS), August 7, 2012.

thereby giving boost to the state economy. Nearly 5 lakh families are associated in cultivating the crop with more than 70,000 small tea growers spread over 14 districts. They produce 100 m.kg of largely CTC tea annually from about 2.5 lakh hectares of land under tea cultivation.[24]

As per record available, the first commercial small tea garden was established Assam in Golaghat district in 1978. Tea cultivation in small holdings is providing employment to large number of unemployed youth generating additional income to farmers, contributing large quantities to State total production and thereby helping the State economy. These small tea growers are now gradually organized.

Small tea cultivation received greater importance in the recent years not only as the source of self employment of people particularly the young generation and increasing income but also point of view of increasing future production of tea of Assam since the horizontal expansion of big tea estates have become very limited and the productivity almost reached its potential. In fact, the small tea growers have greatly revolutionized the socio economic fabric of Assamese Society. It is this group which proved that a lucrative business like tea need not be in the hand of the big players. It has also inspired the misguided youths to do some productive works for their better livelihood. The beneficiaries of this new venture were also the small and marginal farmers, the unemployed and underemployed and weaker sections of the society. This eventually turned in to a significant movement and ushered in a new era in the plantation history of Assam. By the middle of eighties these sections of the society took to a tea plantation on any suitable land, whether belong to them, their families or to the Government. The educated unemployed youth were attracted to this

[24] AR News: "Assam Small Tea Growers are an Integral Part of Industry", *Assam Review & Tea News*, Vol-103, No-4, June 2014, p-28.

profession by designed rather them by default probably due to the fancy and status associated with the enterprise. The new entrepreneurs defied the challenges of the vagaries of nature and other difficulties and brought vast shelters of vacant land in upper Assam in tea cultivation. The small tea grower sector soon became one of the well known avenues use for employment both self and other wise though, initially small scale tea cultivation gained momentum only in the upper Assam in recent years it has spread almost all district of the state.

[**Profile of Assam Tea:** No of big gardens-825, Area of big gardens-232649 hectares, No of small tea gardens-64597, Area of small gardens-88,647 hectares, Employment (permanent)-5 lakh, Employment (casual)-5 lakh, Total production in Assam-480 m.kg in 2010, All India production-966 m.kg in 2010, Total turnover-Rs 5000 corers, Country share-50 %, World share-12%.][25]

In the history of tea plantation in Assam, development of small tea garden in the late nineties was considered as a blessing in the tea sector. From the available literature, it has been observed that small tea growers have attained respectable position in the state as well as in the country. So India Tea Association (ITA) and State Government also considered it as essential to create self employment opportunity for the educated Unemployed youth and to create employment potential for the ex tea garden labourers. The small tea gardens were quite encouraging in the initial stage of its development as they were getting remunerative price for their green tea leaves as there was less consumption. But later on number of small tea growers increased substantially particularly in upper Assam districts. Therefore, now the small tea growers have been facing the problem of marketing of green tea leaf and some

[25] Hazarika M, Mrinal Talukdar (eds): *Tocklai & Tea as the Road Fades Away,* Tea Research Association Jorhat-785008 Assam. 2011.

other problems restricted the small tea growers in adopting scientific method of tea cultivation for optimum return. Existing underutilized factories of big tea plantation and the recently installed bought leaf factories are tea growers. The produce is sold to these out lets directly or through their agents involved in the trade. Apart from these problems the tea production of Assam has crossed 500 million kg mark recently. The state has remanded a total production of 508.74 million kg for year 2011 the figures for last three years were 480.28 million kg in 2010, 499.99 million kg in 2009 and 487.49 million kg in 2008. The total production of tea in the country for 2011 is 988.32 million kg which is the highest over past 11 years. The North Eastern Tea Association (NETA) chairmen Bidyananda Borkakoty told the Hindu (16th February 2012) that the credit for the increase of Assam tea production goes to small tea growers. Production from small tea growers accounted for about 30 per cent of total production in the state. According to a survey by the Assam Government there are 68,465 small tea growers in 14 district of Brahmaputra Valley. Now tea is grown almost all 27 district of Assam.[26]

The All Assam Small Tea Growers' Association was registered in the year 1987. AASTGA has brought in a green revolution in rural Assam by cultivating tea in unutilized and underutilized uplands and thus bringing huge socio-economic changes in Assam. In the last two decades, the number of small tea growers has swelled to astounding number of 65000. Almost 9 lakh people are engaged directly and indirectly in this Association. Around 2.5 lakh hectares of land has been covered by the Small Tea Growers. The members of AASTGA have been contributing about

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[26] *The Hindu,* 16th February 2012.

29 per cent of the total tea produced by Assam which is approximately 14 per cent of the total tea production of India.

Tea was declared as a "State Drink" of Assam by Chief Minister Tarun Gogoi on 22nd November 2011 at the World Tea Science Congress held in upper Assam, Jorhat town on occasion of 100 years celebration of Tocklai Experimental Station of the Tea Research Association.

The high rate of growth of small tea cultivation in upper Assam is due to the already available infrastructure like the presence of organised market, availability of planting materials and skilled labour in the established big tea plantations. During the initial period of emergence most of small plantation were established in the vicinity of these big plantations and were considered as satellite green leaf production centres for the factories of the big plantation. Most of the land utilized for establishing their gardens were ceiling surplus land, grazing land allotted government land encroached government land, forest villages or land occupied previously by other crops such as sugarcane, areca nut, orange pine apple, bamboo, citronella and also high land rice only a small per cent of growers have cultivated tea on land previously occupied upland rice. Besides, 30 per cent of small tea growers have cultivated tea on land inherited from their predecessors or have purchased land and thus have title to their land.[27]

[27] Ali Shamima Yasmin: *Op cit,* p-8.

Table 1.04: Districts of Assam having Small Tea Plantations:

Major Plantations	**1. Tinsukia**	**8. Bongaigaon**
	2. Dibrugarh	9. Darrang
	3. Sivasagar	10. Sonitpur
	4. Jorhat	11. Lakhimpur
	5. Golaghat	12. Dhemaji
	6. Nagaon	13. Udalguri
	7. Kokrajhar	14. Karbi Anglong
Minor Plantations	1. Morigaon	4. Nalbari
	2. Kamrup	5. Barpeta
	3. Baksha	

Source: Records of All Assam Small Tea Growers Associations.

Small tea growers are now an economic force for the state of Assam and the small tea gardens serve as the back bone of economic rejuvenation. The growth of small tea growers in the region has been monitored by Tea Board, Small Tea Grower Advisory Programmer (STAP) sponsored by Tea Board, Assam Agricultural University Department of Tea Husbandry and Technology. Assam Agricultural University, Jorhat had taken some initiative in the late eighties in the direction by setting up of a (Tea Advisory cell) which subsequently was funded by Tea Board and was renamed "Small Tea Advisory Program" (STAP). The Advisory Services were rendered by the call these years but considering the tremendous growth of the sector this was a persistent demand from the growers associations to form an 'advisory cell' at TRA. Thus, in the year 2004 the Small Tea Growers Advisory Cell (STGAC) was set up at Tocklai to cater to the training needs of the small tea growers.[28]

[28] Baruah B P: "Training Needs of Small Tea Growers" *Seuj Silpa*, A Souvenir Published By All Assam Small Tea Growers Association 2008/9, pp 124-125.

The two major mandates of the STGAC are:

(a) Disseminate technical knowhow of tea culture among the small tea growers of the target areas.

(b) Motivate the small tea growers to form Self Help Groups (SHG_S) to avail the benefit under various schemes of the Tea Board India.

Assam Agricultural University is credited for the popularization of tea as a farmers' crop and subsequent development in the small tea sector in Assam in particular and the entire north eastern region in general. The relentless efforts made by the department of Tea Husbandry & Technology to popularize tea, as a farmer's crop in Assam is a significant contribution towards agricultural development of the state. Advisory services for the benefit of the small tea growers of Assam were first initiated at the department of Assam Agricultural University during 1988. An ad-hoc body called 'Tea Advisory Cell" was constituted with four teachers of the department to render technical help to the common farmers interested to take up tea cultivation. Later, with the financial assistance of the Tea Board, India the cell was reconstituted as 'Small Tea Growers' Advisory Programme' (STAP) during 1991.

The 'Small Tea Growers' Advisory Programme' (STAP) is one of the most successful programmes of the university. The uniqueness of the programme lies on the fact that unlike most extension programmes of the university, it has a direct relationship with every registered farmer of the state. The (STAP) programme has been offering yeoman's service to the small tea growers of Assam as well as neighbouring states like Arunachal Pradesh, Nagaland, Mizoram, Meghalaya and Tripura. The extension activities of STAP are summarized in Table 1.05**.**

Some of the Activities Carried Out Under This Programme are:

- Institutional training for the growers of Assam and other North Eastern States.
- Field training and method demonstration for the growers
- Training for officers related to tea development
- Field visits for identification of field problems and advice to the growers
- Postal and telephonic advice to the growers.
- Advice at the H.Q.
- Issue of Land Suitability Certificate.
- Organization and /or participation in workshops, Seminars and Farmers' Fair

  Publication of literature.
- Liaison with Financial Institutions, Tea Board and Government.
- Maintenance of database on small tea growers.

Table 1.05: Abstract of activities of STAP (as on 2009).

Activities	Up to December 2009
Number of Member growers of STAP	12,275
Number of field training conducted	329
Number of institutional training conducted	147
Number of training conducted outside the state	8
Number of National training conducted	7
Number of growers trained	30,428
Number of field demonstration conducted	587
Number of land suitability certificate issued	1,232
Number of growers receive guidance from HQ	15,619
Number of exhibition held	37
Number of publication	36
Quality up gradation campaign	40
Farmers conference/scientific conference/workshop/Meeting attended	19

Source: Assam Agricultural University (Tea Husbandry and Technology).

In the field of production, low productivity of small tea growers may be attributed to several problems and the constraints such as the inadequate use of fertilizers herbicides, fungicides, pesticides, shade tree management, use of outdated machinery in the processing units' lack of management personnel, inadequacy of working finance etc. In the marketing aspect small tea producers may have suffered from obtaining a reasonable price for the produces and this may affect their profitability to a considerable extent. So training has become vital and essential to induce motivation create confidence and increase efficiency of an individual. Small tea Growers have thus merged into small cohesive groups i.e. SHG which help to link small tea growers to value chain of increasing productivity and reducing poverty. Collaboration and partnership of STG-SHG_S reduces risk and increases chances for success. The development of groups is also being supported by the Government of Assam and Tea Board of India which aims at formation of 200 SHG_S during the 11^{th} five years plan and also providing training and funding facilities to $SHGS_S$ members only. SHGs are the voluntary association of poor people, preferably from the same socio economic background. It is an informal group, whose member's pool savings and relend within the group on rotational or need basis. It also provides conductive atmosphere for cooperation and group environment and a cost effective delivery mechanism for small credit to its members and also to the outside members.

A survey conducted by the State Government in 14 districts of Assam indicated that there were more than 68,000 small tea growers. The State Government proposes to continue the survey in the remaining 13 districts and also re-survey the 14 districts surveyed earlier so as to enumerate those small tea growers who have been left out during the initial survey. The Government of Assam has, on 7th February, 2011, notified the "Assam Cess Utilization Policy, 2010". The Policy is aimed at

strengthening the small tea growers and the workers engaged in the small tea growers' gardens through financial support; organizing them into self help groups and cooperatives and also for setting up of tea factories in the co-operatives sector so as to achieve quality, as well as to get better price of green leaf on the basis of price sharing formula of the Tea Board. The Government of India through the Tea Board of India has taken several steps for development of the tea industry including small tea growers in the country. These measures include extending financial support for re-plantation and rejuvenation of the old and uneconomic tea areas; modernization of the tea processing factories for producing quality teas; market promotion; welfare of the workers of the tea gardens and support for Research and Development institutions for carrying out research aimed at improving production, productivity and quality. A separate Directorate for addressing the developmental needs of small growers with headquarters at Dibrugarh in Assam is being established. This information was given by Shri Jyotiraditya M. Scindia, Minister of State for Commerce & Industry in written reply to a question in Rajya Sabha on January 5 of 2013.[29] (Press Information Bureau Government of India 5 January, 2013).

The Executive Director of Tea Board Rakesh Saini told March, 21 (IANS) 2012 in Guwahati that the process of registration of small tea growers with Tea Board in Assam has not picked up so far therefore Board decided to simplify the process of registration. The registration with Tea Board help the growers with bank loans for their plantation and they can claim various subsidy schemes of the state and Central Government besides taking part in the exposure trips being organized by the Tea Board of India from time to time.

[29] Press Information Bureau Govt. of India, 5 January, 2013.

During last two decades, small tea cultivation in Assam has become popular among the common farmers and it's a significant development in the history of 160 years of commercial tea cultivation in Assam. The new venture is playing a vital role in upliftment of socio economic condition of farmers in some area of Assam. Besides, providing directly assured employment opportunity to a sizable number of unemployed youth and providing indirectly income opportunities in transport storage and marketing are considered as one of the major contribution.

Assam located in the North Eastern part of the country covers an area of 78,438 sq kms. This is 2.4 per cent of countries total geographical area. The majority of population in Assam i.e. 89 per cent is living in rural areas. In Assam, agriculture is the basic source of income and it has been contributing the bigger share to the state income. The whole geographical area of Assam is predominantly covered by the rural land leaving a few industrial and urban areas. Brahmaputra and its tributaries bring silt in the region which made the soil very fertile for agricultural production.

Demand for tea increasing both at national and international markets. In the recent past green tea leaf produced by small tea gardens in Assam substantially increased. It is expected that more area will be covered under small tea gardens in the near future, more and more employment opportunities provided to educated youth by this sector. Since the tea cultivator occupies significant elite strata in the society it is expected that the young educated generation has been attracted towards tea cultivation rather than being involved in cultivation of their traditional crop.

The State of **Nagaland** has proven potential for production high quality of tea grown on different altitudes on commercial basis both in the hills and foothill areas adjoining Assam. The State Agriculture Department (nodal agency) has

identified approximately 9800 hectares of land spread over all the districts of the State for the development of tea on a commercial scale. At present, about 750 hectares of land is under tea cultivation.[30] This implies that approximately 9000 hectares of land yet to be covered under tea cultivation in Nagaland.

The number of small tea growers in Nagaland has been gradually increasing and more and more farmers are developing tea gardens in the state. A number of small tea growers have been financed in Mokokchung district during 2005-06. Other potential districts were tea cultivation can be promoted are Wokha and Mon. The Agricultural Department has also been encouraging interested growers by granting subsidy, supplying planting materials and technical support. The quality of tea produced is of high standard. Given the right impetus tea plantation in the state could develop in to a major economic sector. Being high investment activity institutional credit assistance to small tea growers assumes significance. Bank need to come forward for financing the sector.[31]

The lower Konyak area of Tizit town was a hot spot for lumbering and a flourishing valley for setting up to timber mills in the eighties. With the timber resources the entire valley was consumed. Tea firms have now replaced the timber mills. People here have embraced the tea crop which provides them with a promising source of livelihood. Embracing tea by the people of the valley as an alternative means of livelihood was not only helped the people to consume organic product but also helped to reduced jhum cultivation. These in turn helps forest were damaged during the lumbering days of the early eighties to the regenerate. Most of the villages around

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[30] Karmakar K G & Banarjee.G.D : *Horticultural Boom in Nagaland*. (Managing Director and Deputy General Manager) A report of NABARD, Mumbai, p-3.

[31] *Loc.cit*, p-3.

Tizit valley in the lower Konyak areas have embraced tea as an alternative crop for livelihood. They have now started harvesting 15,000-20,000 kilos of tea leaves a day, an ample amount to run a tea factory. Hatwang a progressive tea farmer from Phuktang village said that tea farmers carrying their crops to Assam are charged Rs 1/ on every kilos as tea tax to the Assam Govt. As such he felt the need to establish a tea factory in Nagaland it will be very beneficial. Tea farmers in the area informed that the price of tea fluctuation from Rs 15-20/ depending on the market. The tea farmers of Nagaland have a hard time to selling tea leaves to tea factories in Assam during the peak production season which is June to September.[32]

The All Nagaland Small Tea Growers Association (ANSTGA) has appealed to Prime Minister for his intervention in setting up of small tea production factories near the tea growing areas of the state and establishment of Tea Board office in Nagaland. The ANSTGA justified that the cultivation, which is eco-friendly and creates employment opportunities to large population, is faced with grim situation due to non-existence of tea production facilities in the state. The tea growers have to transport tea leaves to long distance outside the state and during which tea leaves get damaged and compelling the growers to sell their product at low price.[33] The Small Tea Growers of the country account for about 30 per cent of its produce but the plights of the STG's are pitiable. Many even do not have their own manufacturing facilities and depend upon the conventional and brought leaf factories (BLF).This has exposed them to exploitation. In Nagaland the case is even worse. Many times the farmer's

[32] Morung Express.Com: *Op cit.*
[33] *The Assam Tribune* Guwahiti, December 17, 2014.

skiff off the leaf and the leaf is either thrown away or sent for hand manufacture through crude process. Such tea leaves are hardly saleable.[34]

The most challenging problem which our country has to face in the coming decades will be to provide food, health and economic security to the millions of our population. This requires a careful matching of technological vectors with social dynamics to improve the carrying capacity of the country through the optimal management of its natural resources. The challenge is to build up sustainable regenerative capacity of land and water resources to provide basic food and economic security to the people at large, without compromising on the ecological and environmental integrity.[35]

Traditional agriculture in mountain areas has relied primarily on locally available natural resources and their management, for meeting food, fodder, fibre and fuel needs. Crops livestock and forestry have formed on integral part of the farming system in mountain area. In adapting to the specific needs of greatly varying slops, aspects, climates and soils over short distances, farming systems in mountain areas have to consider important points like maintenance of soil fertility, control of soil erosion, management of water-resources and management of forest resources.[36] With the last 10 years, there has been rapid growth of population in hill areas. This growth has put more pressure on farming system to meet food, fodder and fuel needs. Hill areas supported a moderate population in earlier times. But with successful control of

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[34] Kibami D. Hukiye: *op.cit.*

[35] Pranesh M B: *Sustainable Development of Hill Area by Tea Cultivation (A Study in Nilgiri District)*, Kalpaz Publications, Delhi-110052, 2005, p-21.

[36] Banskota M and Pratap T: *Education Research and Sustainable Mountain Agriculture, Priorities for the Hindu Kush Himalayas*. Cited in *Sustainable Development of Hill Area by Tea Cultivation (A Study in Nilgiri District)*, Kalpaz Publications, Delhi-110052, 2005, p-29.

malaria, the population in hill areas is growing fast. This has resulted in uneconomic fragmentation of holdings.

Nagaland is an agrarian state located in an altitude ranging from 150 m to 3800 m above sea level. The climate of the state ranges from sub-tropical to temperate with an annual rainfall of 2500 mm and temperature ranging from 4/ to 35/ Celsius. The total geographical area of the state is 16,579 sq kms of which only 8.48 per cent can be considered plain and rest is constituted by undulating and hilly terrain with altitude varies from 200 m to 3840 m. The crop sector in Nagaland has impressive annual growth rate and it is almost five times more than the national growth rate. Similarly the livestock sector growth rate of 6.63 per cent is higher than NER.[37]

In the hill areas, agriculture is the key sector for employment and income-generation because large scale industrialization is not ecologically desirable and the infrastructure is too poor to attract industries. Traditional crops have little growth potential. Hence emphasis has been laid on promotion of horticultural crops. There is a view that requirement of packing materials for marketing horticultural produce will lead to damage forests. However, detailed studies have found that these negative effects are not considerable. Demand for packing cases is no longer met by cutting timber from local forests. Diversification through horticultural crops has resulted in positive effects like reduction in crop intensity, control of soil erode, livestock pressure and grazing incidence and improvement in income, all of which have favourable ecological implications. Forests in the vicinity of economically improved village suffer less damage than forests near economically more backward villages. Low income and poverty are the major causes for degradation of natural

[37] *Integrated Agricultural Paper 190112_ Nagaland*. pdf

resources. Improvement of socio economic condition brought about by horticultural crops benefits people as well as ecology.[38]

In particular, diversification of cultivation from annual crops to cultivation of tea, aids sustainable development of hill areas. Annual tilling causes loss of valuable top soil, where annual crops are cultivated. This causes irreparable damage to the farmers, by loss of fertility of the soil. It also reduces the storage capacity of hydro-electric and irrigation reservoirs located in the foothills. If the crop is substituted by tea, water loss can be greatly reduced. There is also a tremendous improvement in the economic condition of small growers due to diversification from annual crop to tea. This has resulted in improvement in living standards. The promotion of tea cultivation has not only helped in the eco-preservation of the hills, but also brought about economic improvement among the farming community.[39]

An action plan for development of tea sector in Nagaland has been drawn up (Tea Board 1999-2000). The important action points include the following.[40]

- Setting up of farmers' co-operative societies with the State Government's participation.
- Arranging training on nursery techniques and new planting.
- Extension of technical support by TRA.

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[38]Chand Ramesh: *Ecological and Economic impact of horticultural development in Himalayas.* Cited in *Sustainable Development of Hill Area by Tea Cultivation (A Study in Nilgiri District)*, Kalpaz Publications, Delhi-110052, 2005, p-32.

[39] Ramu s and Ramamurty G:" Promotion of Tea Cultivation for Crop Diversification in Nilgiris." Paper presented in Workshop organized by HADP Cell, Ootacamund, 1999. Cited in *Sustainable Development of Hill Area by Tea Cultivation (A Study in Nilgiri District)*, Kalpaz Publications, Delhi-110052, 2005, p-32.

[40] Banarjee G D, Sarda Banarjee: *Sustainable Tea Plantation Management*, International Books Distributing Co. Khushnuma complex Basement-7 Lucknow-226001, UP, India, 2008, p-39.

- Preparation of a comprehensive project plan for systematic development of tea with appropriate financial backing from various agencies–NABARD, Commercial banks, Tea Board etc.
- Organization of a seminar to create awareness amongst the local farmers.
- Study tour was organized by Tea Board for the farmers of Nagaland to visit Nilgiries.

The Tea Development Scheme for North-Eastern States for the control of jhum cultivation primarily seeks to serve as a vehicle for social transformation in the non traditional tribal North-Eastern States. It aims at weaning away the farmers from the traditional practice of jhuming/shifting cultivation and enthusing them to take up tea cultivation. This not only provides an opportunity for the jhumias to settle permanently in one place and provide them with regular income but also helps in arresting of denudation degradation of forest wealth in the North-Eastern region.[41]

Tea Board statistics (Table 1.06) reveals that the productivity of tea in entire North India occupies a significant role. The production of tea in North India for the calendar year 2011 was 875.75 million kg which was increases to 958.62 million kg in 2013. On the other hand in 2014 only for five months (June to October) it was estimated to increase 822.37 million kg expose the feasibility of tea cultivation in the region. The growth rate of production of tea in North India from 2011 to 2013 was estimated 9.46 per cent which was more compared to 7.59 per cent all India growth rate.

[41] Banarjee G D, Sarda Banarjee: *Op cit*, p-49.

Table 1.06: Production of Tea Region Wise.

Quantity Million Kg. (For calendar year)

Year	North India	South India	Total
2011	875.75	240.15	1115.72
2012	886.95	239.38	1126.33
2013	958.62	241.79	1200.41
2014(June to October) E	822.37	203.53	1025.90
2013(June to October)	833.91	196.88	1030.79

Source: Tea Board. (E) Estimated subject to revision.

Table 1.07: Production of Tea Region Wise.

Quantity Million Kg. (For Financial year)

Year	North India	South India	Total
2011-12	865.59	229.87	1095.46
2012-13	893.38	241.69	1135.07
2013-14(P)	965.07	243.71	1208.78
2014-15(April-October) E	779.49	154.98	934.47
2013-14(April-October)	797.48	150.25	947.73

Source: Tea Board. (E) Estimated subject to revision.

Table 1.08: Auction Price of Tea Region Wise.

Quantity Million Kg. Price per kg. (For calendar year)

Year	North India		South India		All India	
	Qty (M. Kgs)	Price (Rs/Kg)	Qty (M. Kgs)	Price (Rs/Kg)	Qty (M. Kgs)	Price (Rs/Kg)
2011	390.72	117.19	151.44	70.11	542.16	104.06
2012	367.81	135.59	147.18	87.39	514.99	121.81
2013	383.88	139.95	148.52	98.75	532.4	128.46
2014(P)	395.96	143.07	145.78	82.89	541.74	126.88

Source: Tea Board. (P) Provisional subject to revision

Table 1.09: Auction Price of Tea Region Wise.

Quantity Million Kg. Price per kg. (For Financial year)

Year	North India		South India		All India	
	Qty (M. Kgs)	Price (Rs/Kg)	Qty (M. Kgs)	Price (Rs/Kg)	Qty (M. Kgs)	Price (Rs/Kg)
2011-12	390.34	117.01	151.49	70.26	541.83	103.94
2012-13	362.09	142.09	150.27	93.75	512.36	127.91
2013-14	385.12	137.61	145.96	95.82	531.08	126.12
2014-15 (Apr-Dec)(P)	326.24	148.92	111.46	80.23	437.70	131.43
2013-14 (Apr-Dec)	315.40	142.45	111.65	97.13	427.05	130.60

Source: Tea Board. (P) Provisional subject to revision.

Tea Board statistics (Table 1.08 and1.09) reveals that the auction price of tea in North India is higher than the South India and as well as all Indian price per kg, implies tea produced in the region is better quality, soil, weather and climate is favourable for tea cultivation in the region.

Due to the fragmented nature of holdings, tea plantation in Nagaland is basically a small planters' crop. The lack of processing facilities, high cost of labour, absence of skilled manpower and the existing land ownership systems, pose some constraints to expansion tea sector in the state. Production of high quality leaf tends to high quality of made tea. Tea is such type of crop that it should be plucked in proper time and send to the factories within very short period. Conceptually the growers should plucked one bud and two leaves within 24 hours of every alternate of 6-7 days and the distance of factories should not exceed 10-15 KM of plantation area. Statistically there are two tea factories in the state and these factories cannot absorb all green leaves produced by the growers. Therefore, the growers are compelled to send

their leaves to the factories located at the foothill. Table 1.10 shows district wise area and production of tea in Nagaland.

Table 1.10: Area and Production of Tea in Nagaland, District Wise 2010-11.

Tea plantation areas.	Area in hectares.	Production in Metric tons.
Kohima	330	1470
Phek	660	2940
Mokokchung	730	3240
Tuen-sang	1540	6850
Mon	1090	4870
Dimapur	2860	12720
Wokha	140	620
Zunheboto	80	350
Peren	-	-
Kiphire	20	90
Long-leng	-	-
Total	**7450**	**33150**

Source: Statistical Hand Book of Nagaland, 2012-13.

Table 1.10 reveals that maximum area and production of tea comes from Dimapur which was 2860 hectares and 12720 metric tons respectively. The lowest production in Kiphire only 90 metric tons and covered area of 20 hectares. The total area covered 7450 hectares and production was 33150 metric tons. The average yield was estimated 4449.66 kg per hectare. On the other hand during same period in Assam the total area under tea in 2011 was covered 322210 hectares and production was 589110 metric tons. (**Source**: statistical Hand Book Assam 2013). The average yield was estimated 1828.34 (approximately 1830) kg per hectare seems quite low compared to Nagaland expose the potentiality of tea cultivation in Nagaland.

The mainstay agrarian economy of Nagaland is facing serious crisis of declining prices, rising cost, low quality and distressing tea export from the state as a whole. In the field study yielded a lot of data about the composition of small tea farmers, their holdings, when they started cultivating tea, the crop which they cultivated earlier etc. Table 1.11 shows the quantity and average price of tea of Nagaland sold in Guwahati Tea Auction Centre.

Table 1.11: Quantity and Average Price of Tea Sold in Guwahati Tea Auction Centre.

Type	2012		2013	
	Quantity Million kg	Average price per kg	Quantity Million kg	Average price per kg
C.T.C				
Assam	61.13	142.25	62.24	137.00
Cachar	5.85	113.58	6.88	103.13
Arunachal	2.18	119.50	2.57	106.82
Meghalaya	0.06	129.26	0.07	111.73
Nagaland	0.002	91.89	0	0
Tripura	1.62	106.75	1.82	93.65
Total C.T.C	70.84	138.27	73.58	131.68

Source: Statistical Hand Book of Assam 2013.

Table 1.11 reveals that Nagaland sold lesser portion (only 0.002 million kg) of tea through Guwahati Tea Auction Centre and average price received only Rs 91.89 per kg lower than the all average price of Rs 138.27. Which implies that the grower's to face the challenges have to need some strategies like export promotion and marketing, diversification of market portfolio, value addition of the product, quality control at international level, proper input base, cost reduction etc.

Despite these constraints the small tea growers in Nagaland are now gradually organised. They throw up their challenges by their limited opportunities and led to exploring the possibility of extending tea cultivation in non traditional areas of the state. Simply by selling green leaves the industry cannot sustain in the long run. So, the Tea Board, Agricultural Department of the Govt. and the tea growers have to emphasised to setting up of small but viable tea factories inside the state so that the tea planters from interiors could be benefited. Hill areas of India whose ecology is fragile, have a crucial role in determining the ultimate rainfall and availability of water for the whole economy. Preservation of the hills is necessary not only for the benefit of the people living in the hills but also for the benefit of people living in the plains. At the same time the interest of the people living in the hills should not be neglected. They need programmes which can help the people to improve their economic condition. Hence, the concept of sustainable development by tea cultivation is highly relevant to the hill areas of India.

Fig 1.02: Map of Assam Showing Small Tea Growing Areas.

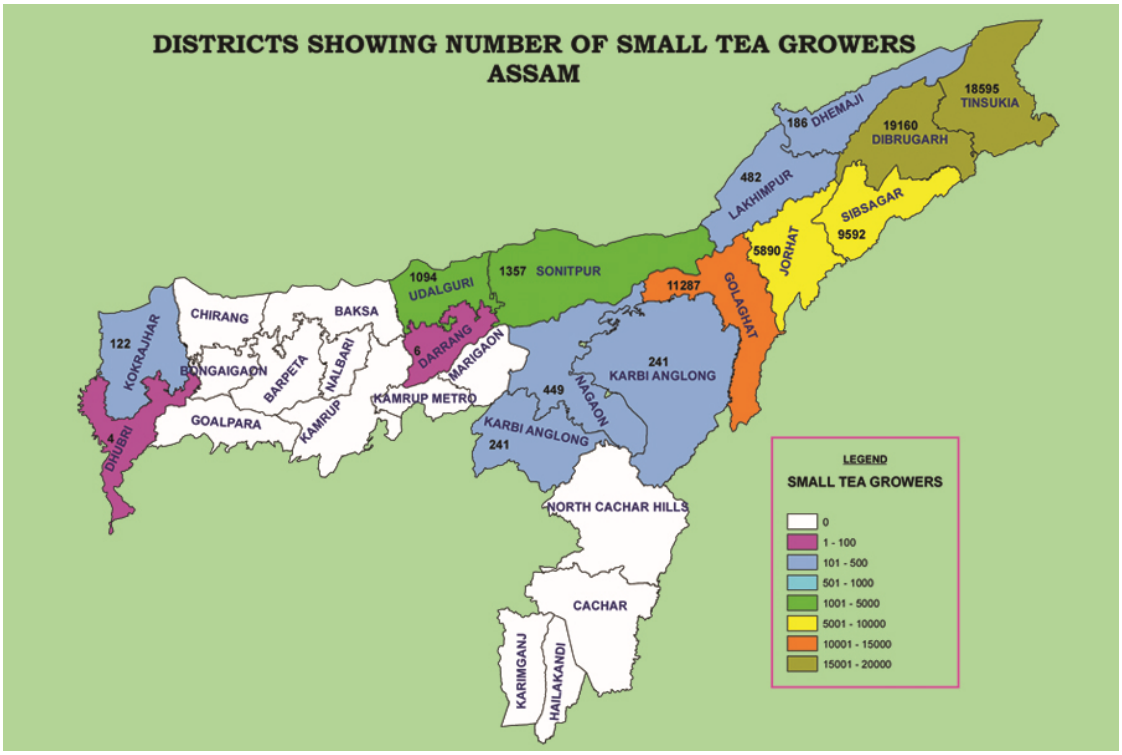

Fig 1.03: Map of Mokokchung District (Study Area of Nagaland).

1.04 Review of Literature:

The resume of relevant literature of the present study has been reviewed to gain insight in to the scope and significance of the study to provide guidance in designing and conducting the study which would help to interpret the findings. A handful of literature closely related to the present study has been highlighted in this part under the following heads:

- History of Tea Industry and small tea cultivation in Assam and Nagaland.
- Concept of small tea cultivation/growers.
- Constraints of small tea cultivation.
- Training and guidance of small tea cultivation.
- Future prospect of small tea cultivation

1.04 (a) History of Tea Industry and Small Tea Cultivation in Assam and Nagaland:

Monoharan (1974) expressed the definite mention about tea can be found in the Chinese ancient history. Tea Chinese encyclopaedia "Pent Sao" the compilation of which goes as far back as 2700 B.C. There are some commentaries on the tea tree "She King" one of the classical works by Confucius, contains an elaborate account of tea. The word tea comes from the Chinese local Amoy dialect. Thus China gave both the beverage and the name for it to the world.[42]

Ghosh (1987) reported that, the origin of tea seems to be associated with a tale from Japanese mythology about a stage that broke his vow by falling asleep and cut his eyelids by way of atonement out of which sprouted the first tea bushes. Tea is associated with a number of historical events like the Boston tea party Indian tea exports over took China's in 1904 as the British rulers realized the potential that was inherent in the cultivation of tea.[43]

Bora and Deka (1999) viewed that tea plant in India was discovered by C.A. Bruce in 1823 growing wild in the hill tracts of Assam. The East India Company ignored this epoch making discovery as it would adversely affect its monopoly in tea trade with China. However this situation did not last long and Sir Joseph Bank prepared a comprehensive report for the East India Company with a view to establishing tea in Assam. Seeds and plants were initially obtained from China but the tea industry was launched with the discovery of indigenous plants. C.A. Bruce started

[42] Monoharan S: *Op cit*, p-1.
[43] Ghosh Tushar Kanti: Tea Gardens of West Bengal, A Critical Study of Land Management, B R Publishing Corporation, Delhi 1987, pp1-5.

a garden in Sadiya. Lord William Bentinck Governor General of India appointed a tea committee to advice the possibility of commercial cultivation of tea in India.[44]

Baroowah (2006) viewed that there are many old legends behind the origin of tea. According to one version, prevalent in China 'The good king drank water from a pot into which leaves from a wild bush had fallen while the water was on the boils and savoured the first cup of tei'. Significantly, the Chinese tea garden workers called it chai, which is probably the origin of the world "cha" in India. Another story says, Chinese travellers carried it from North-East India to China 500 years ago for its medicinal value.[45]

Baruah (2007) in his article pointed out the visionary Maniram Dutta Barbandar Baruah opened up two tea gardens at different locations. Maniram was the first India tea planter and discovered that he was also the first individual to open private tea gardens in India. The credit for discovery of tea plants in the jungle of Assam generally goes to C.A Bruce. On the contrary many people believe that it was Maniram who actually discovered first tea plants in Assam of course there is a lot of controversy in this matter. However we cannot deny his contribution in tea sector. Considering that Maniram's contribution to the growth and development of the industry in the world is unparalleled and unique.[46]

Singh *et al.* (2006) reported that the development of tea plantation in Assam is rooted in the history of India. It is summarized as the gift of colonial administration being favoured by geographical and political forces which have pave the way for the early start of the plantation in Assam. It started during 1840s in Assam

[44] Bora P C and A Deka: *Op cit*, p-43.
[45] Baroowah GP: *Op cit*, p-26.
[46] Baruah Anjan: "Maniram Dewan, The Great Assamese Entrepreneur", *Singha Puras Maniram Dewan*, A Souvenir on occasion of 200 years birth anniversary of Swahid Maniram Dewan, (eds) SMD College, Sibsagar Assam, 2007, pp 153-158.

valley (Brahmaputra Valley) and 1855s in Surma Valley (Cachar). Tea plantation is an agro based enterprise in which large numbers of manual workers are required round the clock. The workers both skilled and unskilled live within the plantation area. The success of the tea industry depend upon the labour whose strenuous efforts produce maximum green crop. The tea plantation workers play a significant role in the management of tea industry all over the world. Nearly half of the labour force is supplied by woman folk.[47]

Baruah (2011) reported that in small scale in Assam was made in 1987 by Sri Soneswar Bora the Agriculture Minister of Assam. His intention was to utilize the available follow high levels and attract the young generation to agriculture sector and here by to solve the burning unemployment problems. During his tenure a group of enterprising cultivators from Golaghat, Jorhat, Sivasagar and Dibrugarh area come for word to cultivate tea in the early part of the Eighties and established small tea gardens. It is heartening to note that without any support from state government on the Tea Board these growers with their own initiative could develop their plantations as the only means to earn their livelihood and established that cultivation of tea very profitable. The general nation that tea is a "rich man's crop" could also he removed from the minds of the common farmers. Gradually it become popular amongst the other cultivators and the sector has spread other districts also.[48]

Kibami D. Hukiye President of ANSTGA (2012) reported that keeping in mind in view the unfavourable impact of jhum cultivation on ecology and environment some forward looking Nagas took up organised tea cultivation way back late seventies as an alternative means of livelihood. Late Mr. Sashimeren Aier (Rtd. Development

[47] Singh S N, A Narain and P Kumar: *Socio-Economic and Political Problems of Tea Garden Workers*, Mittal Publication, New Delhi 11000, 2006, p-1(preface)
[48] Baruah B P: *Op cit*, pp 120-129.

Commissioner) was such a pioneer. Mr Toluvi Kibami (Rtd. CCDU/ Chief Engineer, PHED) initiated tea cultivation in the 1990's. It is reported that some tea manufactured in the late seventies were valued at as high as Rs 200/ per kg. This was an indication that Nagaland has the potential for high quality teas. However, that was all what was heard about Nagaland teas. Even today i.e. after 40 years, tea growing in Nagaland has almost remained a non sector.[49]

The Project Report of UNDP (2009) reveals that, Tea cultivation in Nagaland of late has become a reality and there is much enthusiasm among planters after various studies revealed that land is suitable for quality tea production. In 2001, the State Government and Tea Board official pointed that tea cultivation can be a suitable alternative to jhum (slash and burn) cultivation in Nagaland and the abandoned jhum land can be transformed into eco-friendly tea plantations. As per statistics available with the State Agriculture Department, about 800 acres of land in Mon and 300 acres in Mokokchung District have been brought under tea cultivation and the per hectare production of tea some estates in Nagaland were more than that in Assam.[50]

1.04 (b) Concept of Small Tea Cultivation/Growers:

Rajkhowa (1992) viewed that although the history of tea cultivation is very old in Assam, the concept of small tea cultivation by common farmers in Assam is not very old despite the fact that it has already existed in the southern part of the country like Tamilnadu, Kerala, Karnataka and Northern states like Himachal Pradesh. These small tea Estates are mostly found on the periphery of existing big tea estates in

[49] Kibami D. Hukiye: *Op cit.*
[50] *Livelihood and employment opportunities in Nagaland* (2009): *op.cit,* p-24.

ceiling surplus land or in privately own land in the Brahmaputra Valley districts in Assam.[51]

Gogoi (1999) reported that the information on small tea growers of India is scanty and the growers with holding size up to 10.12 hectares are categorized as small tea growers by the Tea Board of India and the Small Tea Growers Advisory Programme (STAP) while the Government of Assam Considers farmers with a holding size of less than 4 hectares as small tea growers.[52]

Bhuyan (2000) conceptualized that most of the land utilized for establishing their garden were ceiling surplus land, grazing land, allotted government land, encroached governmental land, forest, villages on land occupied previously by other crops such as sugarcane areca nut, orange, pineapple, bamboo, citronella and also high land rice. Only a small percentage of growers have cultivated tea on land previously occupied by upland rice. Besides, about 30 per cent of small tea growers cultivated tea on land inherited from their predecessors. Also some have purchased land and thus have title to their land.[53]

Bhuyan R P. (2004) viewed that formation of cooperatives among small tea farms be encouraged processing units in cooperatives on government sector may also be established. Direct sale of green leaf produced to tea factories, i.e. without presence of middleman in the marketing channel should be encouraged.[54]

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[51] Rajkhowa J P: "A Case Study for Small Tea Estate", *Assam Tribune,* 1992

[52] Gogoi J K: "Boom in Indian Tea Industry and Small Tea Growers of Assam" Paper presented in National Seminar on Plantation Economy of North East with special reference to Small Tea Garden Movement in Assam, North East Foundation Guwahati, November 12-13, 1999.

[53] Bhuyan D:" Khudra Chah Khetiyakar Bhumi Samasya Aru Sorkaror Koroniya (An Assamese Souvenir)", 5TH Bi annual Conference of All Assam Small Tea Growers Association, Melamora Golaghat, pp 141-144.

[54] Bhuyan R P: *Economic Analysis of Green Leaf Production; A Case Study of Small Tea Growers of Assam,* An un published Ph D. Thesis submitted to Assam Agricultural University, Jorhat, 2004.

Mandol (2004) reported that during the latter half of the 1970's, Assam, the fortress of corporate sector tea plantation, witnessed a new trend when small farmers in the district of upper Assam started tea plantation in their small holdings and new avenues for gainful and productive self employment in the plantation sector opened up. The beneficiaries of this new venture were small and marginal farmers, the unemployed, the under employed and the weaker sections of the society. The new entrepreneurs defied the challenges of the vagaries of nature and other difficulties and brought vast shelter of vacant land in upper Assam under tea cultivation. The small tea grower sector soon became one of the well known avenues for employment both self and otherwise. Though initially small scale tea cultivation gained momentum only in the upper Assam, in the recent years it has spread 22 districts. The highly unorganized sector of small tea growers produces approximately 150 million kg which is almost 18 per cent of the total land production of the country.[55]

Baroowah (2006) viewed during the last part of the twentieth country; small growers mushroomed in North Eastern states. The small growers of South India pioneered the movement for manufacture of black tea by larger tea manufactures. The tea industry today supports more than 200,000 small in the country that are able to earn relatively better value for their produce and reach a larger market despite having no infrastructure of their own. Prevalent in South India at one time, this is now popular in North-East too. The organised industry nurtures small tea growers by helping them to acquire technical knowhow, offering capital intensive manufacturing facilities and helping to market their product. This practice was initially started in South India and

[55] Mondol K: "Tea Sector Still in Dark on Budget Spot", *Business Line*. The Hindu Group of Publication, 2004.

later taken up in North East too. Small tea growers have existed in South India since 1931. The first factory to process tea leaves by small tea grower was set up in 1935.[56]

Benarjee and Benarjee (2008) viewed that the concept of small tea cultivation in home stead gardens and unutilized land along with other crops to sell the green leaf to the existing big factories for enhancing form income was initiated during the seventies by the then Janata Government in Assam, encouraged by the Government. In India tea cultivation on a large scale started with lots of inputs like huge finance, large area imported labour, big organization and management facilities etc. during the colonial period. However small tea plantation is of recent origin, because the large tea plantation already occupied whatever suitable land was available for tea cultivation. These can be called traditional areas of the plantation where as the small tea planters have emerged beyond the traditional tracts of tea cultivation. Small Growers with little finance have developed small tea plantation.[57]

1.04 (c) Constraints of Small Tea Cultivation:

Singh (1985) pointed out that the culture and processing of tea are based on sound scientific and technological information. It has therefore become necessary in today's competitive world to adopt the sound lasted practices in overall business of tea to sustain productivity and quality for maximum profitability. The adaptation of current use of scientific information will be helpful in minimizing cost of production with maximum profit.[58]

Banerjee G. D. and Srijeet Banerjee (2008) emphasised the importance of soil fertilisers farming practices, biodynamic composting and plant protection of tea.

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[56] Baroowah G P: *Op cit*, pp 93-97.
[57] Banarjee G D and Srijeet Banarjee: *Op cit*, pp 511-515.
[58] Singh N P and Gill SS: "Relationship of Training Needs Fulfilment with Personal Characteristic of the Farmers", *Indian Journal of Extension Education*, XXI (3&4), 1985, PP 89-94.

Economics of Kangra tea industry focusing of cost of cultivation gross return, net return, business return per hectare and perform break even analysis has been attempted small tea growers which constitute the major share in total member play a prominent role in tea industry their problems, probable solutions and policy prescriptions with reference to sample studies in Assam, Himachal Pradesh and North Bengal have been intake. The Agricultural Refinance Corporation (1965) in its book "Report on Study of Small Tea Planters" noted that the small tea growers recorded low yields due to outmoded cultivation techniques. It was also found that the small growers had not functioning in an organized way and that they had been exploited by the private Bought Leaf Factories.[59]

Barooah committee (1968) during its study on tea industry was of opinion that the small tea growers had not efficiently cultivated their lands and the yields obtained was only a quarter of the average yield of big garden. The committee found that the Bought-Leaf-Factories were mostly ill equipped with old and worn out machinery and had inadequate facilities for manufacturing good quality tea. The committee also felt the need of opening up of co-operative tea factories with a view to help the small growers.[60]

Borah (2002) pointed out that a survey conducted recently has indicated that the small tea grower is getting a very small share of the total price paid by consumer. They actually supplied the green tea leaves to tea factories. Their transactions are not very coherent and well structured and lack of groups action and bargaining power. Having regard to this fact the tea Board has initiated detailed study

[59] Banarjee G D and Srijeet Banarjee: *Op cit,* pp 517-519.

[60] Barooah P C: "A Report of P C Barooah Committee on Tea Industry", Govt. of India, New Delhi, 1968.

to device an appropriate technology for fine tuning this un organized sector and for ensuring that the tea grown by the small players could be directed towards the export market because of low cost of production and good quality.[61]

Sanyal in his article (3 May, 2012) reported that the tea Board survey of small tea growers in Assam and West Bengal reveals that the majority of them have no proper documents in support of earlier ownership of lease land they use. In Assam, only 4,773 out of 68,500 small growers and in West Bengal 1,107 out of 22,000 have valid documents.[62]

Taparia and Bhuyan in their article "Tips for Effective Management of a Small Tea Garden" (2011) reported that the greatest weakness of small tea enterprises is that the farmers are operate according to the decree of the buyer's market, and therefore are not in a position to dictate the price of their own produce. A simple 'put up job' that there is a slump in price is sufficient for the commercial tea estate and brought leaf factories to slash the price fixed for the purchase of green leaf leaving the growers in despondency. There is a high price fluctuation even within a growing season and during global recessions and booms. To provide an effective shocks absorbing mechanism it is necessary that cost of production of green leaf be controlled by keeping a constant vigil on costing. For this the growers must acquire the requisite knowledge of scientific tea cultivation and efficient from management method. Basically a small tea enterprise is usually a family run or family dominated business, the owner performs all important tasks and is the major source of energy and direction as le performs the various functions of management. In this he is helped by other members of the family professional advisers, friends and neighbours. Therefore he

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[61] Bora A K: *Pattern of Land Utilization in Assam with Special reference to Sibsagar and Nagoan Districts*, An un published Ph D. Thesis, Guwahati University, 2002.
[62] Sanyal Santanu: *Bussiness Line*, May 3, 2012.

should develop an effective system of communication for sharing his decisions or providing proper suggestions to others to others.[63]

Baroowah (2006) viewed that small tea gardens have become, of late, a craze in the North East thousands of farmers have left paddy cultivation to grow tea on whatever land is available. With the rush for cultivation also comes corruption. The stealing of green tea for marketing began. Overnight, fly-by-night selling agents mushroomed. Genuine small and big growers become victims of human greed. There were no systems for monitoring of production of small growers. In the absence of such monitoring systems a critical over supply situation developed during the last couple of years, forcing tea prices to fall. The government did not issue clear land titles to small growers. These points need to be taken up soon if the all round development of people is expected.[64]

Ghose (2003) viewed that better quality of tea can definitely be made from the leaf from the small tea growers farms are treated, helped and nurtured as their own plantation by processing factories through proper planting and tea factory is laid out and equipped in all respect for marketing quality tea and not just to make some black tea somehow.[65]

Banarjee G D and Sarda Banarjee (2008) reported that the numbers of growers in Assam would be substantially more than that indicated by Small Tea Growers Association. They were deprived of the necessary scientific and technical advice from Tea Research Association. Most of STGs did not receive the benefit of training in tea cultivation from recognized institutions like Assam Agricultural

[63]Taparia M and Rana P Bhuyan:"Tips for Effective Management of a Small Tea Garden", *Seuj Silpa,* A Souvenir published by All Assam Small Tea Growers Association, 2008-09, pp 105-119.
[64] Baroowah G P: *Op cit*, p 97.
[65] Ghose S: "Awaking to Quality Demand of Tea", *Assam Review and Tea News*, Vol-92, July 2003, p 92.

University, Tea Research Association and such other did depend on their commonly acquired knowledge on land preparation, cultural practice, selection of planting materials, timely application of inputs like fertilizers, chemicals etc. Of the total area (341.38 ha.) only 40 per cent (138.13 ha.) was utilized for tea and the rest was either under cover of the crop (11 per cent) or laying vacant (49 per cent). Survey revealed that about 166.13 hectare of additional area was available for tea cultivation among the small growers. Such land was available as degraded forest and waste land laying unused or marginal land along the state boundary areas.[66]

Kabir (2009) reported that draught has become a way of life in the tea industry of North-Eastern India. Every year the dry spell intensifies from March to May, resulting in huge crop loss, wilting of tea plants and eventually death of plants in stormy and sandy patches of tea gardens since changing the climate is not the hands of the planters. It is pertinent to train tea bushes to adopt new phenomenon and gear up for fighting battle with drought. The most important tool in combating drought can be increased in potassium application in the plants.[67]

A. R News (2013) reported that "National Federation of Small Tea Growers" demanded No Objection Certificate by the Tea Board which would give them the status of plantation sector and enable them to route their produce through actions for better price realisation. Small Tea Grower with their annual output being almost 33 per cent of the country's total production has acquired considerable clout within the industry. They alleged that they were being exploited by brought leaf factories that brought green leaves from them at cheap price and sold them at high

[66] Banarjee G D and Sarda Banarjee: Op cit, p 76.
[67] Kabir S E: "Importance of Potassium to Increase Productivity, Quality, and Draught Manoeuvring in Tea Plants", *Assam Review and Tea News*, Vol. 98, No. 8, October 2009, p 12.

prices after processing. Selling through auctions would provide better price realisation for small tea growers.[68]

Goddard (2008) in his article reported that there has been rapid increase in smallholder tea production over the last 10 years (CEC, 2003). Of the estimated 88,115 tea plantation in India, about 98% are smallholder tea estates of less than 10 hectares. This sector provides employment for approximately 230,000 families, yet accounts for 11% of total production in India (Chattopadhyay, 2005). Small producers often have little choice as to which they can sell their tea production. Their conditions have worsened as tea prices have fallen. Just as plantation workers, smallholder growers are living in debt and malnutrition. A small grower operating a 3 acre tea estate is quoted by Action Aid Report as saying that "Ten years ago, I could say....I have taken my family out of poverty ....now I have nothing to give (to only my grand children)". They struggle to earn sufficient income from their tea fields. Unlike the arable crop farmers, the smallholder tea growers must buy all their daily food needs from the market by paying hard cash which they do not have. Conditions are worsening for the workers employed by smallholder growers.[69]

Karuna Mahanta, General Secretary of AASTGA (March 21, 2012) said that the Association is going to launch an awareness drive throughout the state from March 29th to April 14th of 2012 for creating awareness about the registration drive of the Board. The number of small tea growers has increased in the state over the year; the quality of tea has not improved. The registration drive will not only help the

[68] A. R News: "Small Tea Growers Demand Plantation Sector Status", *Assam Review and Tea News*, VOI 102, No. 06, August 2013, p 27.
[69] Goddard S: "Socio Economic Issues Extract from an Action Aid Report (2004)", *Economic Crisis in Tea Industry (eds),* Studium Press LLC, USA, 2008, pp 17-21.

growers but also help to maintaining the quality of tea. However many growers are not aware about the registration process and the benefits of registration with Tea Board.[70]

1.04 (d) Training and Guidance of Small Tea Cultivation:

Small Tea Growers' Advisory Programme (STAP) of Tea Advisory Cell funded by Tea Board and established in1988 has gained immense popularity amongst the small tea growers of Assam and other NE states. The programme caters to the technical need of the small tea growers through counselling and training programmes. During 2006-07, 7 trainings have been conducted where 177 small tea growers participated. A total of 12,500 small tea growers have so far registered with STAP for technical guidance.[71]

The Small Tea Grower Advisory Cell (STGAC) (2008) reported that (during period 2004-2008) they had carried out 556 Training Cum demonstration programs covering 17608 participants of small tea growers. During the course of these training 6870 small growers fields were also visited for demonstration on various cultural practices which is comprise about 20 per cent of the total growers. Thus about 80 per cent of the growers are yet to get any exposure to the trainings and demonstrations conducted by TRA, Tocklai.[72]

By Special Correspondent of Assam Review and Tea News (2015) reported that small tea growers have contributed greatly to the economy of Assam despite escalating constrains like unfavourable weather conditions, poor drainage and increasing input cost. Application of tea science has been poor as in discriminate manufacture of organic tea without a scientific database of soil is hardly beneficial to

[70] Mahanta Karuna (General Secretary AASTGA): IANS, 21st March 2012.
[71] Official Report: Small Tea Grower Advisory Cell, Tocklai, Jorhat.
[72] Baruah B P: *Op cit*, pp 124-125.

the crop. Small tea growers market is limited to brought-leaf factories and not much effort to improve the quality of the crop is observed. This is where the Tea Board failed to intervene effectively over the years to educate 1, 18832 small tea growers across Assam who cultivate the crop over estimated 2.5 lakh hectares. Last year 2014 they produced 170 mkg of made tea which is 28 per cent of total output of the state. The Union Ministry of Commerce must step in to help, formulate long term policies for sustainable growth and provide technological support to small tea growers to concentrate more on quality rather than quantity.[73]

Banarjee G D and Sarda Banarjee (2008) viewed that perhaps nothing has been thought and done for importing any sort of training to the workers in the garden on plucking, cultivation and manufacturing. This aspect can no longer be ignored and the impact on increasing productivity and ultimate reduction in production cost should be kept in mind. The number of recruits from traditional labour families may decline gradually. For further recruits and existing labour force, some short of training in different spheres is imperative like plucking skill, through practical demonstration, application of fertilizers to minimise waste, art of tea making in factory and vegetative propagation and bush care.[74]

Www.One India.com (2006) reported that people of Nagaland are actually new in this crop and do not know about the market dynamics or quality differences. Honloi, a farmer said adding that he was planning to come up with a factory for better profit. Farmers like him are few and most others are untrained in the skill of plucking. Tea plucking is a sensitive matter. For instance, the finest Darjeeling tea is one that comes from the timely plucking of two tender leaves and a bud. In Mon

[73] By Special Correspondent: "Effective Long Term Policies Can Rescuer Small Tea Growers", *Assam Review and Tea News*, VOL-104, No 9, Nov 2015, P 35.
[74] Banarjee G D and Sarda Banarjee: *Op cit*, pp 331-332.

due to lack of much awareness farmers lose out on the plucking time but they enjoy other advantages compared to those in Assam.[75]

Neelanjana M (2006), regarding research and development and investment viewed that there is an urgent need to increase productivity of tea. Systematic and organized research is necessary for developing and improving techniques, as well as for finding answers to emerging constrains and limitations. Adequate investment in research, therefore, is crucial for safeguarding the interest of the industry in the future. With the increase in investment on research, a sizeable segment of the tea industry, like that in the non traditional areas, where extension of tea plantation is sowing great prospects, could benefit. However, research and development expenditure in the tea industry is quite inadequate and possibly one of the lowest in the agricultural sector. It has been estimated that hardly 0.2-3 per cent of the total turnover of the tea industry is annually made available for research. As a result of such poor funding, the research and development sector of tea industry, which is primarily confined to applied research, receives nominal attention. Due to lack of funds, the Tea Research Association at Tocklai and the Research Institute of UPASI has become almost paralyzed.[76]

1.04 (e) Future Prospects of Small Tea Cultivation:

Manoharan in (1974) pointed out that tea being an internationally traded commodity; the fortune of India tea is so interwoven with the international tea situation that a realistic assessment of the Indian tea industry can better be made with a backdrop of its rival producers. However, the emphasis and aim in towards Indian tea

[75] Www.One India.com: *Op cit.*
[76] Neelanjana R: "Tea Tea Industry", *The Structure of Indian Industry (eds)*, Oxford University Press YMCA Library Building, Jai Singh Road, New Delhi 110001, 2006 , pp 38-39.

and digression is made to the extent that it enables to study the farmer in the proper prospective.[77]

Patil (1974) pointed out that the importance of tea industry lies in its capacity to earn foreign exchange ability to provide employment directly to over a million people specially the weaker sections and about twice the number of indirectly in transportation storage and marketing. Therefore tea industry must grow not to fulfil its primary functions of producing a whole some beverage but also to fulfil its social obligations in sustaining and improving the well being of these who are depending or production and distribution of tea.[78]

Mishra (1990) reported that the population of world is increasing and the size of the domestic market is fast expending and the tea is finding its place in the nonconventional areas as all classes of people are fast adopting tea as a most favourite beverage. Hence the country like India consuming over 80 corers cups of tea every day. This has raised the expectation to increase the production of tea manifolds in India.[79]

Ghosh in his book Tea Cultivation Comprehensive treatise (2001) stressed that 'tea has come to occupy an important place among plantation crop of the world and it is known world over as one of the healthy beverages tea plantation wonderful agro asset and does not cause any imbalances in the eco system; rather it

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[77] Monohoran S: *Op cit*, p 1.
[78] Patil T Y, Hinge B J and Rajmane K D: "Economic Problems of Horticultural Plantation in Maharstra", *Indian Journal of Agricultural Economics*, 29 (3), 1974, pp 134-142.
[79] Mishra D C: *New Direction in Extension Training*, Training Directorate of Extension Ministry of Agriculture, New Delhi, 1990.

really contributes a lot in maintaining ecological balance. The lush green tea plantation retains the soil cover checks soil erosion and also conserves the soil moisture.[80]

Banarjee G. D. and Srijeet Banergi in their book export potential of Indian tea (2008) explore the possibility of future strengthening export market of tea world. Indian tea has gained reputation for its quality in the United Kingdom, Poland, and United State of America, Canada and South Africa. The value added teas also have captured this market. India has also identified suitable strategies to prevail upon more markets like Arab Republic of Egypt Aral Republic of Syria, Arab Republic of Libya Jordan and Iran. Her aggressive marketing ventures in popularising teas in the markets namely Singapore, Nigeria, Middle East Mauritius Taiwan Japan and South Africa are well acknowledged. Tea is becoming more and more the beverage of choice because of its refreshing taste and its perfect fit with desire for heal their life style.[81]

Dhunuka, Chairman of Indian Tea Association (2003), reported that a golden line is visible on the horizon of Indian tea market as international demand is likely to drive Indian tea fortunes in the coming months. The industry is now looking forward to introduce linked wages and the entire process will involve the tea planters and later also the Union. He added that the worst for industry seems to be over; the international consumption of tea might be more than the global tea production. As a result massive pick up in buying of Indian teas is expected. In the mean time controlling cost is one of the most crucial and probable factors that trouble the

[80] Ghosh Hajara: *Tea Cultivation Comprehensive Treatise*, International Book Distribution Company, Lucknow, UP, India, 226004, 2001, p (preface) 1.
[81] Banarjee G D and Srijeet Banarjee: *Export potential of Indian Tea*, Abhijeet Publication, Delhi 110094, 2008, p (preface) 1.

domestic industry. The cost of production is estimated to be between Rs 65-75 per kg.[82]

Banarjee G D (2008) reported that tea producer exporter is being allowed the tax benefit under section 80 HHC of the Income Tax Act only to the extent of 40 per cent of its profit from tea exports whereas the tea merchant-exporters are repaying full deduction benefit for income tax purpose all other commodity exporters. The tea plantation industry has been pointing out to the faulty explanation under Notification No: 600 dated 25th May 1991 of the CBDT for limiting extent of Tax benefit to 40 per cent of the profits from tea exports but nothing seems to be happening for long. Deduction under Section 80 HHC in respect of export profit must be allowed from the composite income of a tea producer exporter in computing business income. As Assam tea is the main constituent in tea exports, full tax benefit has been allowed under Section 80 HHC to the tea producer exporter. It is expected that other tea growing States will extend their support in this direction.[83]

WWW.One India.Com (2006) reported that Naga tea produced in Nagaland has started fetching record price giving 'Asom Tea' a real run for money. In the recent auctions 'Naga Tea' has been attracting record price holding a new era in tea production of the "Industry-Starved" state. The Naga tea manufactured by Nagaland tea factory have attracted second highest price in Guwahati Tea Auction last week. The auction officials said the spurt in price and interest in Nagaland tea would have tremendous impact on the actual ground. Most of the farmers have shifted

[82] Dhunuka C K: "The Worse for the Industry Seems to be Over" *Assam Review and Tea News*, VOL 92, No 9, November 2003, p 33.
[83] Banarjee G D and Sarda Banarjee: *Op cit*, p 473.

towards exclusive tea cultivation in Nagaland instead of mixed crops. The Naga tea has similar taste and flavour like to Darjeeling tea.[84]

Sanyal Santanu 20th August 2012 reported that low cost high quality produce of small tea growers have the potentialities to dominate not only tea domestic market but also to the markets in Egypt, Pakistan, Iran and Iraq provided all small growers are regrouped in to primary producers societies and their produce is developed in to a single brand. Bijoy Gopal chakraborty president of CISTA has stated is a memorandum to the Tea Board Chairman. The memorandum identifies several tea growing areas such as North Bengol, Kokrajhar, in Bodo land and states such as, Meghalaya, Mizoram, Arunachal Pradesh, which have concentration of small tea growers capable of producing high quality orthodox tea 'we will need dedicated work force' the memorandum observer.[85]

Barkakoty (2012) reported that, a national drink is a drink that represents a particular country, nation or region. A drink can become a national drink for a variety of reasons. It can be the national drink because it is a daily drink for the majority of the population. It can be the national drink because it represents the regions and customs of the whole country. Or it can be the national drink because it is produced locally. National drink is an integral part of a nation's identity & self-image, history, ecology and culture. With the National Drink status to the beverage, its domestic consumption is likely to increase from the present level of around 872 million kg. At present, the per capita consumption of tea in India is 730 grams, whereas per capita consumption in UK is 2.10 kg, Russia-1.64 kg, Sri Lanka- 1.39 kg, Iraq- 1.03 kg, New Zealand-1.00 kg, Egypt-970 grams and so on. The status that we

[84] WWW.One India.Com: *Op cit.*
[85] Sanyal Santanu: *Bussiness Line*, 20 August, 2012.

have proposed for this beverage is going to strengthen the emotional attachment of the people of the country to it. If granted the status of a National Drink, the beverage will become an item connected with the emotion and pride of the people of our country.[86]

Saikia (2014) in his article viewed that spotlighting of some batches of exported tea from India for presence of high residue of chemicals in the recent years was one of the major concern and setback to our export potential. Tea being the most organized sector of such issues. These issues coupled with escalating cost of inputs brought the matter to a level where the tea producers had to think of alternative ways, where dependence of chemicals can be reduces to maximum extent possible and the problem of chemical residues in made tea is eliminated. Under such situations turning towards organic was one of the viable options.[87]

1.05 Statement of the Problem:

Tea industry is one of the largest agro based industry of the country which is playing a dominate role in the economy of Assam as well as economy of Nagaland. Tea has been contributing bigger share to the national income through its export and foreign exchange earning capacity. It contributes substantially to the state as well as central Government exchequer in the form of central income tax/excise duty, export duty, local agricultural income tax, land revenue and other local taxes.

The importance of the industry lies in its capacity to provide employment directly to millions of people especially to weaker section and about twice the number indirectly employed in transportation, storage marketing etc. In Assam, over 6.5 lakh

[86] Borkakoty Bidyananda: "National Drink of a Country", *Platinum Jubilee Souvenir of Assam Tea Planters Association Tocklai*, 2012, pp 25-27.
[87] Saika D N: "Prospect of Organic Tea Cultivation in Assam (NE India)", *Rupali Chah*, A souvenir of 9th Triennial State (Tingkhong) Conference of AASTGA, Rajgarh -786611, Dibrugarh, Assam, 2014, p 165.

people directly depends on tea industry and about 18 lakh people indirectly depends on it. Although, tea cultivation in Nagaland is relatively new concept compared to Assam, yet there is huge potentiality of growing tea in the state. The tea growers in Nagaland are now gradually organized. They throw up their challenges by their limited opportunities and led to exploring the possibility of extending tea cultivation in non traditional areas of the state. Most of the farmers in Nagaland i.e. Mokokchung, zunheboto, Mon, Tuensang, Dimapur, Phek etc have shifted towards exclusive tea cultivation instead of mixed crops and the numbers of growers are continuously increasing. Various studies reveal that land and climate is suitable for quality tea production in Nagaland and the 'Naga Tea' has similar taste and flavour like to Darjeeling. Both State Govt. and Tea Board official pointed out that tea cultivation can be a suitable alternative to destructive jhum cultivation in Nagaland and abandoned jhum land can be transformed in to eco-friendly tea plantation.

Tea cultivation is quite different from other plantation crops, as it normally takes 2 or 5 years for its maturity when cost is high with no returns. After maturity cost gradually decreases and providing income and output for long time (up to 50-60 years). In Nagaland due to different climatic condition farmers, said that the time for tea plant to mature is only a year compared to 4 years in Assam.

The small tea growers naturally lack of technical knowledge on tea cultivation. They do not have idea about optimum size of tea farm. More over financial problem also restrict future expansion of area under tea cultivation. Besides small tea growers mostly rely on big factory owners for disposing their green leaves at the price fixed on mutual agreement which is seems more beneficial to big tea planters and factory owners. A good number of research activities can expose the feasibility of tea cultivation in traditional and non-traditional belts; it can ensure awareness to small

tea growers to receive various Govt. added schemes plan and policies, providing awareness to the growers to receive reasonable returns of their tea leaves etc.

Considering the importance of small tea cultivation in generating income and employment opportunities in rural areas in the state of Assam and Nagaland it should receive much attention from the state as well as central Government for the upliftment of the sector. The central and state Govt. implementing various plan policies and schemes like, Small Tea Grower Advisory programme (STGAP) subsidiaries schemes for tea planters (up to Rs 150000 per hectares) KCC loan from Tea Board and Banks etc. for the betterment of small tea growers. Therefore, here an attempt has been made to highlight the present condition and economies of small tea growers, implementation and impact of various Government schemes on small tea growers and the future prospect and profitability of small tea cultivation to build up state as well as nation's economy through a comparative study of small tea growers in Assam and Nagaland.

1.06 Area of the Study:

The proposed study has designed to cover the Tirabar Sub division (Assam) and Mokokchung District (Nagaland).

Titabar sub-division is situated within the district of Jorhat (Assam). The Jorhat district has three sub-divisions namely Jorhat Titabar and Majuli. Titabar sub division is located at 26.60 N latitude and 94.20 E longitude and covering land by 243641 hectors. The district has 8 Nos. of Development Block and the proposed study area within two Development Blocks namely Titabar and Jorhat Development Block. The Titabar sub-division is selected for the study because there are considerable

number of small tea growers in Titabar sub-division and covering many Bighs/hectares of land under tea cultivation.

Mokokchung district of Nagaland covers an area of 1,615 km^2 and population 193,171 Lakhs (as per 2011 Census). The district is located at 94.29 and 94.76 degrees east longitude and 26.20and 26.77 degrees north latitude. It is bounded by the state of Assam to its north, Wokha district to its west Tuensang and Longleng district to its east, and Zunheboto district to its south. The district has three main valleys i.e. Tsurang, Changki and Milak. Mokokchung district has three Sub divisions namely Tuli,Mangkolemba and Changtongya.

Mokokchung district is selected for the study because small tea cultivation took its farm root in Nagaland from the district.

1.07 Objectives of the Study:

The specific objectives of the present study are:

- To study the role of small tea cultivation in generating income and employment in rural areas.
- To find out the impact and implementation of various Govt. aided schemes, plan and policies on small tea growers.
- To study about the problem and prospect of small tea cultivation.
- To suggest policy implications and conclusion.

1.08 Hypothesis:

The study is based on following hypothesis:

- Small tea cultivation plays an important role in generating income and self employment in rural areas.

- Government policies are the instrument to give boost up to small tea cultivation.

1.09 Methodology of the Study:

Methodology is one of the important parts of social science research. It is a systematic and logical study of principals which lead to scientific investigation. Eminent social scientist define social research as the systematic method of discovering new facts and verifying old facts there sequences interrelationship casual explanation and natural laws which govern them . Research methodology is a way to systemically solve the research problem. It may be under stood as a science of studying how research is done scientifically. It is necessary to know, not only the research methodology but also research methods.

After selecting the area of research identifying and defining the problem, the investigator have to review the related literature to acquire him with recent development of knowledge related with the problem. It is a stage to finalize the research plan and to start working actively on the problem. For this the researcher has to decide about research methods that can apply for solving the research problem.

The present study is basically based on primary data from the sample respondent through interview schedule and set of questionnaires, and by interaction with the knowledgeable person connected with tea cultivation, officials and employees of Tea Board office, Jorhat, Tea Advisory Cell, Tea Husbandry and Technology (A.A.U.), Jorhat, etc. Some secondary sources are also used from various books, and journals, Government reports, internet information's, libraries of Dibrugarh University and Assam Agricultural University, Jorhat.

1.10 Data Collection:

The small tea growers in Titabar (Assam) are guided by Titabar Block/Anchalik Samiti and Mariani Anchalik Samitis from two major places. The Anchalik Samiti of small tea growers in Titabar is made by five sub Samities namely Rangajan Jalukoni, Kachukhat, Chungi, Alengi and Bhagyalakhi sub Samities. On the other hand Mariani Anchalik Tea Growers Samiti has no sub Samiti yet. For the study, the investigator randomly selects 20 nos. of sample small tea growers from each sub Samities of Titabar sub-division whereas total nos. of tea grower respondents are120.

Along with many big tea factories, there are total 7 nos. of bought leaf factories in the study area of Titabar sub-division and 3 nos. of bought leaf factory in Mokokchung district. These bought leaf factories are the main out let's where the small tea growers are disposing their tea leaves through their agents or by self. Out of total 10 nos. of bought leaf factories two of them from Titabar sub-division and one from Mokakchung district are purposively selected for the study. These bought leaf factories are also included in the study to inform the price differences that they are offering to small tea growers and the price actually have to be deserved by small tea growers.

Mokokchung district has three Sub divisions namely Tuli, Mangkolemba and Changtongya. For the study 20 nos. of small tea growers are randomly selected from each Sub divisions whereas total sample are 60.

1.11 Tools of Enquire Used:

In order to collect the required information, a set of schedules and questionnaires were prepared keeping in mind the objectives of the study. Before finalizing the schedule and questionnaire it was pre tested in the sample area. Based on

information gathered in the pre testing period, the schedules and questionnaires have been partially modified and finalized so that the relevant information for the study could be adequately collected.

An interview schedule and a set of questionnaires has been used for collecting relevant information along with personal interaction with the employees of Tea Board, Small Tea Growers Advisory Cell, Tocklai, President and Secretary of Small Tea Growers Anchalik Samiti, Titabar and Mariani, Presedent Sccretary of All Naga Small Tea Growers Association, knowledgeable person relating to tea cultivation in Nagaland were also interviewed for getting relevant information from primary source.

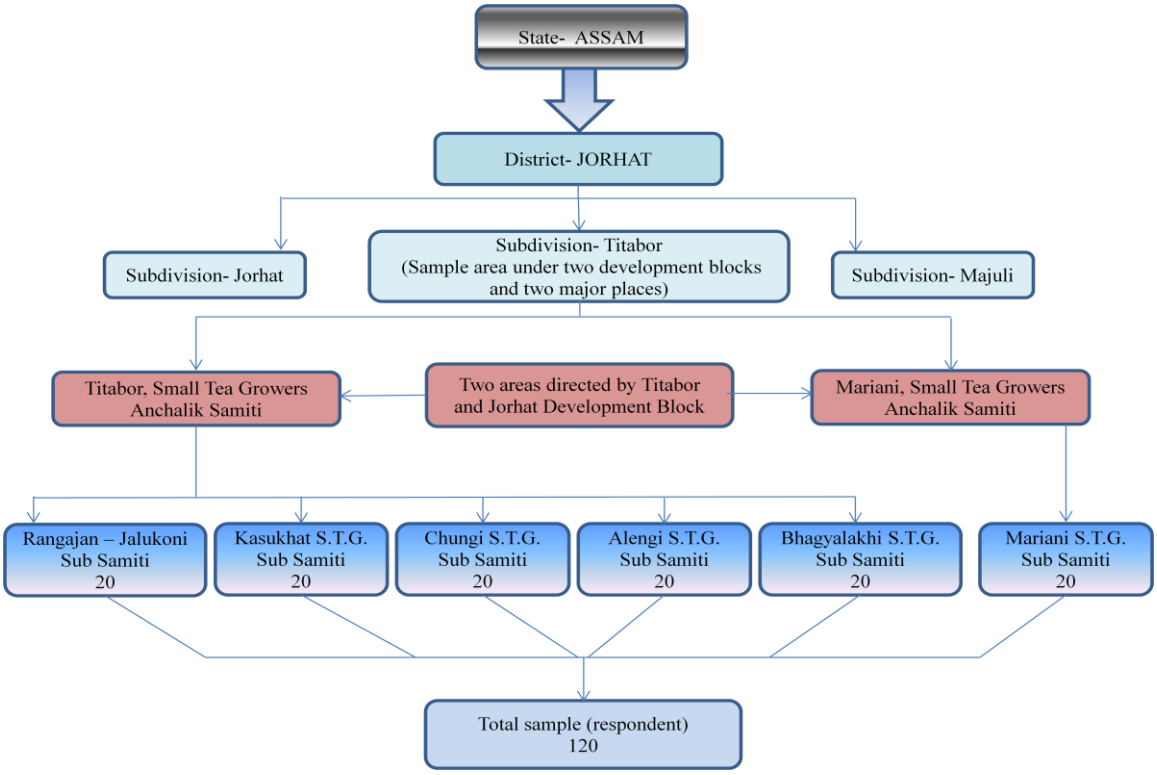
1.12 Limitation and Period of the Study:

- The study covers Titabar sub division and Mokokchung district of Assam and Nagaland.
- The study based on the expressed opinion of the respondent and the personal observation of the area.
- The study relates to the year 2011-12 and 2014-15.

1.13 Sampling Designed:

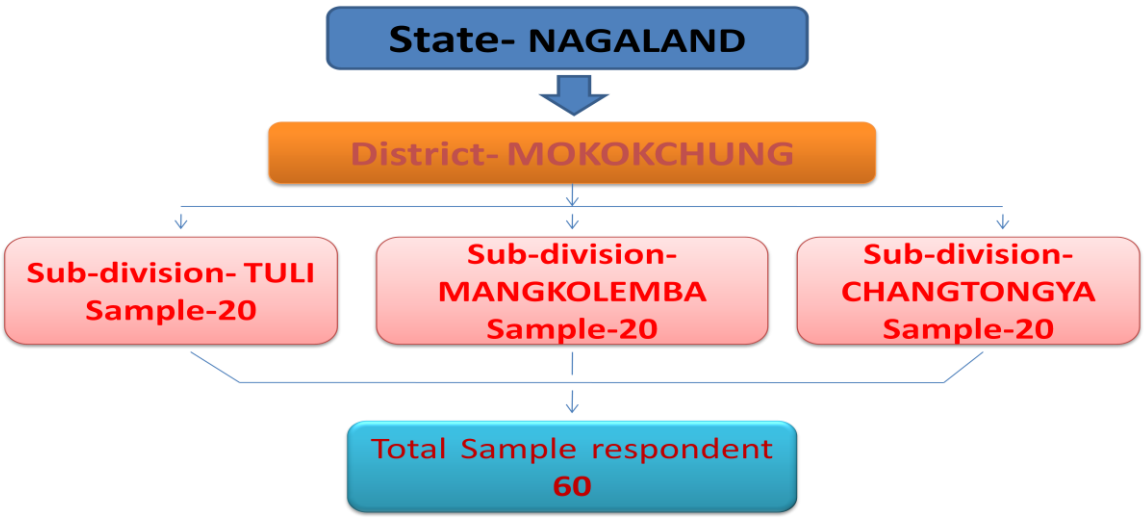
Multistage stratified random sampling technique has been used to collect relevant information from the respondents. There are six tea grower sub-samities in Titabar sub division (Assam) and three sub-divisions in Mokokchung district. Equal 20 numbers of sample randomly selected from each sub-samities and sub-divisions which comprises total 180 samples for the study.

Fig-1.04 Sampling Design of Titabar Sub-division (Assam)



State/Sub-division: purposive, Block/S.T.G Samities: Random.

Fig-1.05 Sampling Design of Mokokchung District (Nagaland).



State/District: Purposive, Sub-division: Random.

1.15 Statistical analysis: To obtain the objectives of the study mainly two statistical methods namely 1.15(a) Simple tabular analysis and 1.15(b) Functional analysis has been followed. The functional relationship of various independent variables to dependent variable has analyzed by using SPSS of version 16.

1.15(a) Simple tabular analysis: The data collected for the study has complied and tabulated for analysis percentage and averages, bar diagrams, pie diagrams, and calculation of Benefit Cost Ratio (BCR) are used according to the need of the study.

1.15(b) Functional analysis: In order to find out the functional relationship of production per hectare land of different farm sizes with the strategic input variables a linear production function has been used as follows.

$$\mathbf{Y= a+b_1x_1+b_2x_2+b_3x_3+b_4x_4+b_5x_5+b_6x_6}$$

Y=Output, **a**= Intercept term.

$\mathbf{x_1}$=Labour**,** $\mathbf{x_2}$=Capital, $\mathbf{x_3}$ = Fertilizer, $\mathbf{x_4}$=Machinery, $\mathbf{x_5}$=Irrigation, $\mathbf{x_6}$=Government policies.

$\mathbf{b_i}$=Coefficient of $x_{i's}$

i=**1, 2 .....6**

To find out the impact of various Government schemes on small tea growers paired ‘t’ test has been used in case of two dependent or correlated of equal two samples. In this situation both the population mean and the standard deviation are not known. In such a situation to apply ‘t’ test, at first it is calculated the differences of pairs of values and then calculated the mean differences. The statistics ‘t’ has been calculated as

$\boldsymbol{t = \frac{|\bar{d}|}{s/\sqrt{n}}}$ with $(\mathbf{n-1})$ degree of freedom.

Where, $\bar{d}$= Mean of differences, S=Estimate of Standard deviation.

$$\mathbf{S}= \sqrt{\frac{1}{n-1}\sum(d-\bar{d})^2}$$

d= Difference of the pair of values.

$\bar{d}$= Mean of differences.

The calculated value of't' has been compared with corresponding table value. If the calculated value is greater than the table value, it is said to be significant and the hypothesis is rejected. On the other hand if the calculated value is less than the table value, it is said to be not significant and there is no reason to reject the hypothesis.

To analyse the problem faced by the small tea growers in respect to production and marketing of tea, Garret's ranking technique has been used. The respondents were asked to rank the different factors which created problem in production and marketing of tea. The order of merit given by the respondents has been converted in to ranks by using the following formula.

Per cent position = $\boldsymbol{\frac{100(R_{ij}-0.5)}{N_j}}$

Where R_{ij}= Rank given for i^{th} factor by the j^{th} individual.

N_j=Number of factors ranked by the j^{th} individual.

The per cent position of each rank thus obtained has converted in to scores by referring to the table given by Garette and Woodworth (1969). Then for each

factor the scores of the respondent has been added together and divided by the total number of respondents for whom the scores added. The mean scores thus obtained all the factors then arranged in descending order and ranks has been given and finally the most limiting factors has identified.

1.16 Conceptual framework: Different concepts used in the study are as follows.

1.16(a) Human labour: Human labour is assessed by family labour and hired labour. The total labour utilization has calculated in terms of adult man days of 8 hours of work per day. In case of woman in converting to standard man equivalent a ratio of 1 woman labour has considered to 0.66 male labours. The wage rate prevailing in the area has considered in calculating the value of labour.

1.16(b) Cost concept used in farm management studies: The cost of small tea growers has been estimated by using different cost concepts. The cost of tea cultivation covered both paid out cost (out of pocket expenses) and imputed cost. The items covered under these cost as follows.

1.16(b_1) Paid out cost: paid out cost includes.

- Hired labour (human, animal and machinery).
- Maintenance expenses on own animal and machinery.
- Expenses on material inputs such as seed (home grown and purchased) pesticides and irrigation.
- Depreciation on implements and farm buildings (such as cattle shades, machine shades, storage shades).
- Land revenue.
- Rent of leased-in land.
- Miscellaneous expenses.

1.16(b_2) Imputed costs: Imputed cost includes.

- Value of family labour.
- Managerial input of family.
- Rent of own land.
- Interest of own fixed capital for which the farmer does not incur any cost expenses.

The paid out cost and imputed cost further has been classified as.

Cost A_1: Which includes value of hired human labour + value of hired and own bullock labour + value of own machinery labour + hired machinery charges + value of polythene bags + value of seed (both farm produced and purchased) + value of insecticides and pesticides + value of manure and fertilizer (own and purchased) + value of irrigation charges + land revenue, cesses and other taxes + interest of working capital + depreciation on implements and farm buildings + miscellaneous expenses.

Cost A_2: This includes cost A_1 + rent paid for leased in land.

Cost B_1: which includes cost A_1+ interest on value of own fixed capital assets (excluding land).

Cost B_2: Which includes cost B_1 + rent value of own land (net of land revenue) and rent paid for leased-in land.

Cost C_1: This includes cost B_1 + imputed value of family labour.

Cost C_2: This includes cost B_2 + imputed value of family labour. (Cost C_2* adjusted to take into account valuation of human labour at market rate or statutory minimum wage rate whichever is higher).

Cost C_3: Which includes cost C_2 + value of management inputs at 10% of total cost (C_2*).

1.17 Imputation Method: The imputation method is highlighted by input used in the production process, allocation and apportion of joint cost and criteria of evaluation farm assets.

1.17(a) Inputs used in production process: Some of the inputs used in the production process are provided by family sources. The criteria adopted for deriving imputed values of these inputs shown in table no 1.12.

Table1.12: Inputs used in production process.

Nos.	Items	Criteria
1	Family labour	On the basis of statutory or market wage rate whichever is higher.
2	Owned animal labour	On the basis of cost of maintenance which includes cost of fodder, cattle shade, labour charges and other expenses.
3	Owned machinery charges	On the basis of cost of maintenance of farm machinery i.e. diesel, electricity, lubricants, repair and other expenses.
4	Implements	Depreciation and charges on account of minor repair.
5	Farm produced manure	Evaluated at rates prevailing in the market.
6	Rent of own land	On the basis of prevailing rents given in the land legislation of the concerned states. (As reported by the respondent).
7	Interest of own fixed capital	Interest on present value of fixed assets charged at the rate of 10% per annum.
8	Interest on working capital	Interest is charged at the rate of 12.5% per annum on the working capital for half the period of crop.
9	Payment in kind	Evaluated at the prices prevailing in the villages at the time of payment.
10	Main products and by products	Imputed on the basis of post harvest prices prevailing in the selected villages.

1.17(b) Allocation and apportion of joint costs: The expenditure incurred on imputed for some of the cost items related to the farm as a whole. Such joint costs are allocated to individual enterprises among different categories of livestock and so on. Depreciation on farm buildings and implements, land rents, land revenue, cesses and taxes, interest on own fixed capital are such cost which are allocated to each category of crops in proportion to their areas. The cost of livestock is allocated to each category of animal in proportion of its numbers to the total number of animal owned by the farmer.

The apportionment of total cost incurred jointly in different crops grown in mixture crops is done in proportion to the total value of output contributed by individual crops in the total crop mixtures. The apportionment of total cost of cultivation between the main product and the bio products is done in proportion to the contribution to the total value of output.

1.17(c) Evaluation of farm assets: The criteria adopted for the evaluation of farm assets has been shown in table no 1.13.

Table 1.13: Criteria of evaluation farm assets.

Nos.	Assets	Criteria
1	Own and self cultivated land	Evaluated at rates prevalent in the village, taking in to account of difference in soil, distances, irrigation facility etc.
2	Farm buildings cattle shade, storage etc.	Evaluated at the rate prevailing in the villages.
3	Implements and other farm machineries	Evaluated at the market prices.
4	Livestock's	Evaluated at the market prices.

1.18 Layout of the Study:

The thesis comprises of five chapters. The first chapter is the introductory chapter as usual covering the basic information's origin and development of tea industry and development in Assam and Nagaland; it also contains statement of the problem, emergence of small tea cultivation in Assam and Nagaland, objectives of the study, methodology, hypothesis and review of literature. The details of the socio economic profile i.e. demographic feature of the sample farmers, population distribution, literacy occupational distribution, economic classification, land use pattern, operational holding etc are discussed in the second chapter. In the third chapter an attempt has made to analyze the economics of small tea cultivation. It will include cropping pattern, cropping intensity, resource position of the sample households, cost of cultivation of tea, generation of income and employment, annual income from non agricultural sources, estimation of BCR (Benefit Cost Ratio) of the study area. The fourth chapter examine the impact and implementation of Government policies on the growth of small tea cultivation in rural areas. The fifth chapter deals with the problems suggestions and policy implications for upliftment of the small tea cultivation in Assam and Nagaland, and finally findings, summary and conclusion.

Notes:

- India is the largest producer of black tea as well as the largest consumer of tea in world. Currently India produces 23 per cent of total world production and consumes about 21 per cent of total world consumption of tea nearly 80 per cent of the produced is consumed within India. Over the last 20 years India's world ranking as an exporter as come down from number 1 to number 4 in the face of stiff competition from Sri Lanka, Kenya and China.

- Tea first authentic reference to tea is found in an ancient Chinese dictionary which was revised about the year 350 A.D. by P'o a Chinese scholar. Tea leaves were boiled at that time to prepare a medicinal decoction. The first book exclusively on tea was published in 780 A.D. by Lu. Yu.
- The discovery of indigenous tea bushes in Assam by Major Robert Bruce in 1823 led to the origin of tea industry in India.
- Tea cultivation was initiated in Nagaland way back late seventies as an alternative means of livelihood. Late Mr. Sashimeren Aier (Rtd. Development Commissioner) was such a pioneer. However tea cultivation was popular among the common farmers since 1990's.
- For a Konyak family, the tea also known as "khalup" occupies an important place in Nagaland. No visitor guest is allowed to leave their house without having tea (khalup).
- According to Tea Board and Department of Tea Husbandry and Technology, "a small tea grower is that whose land under tea cultivation does not exceed 10 hectares (75 Bighas). According to Government of Assam, one can be considered as a small tea grower if his areas under tea cultivation do not exceed 4.02 hectares.
- The All Assam Small Tea Growers Association was registered in the year 1987. AASTGA has brought in a green revolution in rural Assam by cultivating tea in unutilized and underutilized uplands and thus bringing huge socio-economic changes in Assam.

CHAPTER-II

2.01 Socio-Economic Profile of the Sample Tea Growers:

In this chapter, an attempt has been made to analyse the socio- economic profile of the sample households of the study area based on the primary data. It is to be noted that the socio-economic factors influences the entrepreneurial ability and development of an area at considerable extent. The small tea plantation has already made much headway in the green leaves production in Mokokchung district of Nagaland and adjoining tea growing areas of Assam. On the other hand Titabar sub division of Assam is well known of growing tea sector in the history of tea cultivation of the state since British-Raj. Along with many big tea estates there are almost 3000 small tea growers contribute to total tea production of the state. The entrepreneurship development by the expansion of small tea sector substantially contributes towards the development of the area. Such development depends to a large extent on the level of education, environment, physical facilities and the selection of appropriate technologies relevant to one's own need and suitability. In the present chapter, an attempt has been made to depict a picture on the socio economic factors of sample households like demographic profile, level of education, occupational pattern of the families, land resources and its utilization pattern etc.

2.02 Man Power Resources:

The quality of manpower resources is one of the key indicators in determining the development of a nation. The term man power resources mean the process of acquiring and increasing the number of persons who have the skills, education and experience. Human resources include investment on education,

improvement of health, and training of workers in specialised skill, it is also associated with investment in man and his development as a creative and productive resource.

A healthy manpower is a great aspect of development as it leads to greater output per man. Lack of investment in human capital is responsible for slow growth. The rural areas are generally faced two problems, lack of critical skills and a surplus labour force. The existence of surplus labour is prevailing due to the shortage of critical skills. So, man power resources are one of the key determinate of development which further depends on age group composition, skilled formation and entrepreneurial ability of the existing human resources. A region may possess abundant natural and physical resources but if the human resources are not a better position to absorb these resources the country cannot make progress towards development.

2.03 Demographic Profile:

Population forms an important component in the whole process of socio economic development of a region. It is because of its dual role as a producer as well as consumer. Hence, a proper appraisal of its size, growth composition and quality is considered as pre-requisite for an effective planning for balanced and sustainable socio economic development of a region. As such an attempt in this regard is made to focus age-group composition of population, educational status, marital status, economic status, working population composition etc.

Availability of human labour facilitates undertaking of various agricultural activities for crop production in proper time. In Assam and Nagaland the traditional method of crop production is still present due to certain factors like illiteracy and ignorance of the farmer, lack of knowledge to adopt new farm practices,

poor capital formation for investment in modern farm inputs and inadequate infrastructural support etc.

The distribution of population by age groups gives an idea of the composition of the family by family size and availability of labour force as well as dependency ratio. The demographic features of the population of sample tea growers by age groups and sex are presented in Table 2.01.

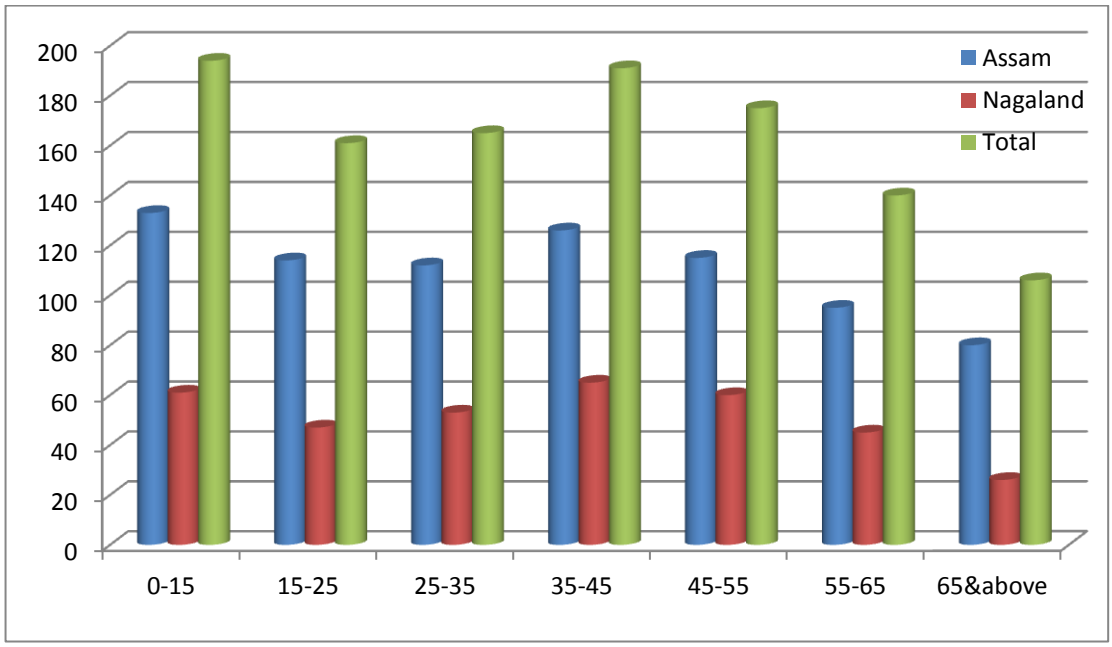
Table 2.01 shows that the total population covered by the study is 1132 of which 775 from Titabar sub-division and 357 from Mokakchung district. In Titabar 399 (51.48 per cent) are males and 376 (48.52 per cent) are female. The average family size is found at 6.45 which is quite more as the state average family size 4.9 as per 2011 census. The sex ratio of population comprises 48.52 per cent of female against 51.48 percent of male. On the other hand in Mokokchung 183 (51.26 per cent) are males and 174 (48.74 per cent) are female. The average family size is found at 5.95 is also more than the state average family size 4.95 as per 2011 census. The sex ratio of population comprises 48.74 per cent of female against 51.26 percent of male.

Table 2.01: Distribution of Population of Sample Tea Grower Households by Age Groups and Sex.

Age Groups	**Titabar**		**Total**	**Mokokchung**		**Total**	**Total of both area**
	Male	Female		Male	Female		
0-15	70	63	**133**	30	31	**61**	**194**
15-25	59	55	**114**	25	22	**47**	**161**
25-35	65	47	**112**	30	23	**53**	**165**
35-45	66	60	**126**	32	33	**65**	**191**
45-55	57	58	**115**	29	31	**60**	**175**
55-65	46	49	**95**	22	23	**45**	**140**
65 & above	36	44	**80**	15	11	**26**	**106**
Total	**399 (51.48)**	**376 (48.52)**	**775 (100)**	**183 (51.26)**	**174 (48.74)**	**357 (100)**	**1132**

Source: Primary (Data collected in 2015).

Fig. 2.01: Distribution of Population by Age and Sex of Sample Tea Growers in Assam and Nagaland.



[Horizontal line represents Age groups (years) and vertical line represents population (Nos.)]

2.04 Educational Status:

Prof. Singer observed that education is not only highly productive but also yields increasing returns in so far as cooperating terms of skilled and educated people are worth more than the sums of the individuals of which they are composed. Wherever we look human investment we find increasing returns at play.[88]

Educational attainment of population therefore, is considered as one of the basic elements which determine the quality of working manpower of the sample. Education is the indicator of the quality of human resources engaged in agriculture and other activities. Their level of awareness, knowledge and acceptability to new technology, by and large depends on their level of education. With education of the people it is likely to adopt of modern agricultural technology, selection of better source of marketing and enhanced bargaining power to them. Without education a

[88] **Lekhi R K:** *The Economics of Development and Planning*, Kalyani Publication, New Delhi, 1995, p-48

farmer is indifferent and heisted to adopt any improved technology, selection of marketing channels and in exercising bargaining power. There is however sufficient ground to believe that education of farmer may play a vital role in improving their farms with modern technology for higher production and return per unit of area. Table 2.02 indicates the educational status of the sample tea grower households.

Table 2.02: Distribution of Population by Age Groups & Educational Status of the Sample Tea Growers in Titabar Subdivision.

Age Groups	Sex	0-15	15-25	25-35	35-45	45-55	55-65	65 & above	Total
Illiterate	M	41	-	-	-	3	5	9	**58**
	F	47	-	-	-	7	6	11	**71**
LP Standard	M	-	-	3	5	8	11	12	**39**
	F	-	-	6	6	7	9	6	**34**
HSLC Standard	M	-	12	18	17	12	11	3	**73**
	F	-	15	22	11	8	7	2	**65**
HSLC Passed	M	-	17	20	18	16	7	2	**80**
	F	-	20	24	17	6	3	1	**71**
HSSLC Passed	M	-	23	16	17	10	4	2	**72**
	F	-	25	18	12	7	5	3	**70**
Graduate	M	-	10	14	20	9	6	2	**61**
	F	-	7	18	15	5	4	2	**51**
Post. Graduate	M	-	3	7	3	2	1	-	**16**
	F	-	4	5	2	2	1	-	**14**
Total	M	**41**	**65**	**78**	**80**	**60**	**45**	**30**	**399**
	F	**47**	**71**	**93**	**63**	**42**	**35**	**25**	**376**

Source: Primary (Data collected in 2015).

Table 2.02 shows that the total population of Titabar sub division 16.65 per cent are illiterate including child not going to school. 9.42 per cent (5.04 per cent of males and 4.38 per cent of females) have educational qualification up to Lower Primary Standard. 17.81 per cent (9.41 per cent of males and 8.39 per cent of females) have qualification up to HSLC Standard, 19.49 per cent (10.32 per cent of males and 9.17 per cent of females) passed HSLC examination or equivalent standard. 18.33 per cent (9.29 per cent of males and 9.04 per cent of females) passed Higher Secondary or

equivalent examination. 14.46 per cent (7.87 per cent of males and 6.59 per cent of females) are graduate, and 3.87 per cent (2.64 per cent of males and 1.80 per cent of females) having qualification up to post graduation. Table indicate sufficiently that an overall educational level in the sample area of Titabar sub division is found satisfactory.

Table 2.03: Distribution of Population by Age Groups & Educational Status of the Sample Tea Growers in Mokokchung District.

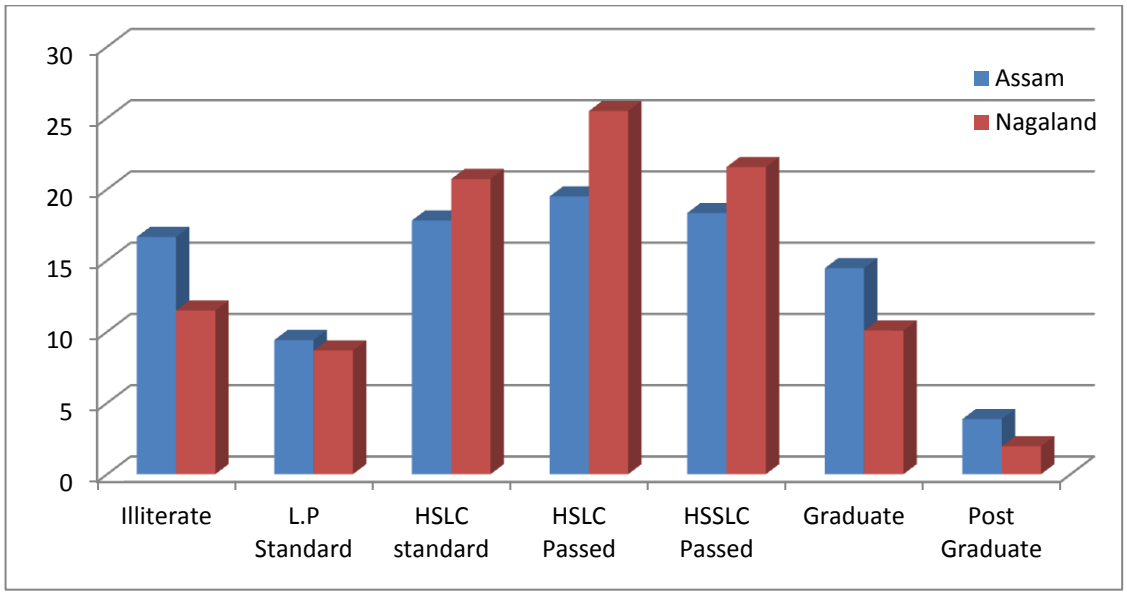
Age Groups	Sex	0-15	15-25	25-35	35-45	45-55	55-65	65 & above	Total
Illiterate	M	12	-	-	-		3	4	**19**
	F	15	-	-	-	1	4	2	**22**
LP Standard	M	-	3	3	4	-	7	3	**20**
	F	-	2	-	4		4	1	**11**
HSLC Standard	M	-	10	14	8	3	1	-	**36**
	F	-	15	13	5	5	-	-	**38**
HSLC Passed	M		14	15	8	2	3	1	**43**
	F	-	15	13	10	6	4		**48**
HSSLC Passed	M	-	13	17	4	2	1	1	**38**
	F	-	15	19	2	2	1		**39**
Graduate	M	-	8	7	2	6	-	-	**23**
	F	-	4	5	3	1	-	-	**13**
Post. Graduate	M	-	1	2	-	1	-	-	**4**
	F	-	-	2	1			-	**3**
Total	M	**12**	**49**	**58**	**26**	**14**	**15**	**9**	**183**
	F	**15**	**51**	**52**	**25**	**14**	**13**	**4**	**174**

Source: Primary (Data collected in 2015).

Table 2.03 shows that the total population of Mokokchung district 11.49 per cent are illiterate including child not going to school. 8.68 per cent (5.60 per cent of males and 3.08 per cent of females) have educational qualification up to Lower Primary Standard. 20.72 per cent (10.08 per cent of males and 10.64 per cent of females) have qualification up to HSLC Standard, 25.49 per cent (12.04 per cent of males and 13.45 per cent of females) passed HSLC examination or equivalent standard. 21.56 per cent (10.64 per cent of males and 10.92 per cent of females) passed

Higher Secondary or equivalent examination. 10.08 per cent (6.44 per cent of males and 3.64 per cent of females) are graduate, and 1.96 per cent (1.12 per cent of males and 0.84 per cent of females) having qualification up to post graduation. Table indicate sufficiently that an overall educational level in the sample area of Mokokchung is also found satisfactory.

Fig. 2.02: Distribution of Population by Educational Status of Sample Tea Growers in Assam and Nagaland.



[Horizontal line represents Educational Status and vertical line represents Per cent position.]

2.05 Economic Status:

In order to study the economic status of sample households, they are classified as earner, earning dependent and dependent. The people who are primarily engaged in any income generating economic activities are classified as earner or worker. The person whose main activities are different but help in economic pursuits of the household partially is classified as earning dependent or helper. The helpers may be the children of below working age-groups (below 15 years of age) but not attending to schools. The students above working age-groups who participated in

income generating activities seldom in their off season are also classified as helper or earning dependent. But the persons classified as non-worker are minor children and the students below 15 years of age and the people who attained 65 years or above are treated as non-workers. The non-workers also included physically handicapped and disabled persons who are not able to do any productive work.

Table 2.04: Distribution of Sample Growers by Economic Status in Titabar Sub division and Mokokchung District:

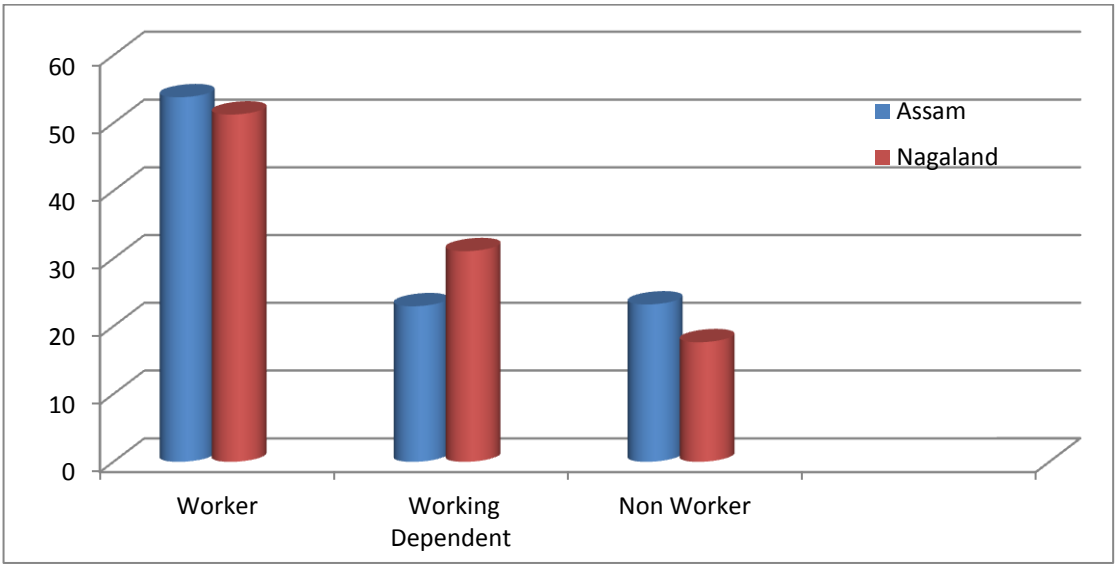
Age Groups	Sample Area	Worker		Working Dependent		Non Worker		Total
		M	F	M	F	M	F	
0-15rs	Titabar	-	-	3	1	62	51	**117**
	Mokokchung	-	-	5	2	14	20	**41**
15-25yrs	Titabar	30	12	23	27	5	3	**100**
	Mokokchung	14	7	14	17	1	-	**53**
25-35yrs	Titabar	53	30	12	23	5	10	**133**
	Mokokchung	23	14	5	10	2	2	**56**
35-45yrs	Titabar	71	34	17	14	2	3	**141**
	Mokokchung	30	16	10	17	1	1	**75**
45-55yrs	Titabar	64	39	12	15	1	4	**135**
	Mokokchung	23	19	7	7	-	1	**57**
55-65yrs	Titabar	37	40	9	13	1	3	**105**
	Mokokchung	21	14	3	9	2		**49**
65 &above	Titabar	5	2	2	7	12	16	**44**
	Mokokchung	1	1	3	2	8	11	**26**
Total & Per cent	Titabar	**260**	**157**	**78**	**100**	**88**	**92**	**775**
		(53.81)		**(22.96)**		**(23.23)**		**(100)**
	Mokokchung	**112**	**71**	**47**	**64**	**28**	**35**	**357**
		(51.26)		**(31.09)**		**(17.65)**		**(100)**

Source: Primary (Data collected in 2015), [M- Male, F-Female]

The Table 2.04 reveals the economic status of the sample tea growers in Titabar sub division and Mokokchung district. In Titabar it is found that the total population covered by the surveys, 53.81 per cent are workers (comprising 33.54 per cent male and 20.25 per cent females), 22.96 per cent (comprising 10.06 per cent male and 12.90 per cent females) are helpers and 23.23 per cent (comprising 11.35 per cent

male and 11.87 per cent females) are dependent or non workers. In Mokokchung district it is observed 51.26 per cent (comprising 31.37 per cent male and 19.88 per cent females) are workers. 31.09 per cent (comprising 13.16 per cent male and 17.92 per cent females) are helper and 17.65 per cent (comprising 7.84 per cent male and 9.80 percent female) are non worker. Table indicate that the dependency ratio is not very high in both the areas. A graphical representation about economic status of the sample households is depicted in Fig 2.03

Fig. 2.03: Distribution of Population by Economic Status of Sample Tea Growers in Assam and Nagaland.



[Horizontal line represents Economic Status and vertical line represents Per cent position.]

2.06 Occupational Pattern:

India is predominantly agro-base economy more than 60 per cent of the population is engaged directly or indirectly in agriculture. The main occupation of the population of study area is agriculture and allied activities. But some of them are engaged in agriculture though they are primarily engaged in Govt services, business trade and commerce, and other services i.e. agricultural labour transport etc. on the

other hand some of them have primary occupation agriculture but secondarily engaged in other productive activities. The field survey in the study area of Titabar subdivision and Mokokchung district it is observed that the working population (worker and working dependent) are engaged in tea cultivation though they are primarily engaged in other productive activity but majority of them adopt tea cultivation as a primary source. The occupational distribution of the working population is presented in Table 2.05.

Table 2.05: Occupational Distribution of Sample Tea Growers.

Category of works	**Occupation Status in Titabar Sub division**			**Occupation Status in Mokokchung District**		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
Agriculture	85	32	117 (19.67)	43	32	75 (25.52)
Tea cultivation	123	55	178 (29.92)	45	21	66 (22.45)
Govt /private services	47	32	79 (13.28)	13	11	24 (8.17)
Trade & commerce	53	57	110 (18.48)	34	25	59 (20.06)
Agricultural labour	18	29	47 (7.89)	21	13	34 (11.56)
Household/other work	12	52	64 (10.76)	3	33	36 (12.24)
Total population	**338 (56.81)**	**257 (43.19)**	**595 (100)**	**159 (54.09)**	**135 (45.91)**	**294 (100)**

Source: Primary. Figures in parentheses indicate per cent position to total workers.

Table 2.05 indicates that in Titabar sub division total working population 19.67 per cent are primarily engaged in agriculture. 29.92 per cent having small tea cultivation as primary source. 13.28 per cent are engaged in Govt or private service. 18.48 per cent are associated with trade and commerce or business sector. 7.89 per cent are agricultural labour or engaged as manual labour or wage earner and it is noted

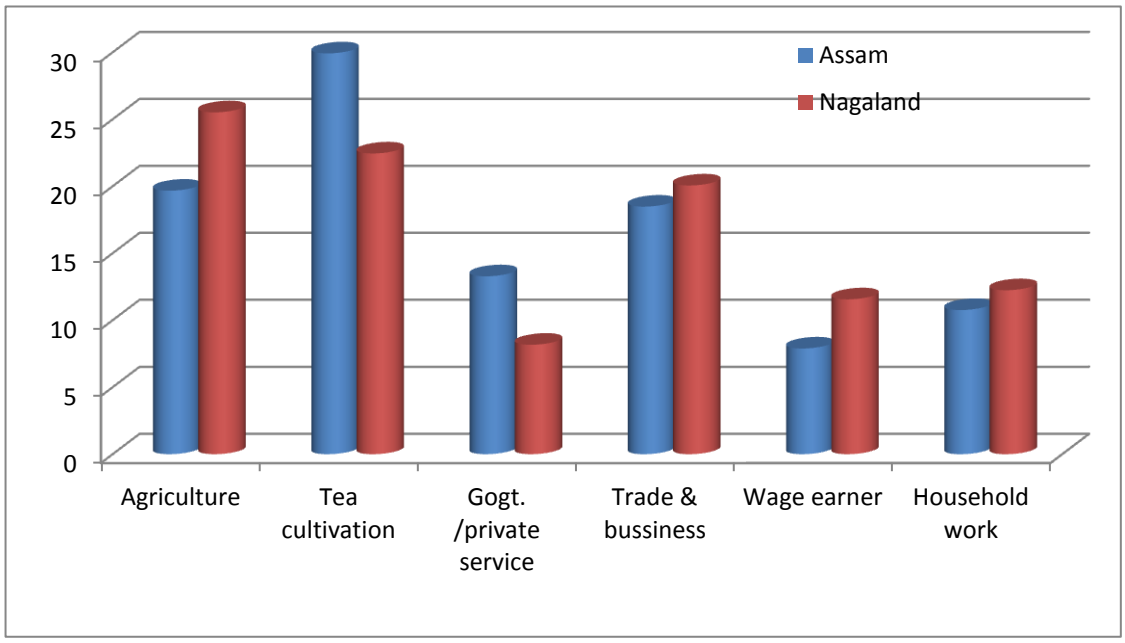
that 10.76 per cent are usually engaged in household or domestic works and most of them are females. The females are although not directly engaged in productive pursuits, yet they perform the basic services to the households. Besides their household domestic work the females are sometimes or somehow engaged themselves in some productive pursuits. On the other hand, fewer amounts of males engaged in domestic works in the case that females take part economic activities or income earner from outside.

In Mokokchung district total working population 25.52 per cent are primarily engaged in agriculture. 22.45 per cent having small tea cultivation as primary source. 8.17 per cent are engaged in Govt or private service. 20.06 per cent are associated with trade and commerce or business sector. 11.56 per cent are agricultural labour or engaged as manual labour or wage earner and 12.24 per cent are usually engaged in household or domestic works. The figures in the table indicate sufficiently that small tea cultivation plays an important role in generating income and employment opportunities in rural areas in Assam and Nagaland. In Titabar sub division 29.92 percent and in Mokokchung district 22.45 per cent growers primarily engaged in small tea cultivation indicates its importance in rural areas as a source of livelihood. Whereas rest out person of the working population also associated with tea cultivation as a secondary source of occupation.

From the analysis of above primary data, it is observed that the workers who are primarily engaged in some occupation also pursued another occupation as secondary source of income and employment. The service holders who are primarily engaged in service also worked as a tea cultivator at home or businessman apart from his prime source of income. So population of the sample area are performed their

occupation from both primary and secondary sources. Fig. 2.04 graphically shows the occupational status of the sample tea grower households.

Fig. 2.04: Distribution of population by Occupational Status of Sample Tea Growers.



[Horizontal line represents Occupational Status and vertical line represents Per cent position]

2.07 Land Holdings Pattern of the Sample Tea Growers:

It is an established fact that land is the prime and dominant resource for the population dependent on agriculture. Land resource plays the strategic role in determination of economic, social and cultural progress of the farming community. Land is the basic input which provides food, employment and income to the people.

The conception of operational holding used in the study is own land under cultivation and land taken on lease and mortgaged. There is no leased out and mortgaged out land found among the sample households. The table 2.06 shows the status of operational land holding of the sample households.

Table 2.06: Land Holding Pattern of the Sample Households.

Types of land nature of utilisation	Sample area of land holding	Own Land	Leased-in Land	Leased Out Land	Mortgage - in Land	Mortgage-out land	Total Land in hectares
Cultivable land in hectares.							
Field crops	Titabar	550	60	-	40	-	650
	Mokokchung	210	-	-	-	-	210
Horticulture crops	Titabar	40	3	-	2	-	45
	Mokokchung	37	-	-	-	-	37
Tea crops	Titabar	425	58	-	35.68	-	518.68
	Mokokchung	267	-	-	-	-	267
Other crops	Titabar	10	2	-	1	-	13
	Mokokchung	46	-	-	-	-	46
Total	Titabar	1025	123		78.68		**1226.68**
	Mokokchung	**560**	-	-	-	-	**560**
Non cultivable land in hectares.							
Homestead	Titabar	15	-	-	-	-	15
	Mokokchung	11	-	-	-	-	11
M. Tree crop	Titabar	7.8	0.5	-	0.6	-	8.9
	Mokokchung	57	-	-	-	-	57
P.P Grazing	Titabar	20.71	1.0	-	0.2	-	21.91
	Mokokchung	38	-	-	-	-	38
Cultivable Waste	Titabar	3.5	0.3	-	0.2	-	4
	Mokokchung	37	-	-	-	-	37
Barren & others	Titabar	4.2	0.2	-	0.1	-	4.5
	Mokokchung	22	-	-	-	-	22
Fallow land	Titabar	2.8	0.3	-	0.5	-	3.6
	Mokokchung	-	-	-	-	-	-
Total	Titabar	54.01	2.3	-	1.6	-	**57.91**
	Mokokchung	**165**	-	-	-	-	**165**

Source: Primary (Data collected in 2015).

Table 2.06 reveals that operational holding of land is classified in to two types as cultivable land and non cultivable land. The total cultivable land in Titabar sub division is estimated 1226.68 hectares which comprising 1025 hectares own land, 123 hectares leased in land, and 78.68 hectares mortgage in land. In Mokokchung district the cultivable land is estimated 560 hectares without any mortgage-in and

leased-in land. On the other hand total non cultivable land in Titabar sub division is estimated 57.91 hectares which comprises 54.01 hectares own land, 2.30 hectares leased-in land and 1.6 hectares are mortgage-in land. In Mokokchung district it is estimated 165 hectares. Table indicates that 518.68 hectares of land under small tea cultivation in Titabar subdivision which is 42.28 per cent of total cultivable land and 40.39 percent of total land in the study area. In Mokokchung district small tea cultivation covered an area of 267 hectares which is 47.67 percent of cultivable land and 36.82 percent of total land in the district. More percent of land covered for tea cultivation in both the areas implies the importance of small tea cultivation in generating income and employment opportunities in the rural areas of the states and indicate its profitability compared to other crops.

The holding of farm size of tea is not equal to all farmers. It is ranges from 1 hectare to 10 hectares and in some cases 10 hectares and above. The land holding pattern according to farm size is represented Table 2.07.

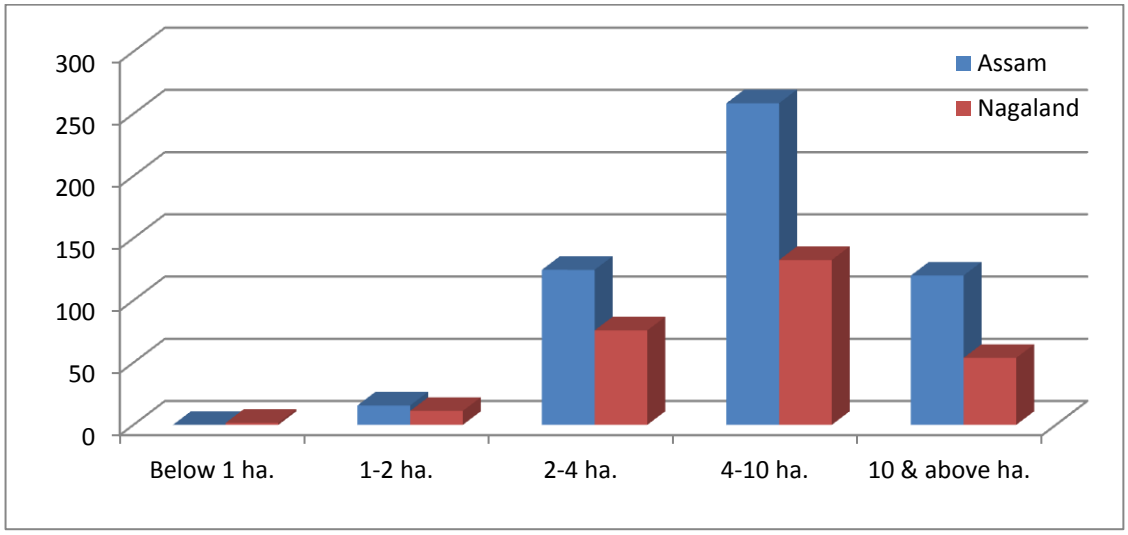
Table 2.07: Land Holding Pattern of Sample Tea Growers by Farm Size:

Farm size (hectares)	**Sample area of land holding**	**No. of Sample**	**Own Land**	**Leased-in land**	**Mortgaged-in land**	**Total in hectares**
Below 1 ha	Titabar	-	-	-	-	**-**
	Mokokchung	2	1.60	-	-	**1.60**
1-2 ha	Titabar	12	15	-	0.60	**15.60**
	Mokokchung	7	11.20	-	-	**11.20**
2-4 ha	Titabar	43	100	20	4.58	**124.58**
	Mokokchung	22	67.90	-	-	**67.90**
4-10 ha	Titabar	55	220	18	20.50	**258.50**
	Mokokchung	26	132.50	-	-	**132.50**
10 & above	Titabar	10	90	20	10	**120**
	Mokokchung	3	53.80	-	-	**53.80**
Total	Titabar	**120**	**425**	**58**	**35.68**	**518.68**
	Mokokchung	**60**	**267**	**-**	**-**	**267**

Source: Primary (Data collected during in 2015).

Table 2.07 indicates that in the sample of 120 small tea growers in Titabar subdivision 15.60 hectares of land is covered by farm size 1-2 hectares, 124.58 hectares of land is covered by farm size 2-4 hectares, 258.50 hectares of land is covered by farm size 4-10 hectares and 120 hectares of land is covered by farm size 10 and above hectares. Table distinctly shows that maximum 425 hectares of small tea growing land is covered by farmers own land, 58 hectares is leased-in land and 35.68 hectares is mortgaged- in land. In Mokokchung district 1.60 hectares of land is covered farm size 1 hectare, 11.20 hectares of land is covered farm size 1-2 hectare, 67.90 hectares of land is covered farm size 2-4 hectares, 132.50 hectares of land is covered farm size 4-10 hectares and 53.80 hectares of land is covered farm size 10 & above hectares. Table shows that area covered tea cultivation in the district is farmers own land without any leased-in or Mortgage-in land.

Fig. 2.05: Land Holding by Farm Size of the Sample Tea Growers in Assam and Nagaland:



[Horizontal line represents Farm Size and vertical line represents Area in Hectare]

2.08 Tools and Implements Used by the Sample Farmers:

The use of appropriate equipment and tools both in terms of farm size and practicality can increase production, efficiency and profits by minimizing cost.

Equipment and tools are necessary for soil preparation, planting pest and weed control, irrigation, harvesting, post harvest handling, storage etc. By selecting appropriate tool farmers can increase profit by increasing crop yields, improving crop quality and save time with expenses. Table 2.08 shows the tools and implements used by the farmers.

Table 2.08 Tools and Implements used by the Sample Tea Growers.

Tools & Implements (nos.)	Size Groups					
	Sample Area	1-2 hectare	2-4 hectare	4-10 hectare	10 hectare &above	Total
Plough	Titabar	11	64	48	37	160
	Mokokchung	4	12	16	20	52
Tractor	Titabar	-	-	3	7	10
	Mokokchung	-	3	3	9	15
Power Tiller	Titabar	-	3	5	18	26
	Mokokchung	-	4	7	3	10
Power pump	Titabar	1	8	12	18	39
	Mokokchung	-	-	2	2	4
Thresher	Titabar	2	13	15	26	56
	Mokokchung	-	-	3	4	7
Weedier	Titabar	1	10	12	15	38
	Mokokchung	-	-	-	-	-
Mini Truck	Titabar	-	-	2	5	7
	Mokokchung	-	-	2	3	5
Spade	Titabar	25	133	155	61	374
	Mokokchung	5	20	35	26	86
Farm house shed	Titabar	-	29	27	19	75
	Mokokchung	-	-	3	7	10
Sprayers	Titabar	25	53	60	63	201
	Mokokchung	14	23	40	42	119
Bamboo Basket	Titabar	25	30	40	65	160
	Mokokchung	13	15	31	43	102
Hand Cart	Titabar	10	2	-	-	12
	Mokokchung					
Tempo/Auto	Titabar	1	5	7	4	17
	Mokokchung	-	-	3	-	3
Hoes	Titabar	3	15	33	45	96
	Mokokchung	4	12	24	40	80
Ladder	Titabar	2	28	23	14	67
	Mokokchung	-	-	-	-	-
Dao	Titabar	30	146	112	45	333
	Mokokchung	2	4	5	5	16

Source: Primary

The small tea growers normally used both traditional and improved tolls and implements side by side in possession of their cultivation. The inputs like bullock labour, machine labour, tractor, manual labour are not scarce in Assam. The growers in Titabar normally employ the tea garden labours comparatively at cheaper wage and they seems more efficient in plucking, pruning, spraying pesticide, manure etc compared to Assamese people. But in Nagaland this practice is quite different as the state is covered by mountains and left out small portion of plains. The inputs which are frequently need in tea cultivation is scarce in the state and in some remote and high mountain areas the growers can not used tractor ,bullock or modern machineries in farm operations. In such cases they need to employ more manual labour hours for land preparation, planting, plucking, transporting etc.

It is evident from the Table 2.08 that traditional tools and implements played a dominating role in all sample households. The ownership of improved tools and implements in contest to traditional ones shows that the cultivation practices remained by the large traditional. Only a nominal breakthrough has been achieved towards modernization. Among the improved tools and implements, 201 and 119 sprayers are used by the farmers in both areas as it is necessary for the growers to spray plant protection chemicals to protect the crop from diseases. Among 120 samples in Titabar sub division 39 water pumps are the second largest modern machinery owned by the sample farmers. Other modern implements are power tiller 26 numbers, tractor 10 numbers in possession of the sample farmers. On the other hand in Mokakchung district the farmers used modern inputs tractor 15 numbers power tiller 10 numbers, they used highest number traditional implements spade and hoes in their cultivation.

2.09 Livestock and Poultry:

The livestock and poultry are another secondary income source of the sample respondents. A major portion of income is earned by livestock and poultry definitely increase their gross income. Table 2.09 depicts a picture of extra total earning income source of the sample respondent (Approximate value).

Table 2.09: Livestock and Poultry of the Sample Growers.

Sl. Nos.	Items	Titabar Sub division		Mokokchung District	
		Nos.	Value (Rs.)	Nos.	Value (Rs.)
1	Bullock	70	1050000	30	510000
2	Cows	450	6750000	180	1800000
3	Young Stock	-	-	-	-
4	Buffalo (He)	55	1100000	21	420000
5	Buffalo(She)	75	1250000	34	680000
6	Pig	200	2400000	355	3195000
7	Goat	500	1000000	96	240000
8	Poultry	60	8000000	12	600000
9	Fishery	40	7000000	2	200000
10	Others	-	-	-	-
Total	-	-	29000000	-	7645000

Source: Primary (Approximate value).

2.10 Agricultural Extension services:

The agricultural extension services is meant for building a professional extension service to assist farmers in rising production by providing appropriate support for agriculture development. Agricultural extension services provide the technical support to the farmers which help them to adopt scientific method of cultivation. Technical support reduces cost of production and enables them to produce better quality of product and also reasonable price in the market. The extension network works as a link between agricultural research and actual practices in the field.

In the sample area, majority of the sample farmers reported that the visit of technical persons from Tea Board, Small Tea Grower Advisory Cell (Tocklai) Agricultural Department is not regular and they occasionally come to farmer's field. However, some farmers of the sample area received certain short duration training on adaptation of new farm technology in crop cultivation. Under centrally sponsored schemes some field trails and demonstration plots of paddy were laid by the State Department for training and motivating the farmers.

Soil testing services is not satisfactory in the sample area. Some of the farmers opinion that their soil need to be tested for efficient use of fertilizer and better soil management but they do not do so because of their negligence as well as lack of guidance of technical persons.

In Mokokchung district the training and guidance of the Agricultural Department of the state and Tea Board is not satisfactory. The tea growers of the district have to be guided by the Tea Board office of Jorhat Assam, but official person rarely visit the growers. The growth of tea sector in the district is completely from the growers own effort except nominal person benefited by the Tea Board subsidiary schemes but which are only few. The tea growers of Tuli and the General Secretary of All Naga Small Tea Growers Association in personal interaction reported that there are about 70 nos. of growers produce nearly 7 lakh kg tea leaves per year but till date the official person never visit their place and never seen their field. So from this production they demanded own processing unit to produce made tea as early as possible. The General Secretary further viewed that 20 nos. of growers received subsidy from Tea Board but that is not enough to carry on their production, they do not have common shade house from where leaves can be dispose to the factory, they do not have technical support about plucking, handling, fertilizing etc further he

reported that the cost of production to produce per kg. tea leaves is high due high cost of labour and they used excessive fertilizer in the area as the top fertile soil is eroded due to heavy rain in the rainy season.

In Changtongya and Mangkolemba of the district the growers are purely new growers but there is a huge potentiality of growing tea in the areas by right direction of the concerned official person. The president of Changtongya unit of All Naga Small Tea Growers Association reported that due to lack of technical knowledge the growers used less amount of fertilizer and their product is purely organic but the growers are more affected due to the transportation of their product as the factory is located far from their plantation area. The Tea Board official person never seen their area but by their own correspondence with Tea Board only 4 nos. out of total 33 nos. of growers in the area received subsidy from Tea Board. In Mangkolemba the growth of small tea cultivation is not satisfactory though there are many big tea estates in the area i.e. J Sankija and sons Tea Estate, Mayang Tea Estate, Dr. Snte Tea Estate etc. The growers in the area till not organized some of them newly planted and some of them plantation yet not fully matured but except them the few matured growers continue their production and sent their product to the factory nearby Assam.

Notes:

- The sex ratio in Titabar sub division is found 48.52 per cent of female against 51.48 per cent of male. The average family size in the area 6.45 is more than state average family size of 4.9 as per 2011 census.
- The sex ratio in Mokokchung district comprises 48.74 per cent of females against 51.26 per cent of male. The average family size is found 5.95 which is more than state average family size of 4.95 as per 2011 census in the district.

- Educational level in both the areas satisfactory. In Titabar subdivision 16.65 per cent and in Mokokchung district 11.49 per cent including child not going to school are illiterate, left out person in both the areas are literate.
- In Titabar subdivision 53.81 per cent and in Mokokchung district 51.26 per cent are workers. The dependence ratio is found 23.23 per cent and 17.65 per cent respectively, which is not very high in both the areas.
- The population of the sample area performed their occupation from both primary and secondary sources. Out of total tea grower respondent 29.92 per cent in Titabar subdivision and 22.45 per cent in Mokokchung district primarily engaged in small tea cultivation.
- In Titabar subdivision 40.39 per cent and in Mokokchung district 36.82 per cent land are under tea cultivation. More per cent of land covered under tea cultivation implies its importance in generating income and employment opportunities in rural areas as a source of livelihood.
- No leased-in, leased-out and mortgaged-in, mortgaged-out land is found in Mokokchung district.
- Soil testing services and technical support by the concerned official person is not found satisfactory in the study area.
- Growers in Mangkolemba subdivision is purely new growers and they yet to be organized though there is a huge potentiality of growing tea by right direction of the concerned department.

References:

[88]**Lekhi R K:** *The Economics of Development and Planning*, Kalyani Publication, New Delhi, 1995, p-48

[89]Census Report 2011.

CHAPTER-III

3.01 Economics of Small Tea Cultivation:

In this chapter, an attempt has been made to work out the economics of small tea cultivation i.e. cropping pattern, cost and returns of small tea cultivation, price level of tea leaves, productivity in different farm size groups, marketing channels, handling of tea leaves, price fluctuation etc based on grass root level data collected from the sample tea growers. It is needless to mention that agriculture is the main occupation of the people living in the rural areas. Land labour and water are the basic resources, which determine the growth and development of agriculture. The pattern of land utilization depends upon the variable factors i.e. rain fall and climate. Due to lack of assured irrigation facilities farmers are compelled to depend on nature. The climate of Mokokchung district is characterised by a warm in lower plain area, moderately warm in upper region during summer but cold in winter. The temperature varies 29^0 Celsius maximum during summer and 15^0 Celsius in winter. The average rain fall in the district varies from approximately 100 -250 c.ms which is received in bulk during the month of May to October. On the other hand Titabar sub division enjoys mild climate and generally warm temperature. In winter there is much less rainfall than in summer. The temperature here averages 24^0 Celsius in a year and the average rain fall is 2103 mm. Various studies reveals that land and climate is suitable for tea cultivation in both the areas. Tea bush is a tropical and sub tropical plants and thrives well in hot and humid climate. There is a very close relation between climate, the yield and the quality of tea. The ideal temperature for its growth is 20^0-30^0 C and temperature above 35^0 C and below 10^0 C is harmful for the bush. It requires 150-300 cm annual rainfall which should be well distributed throughout the year. While prolonged dry spell is harmful for tea, high humidity, heavy dew and morning fog

favour rapid development of young leaves. Alternate waves of warm and cool winds are very helpful for tea leaves. Tea is a shade loving plants and develop more vigorously when plan along with shade tree. Although tea requires heavy rainfall for its growth block water in the plantation area is injurious to its roots therefore, tea is more suitable on hill slopes where water block cannot be take place. However it grows equally in the valley if the drainage is good.

3.02 Cropping Pattern: The cropping pattern of the respondents has shown table 3.01

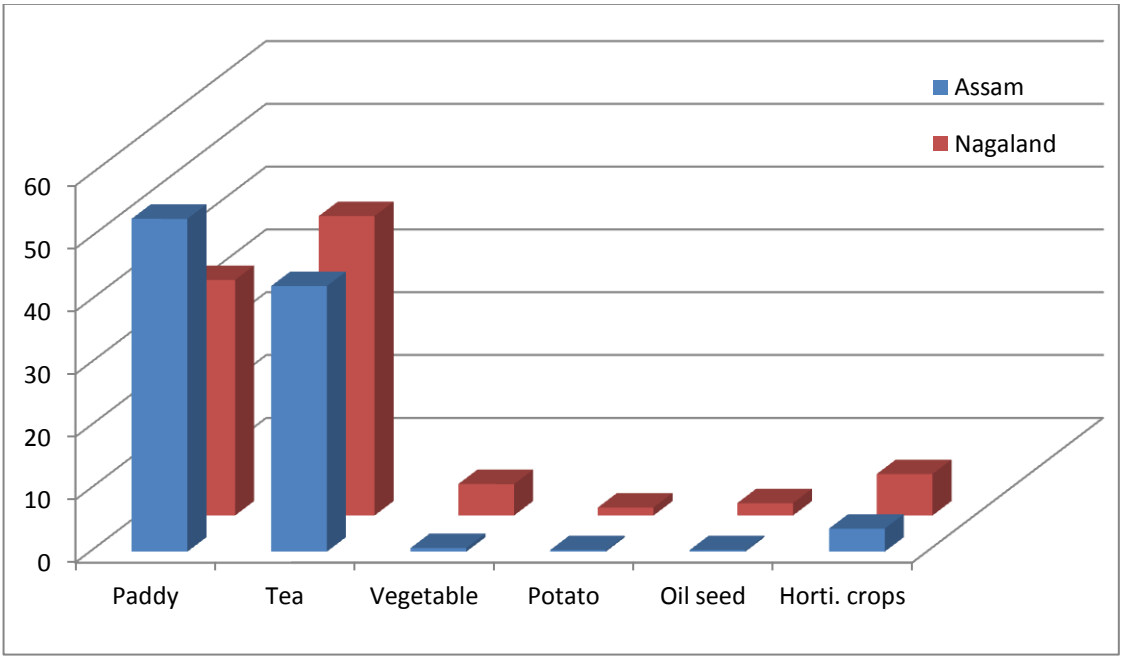
Table 3.01: Cropping pattern of Sample tea Growers by Farm Size Groups.

Crops	Sample Area	Area of plantation (In hectares)					Total
		Below 1 ha.	1-2 ha.	2-4 ha.	4-10 ha.	10& above	
Paddy	Titabar	70	210	230	50	90	650 (52.99)
	Mokokchung	3	27	65	72	43	210 (37.50)
Tea	Titabar	-	15.60	124.58	258.50	120	518.68 (42.28)
	Mokokchung	1.60	11.20	67.90	132.50	53.80	267 (47.67)
vegetable	Titabar	1	3	3	-	-	7 (0.58)
	Mokokchung	3.20	11	6.80	7	-	28 (5.00)
Potato	Titabar	0.60	2.40	-	-	-	3 (0.24)
	Mokokchung	2.60	4.40	-	-	-	7 (1.26)
Oil Seed	Titabar	-	-	3	-	-	3 (0.24)
	Mokokchung	-	2	4	5	-	11 (1.97)
Horti. Crops	Titabar	9	19	7	10	-	45 (3.67)
	Mokokchung	3	15	12	7	-	37 (6.60)
Total	Titabar	80.60	250	367.58	318.50	210	1226.68 (100)
	Mokokchung	13.40	70.60	155.70	223.50	96.80	560.00 (100)

Source: Primary (Figures in parenthesis indicate percentage to total).

Table 3.01 indicates that the total operational holding of cultivable land in Titabar sub division is estimated 1226.68 hectares and in Mokokchung district is estimated at 560 hectares. Table shows major portion of land in Titabar sub division is allotted to paddy cultivation (52.99 per cent), 42.28 per cent under small tea cultivation, 3.67 per cent under horticulture crops and left part is under other miscellaneous minor crops like pulses, potato, oil seed and vegetables. On the other hand in Mokokchung district major portion 47.67 per cent of land allotted for tea cultivation, 37.50 per cent under paddy cultivation, 6.60 per cent under horticulture crop and left out cultivable land is allotted for other miscellaneous crops which completely for domestic purposes not for marketing.

Fig 3.01: Cropping Pattern of Sample Tea Growers in Assam and Nagaland.



[Horizontal line represents various crops and vertical line represents area allotted in per cent.]

3.03 Area, Production and Yield of Tea in Sample Tea Growing Areas:

Tea cultivation is quite different from other plantation crops, as it takes 3 or 4 years for its maturity in plains, while the initial cost is high with no returns. After

maturity, cost gradually decreases and providing income and output for long 50 to 60 years. After 3 or 4 years, the bushes matured and producing almost uniform production based on climate and nature. In Mokokchung district the cutting tea plant required 1-2 years for maturity due to its ideal characteristic of climate land and weather conditions in the state. The hill slope is proved very effective for tea cultivation and growth of the plants. However the seed plant required 2 or 3 years for its maturity but the longevity is more than the cutting plant (up to 70-80 years). From the primary information, it is observed that in plain area 1 hectare land can absorb 14500-15500 nos. of tea plants and productivity is low in the first plucking year and gradually, it increases. On the other hand in hill area the absorbing capacity is lass compared to plains. The hill area normally can absorb approximate 12000-12500 tea bushes per hectare based on convenience of plantation area. The productivity of tea bushes depends upon various factors i.e. maintenance, shade tree, drainage, pruning, plucking, utilization of manure etc. However the average productivity of tea per hectare of the sample area is shown in Table 3.02.

Table 3.02: Average Production of Tea in Sample Tea Growing Areas.

Years	Titabar sub division (Production in kg.)	Mokokchung district (Production in kg.)
Up to 1	-	-
1-2	-	13400
2-3	14000	15020
3-4	15500	16110
4-5	17750	18061
5-6	18125	19110
6-7	18400	19420
7-8	18600	19730
Total	**102375**	**120851**
Average	**12796.87**	**15106.37**

Source: Primary.

Table 3.02 reveals that the average production of tea per hectare in Titabar sub division is 12796.87 kg per year. On the other hand the average production

in Mokokchung district is found 15106.37 kg per year which is quite more than Titabar subdivision. Table 3.03 shows the area, production and yield of tea in both the sample area. The data of 'Statistical Hand Book of Nagaland' 2012-13 reveals that in 2010-11 total area covered under tea cultivation of the state was 7450 hectares and production was 33150 metric tons. The average yield was estimated 4449.66 kg per hectare which is found less than primary level data 15106.37 kg per year per hectare of the district. On the other hand during same period in Assam the total area under tea in 2011 was covered 322210 hectares and production was 589110 metric tons. (**Source:** Statistical Hand Book of Assam 2013). The average yield was estimated 1828.34 kg (approximately 1830 kg) per hectare which is also less than primary level data of 12796.87 kg per year per hectare of the sub division. However more productivity of tea per hectare from both primary and secondary level data of the district exposes the potentiality of tea cultivation in Nagaland.

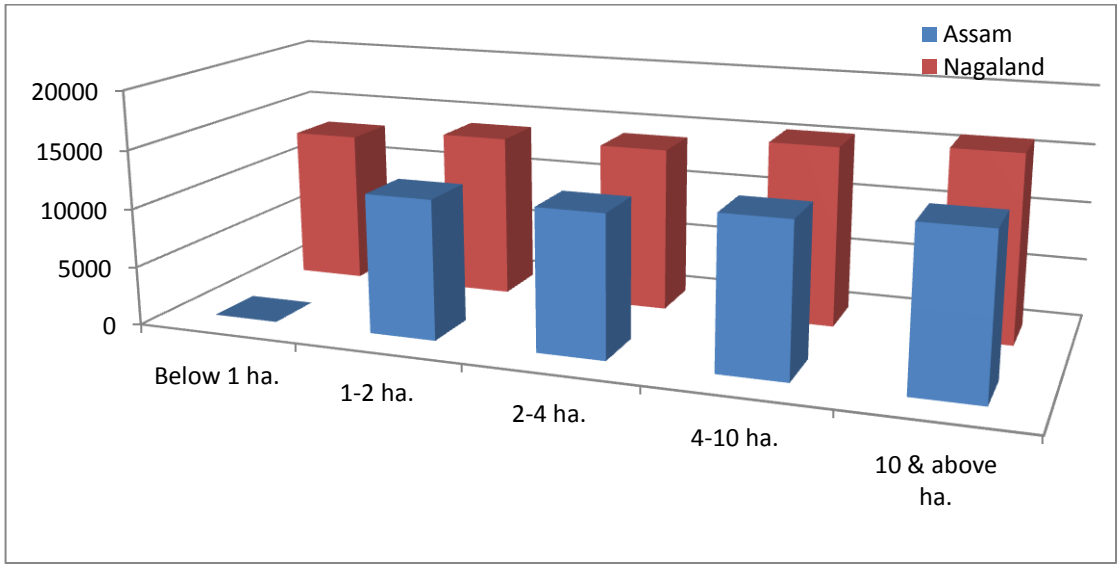
Table 3.03: Area Production and Yield (Productivity) of Tea Growers.

Size Groups		Titabar sub division	Mokokchung district
Below 1 hectare	A	-	1.60
	P	-	210
	Y	-	13125
1-2 hectare	A	15.60	11.20
	P	1855.21	1566.40
	Y	11892.37	13985.71
2-4 hectare	A	124.58	67.90
	P	15024.18	9547.81
	Y	12059.86	14061.57
4-10 hectare	A	258.50	132.50
	P	33305.25	20407.36
	Y	12884.04	15401.78
10 & above hectare	A	120	53.80
	P	16190.16	8602.44
	Y	13491.80	15989.66
Total	**A**	**518.68**	**267**
	P	**66374.80**	**40334.01**
	Y	**12796.87**	**15106.37**

Source: Primary A= Area in hectare. P= Production in quintal. Y= Productivity in kg.

Table 3.03 reveals that the total area of tea cultivation in Titabar sub division and Mokokchung district are 518.68 hectares and 267 hectares respectively. The productivity of tea per hectare per year in Titabar sub division is found 12796.87 kg and the productivity in Mokokchung district is found 15106.37 kg per hectare per year. Productivity of tea is found to be highest in large size groups (10 hectares and above). The difference of productivity is found of size groups 1-2 hectares and 10 and above hectares which is 1599.43 kg per hectare per year in Titabar sub division and 2003.95 kg in Mokokchung district. This is because of large farm size group can use machinery inputs and other implements on greater extent compared lower farm size groups. Tea is a labour consuming and capital intensive cultivation large farm size has the advantage to use capital and labour in their farm operations. There is a big gap between productivity of tea in both the areas, which is found 2309.50 kg per hectare more productivity in Mokokchung district compared to Titabar sub division implies the profitability and potentiality of tea cultivation in the district.

Fig. 3.02: Productivity of Tea of Different Farm Sizes in Assam and Nagaland.



[Horizontal line represents farm sizes and vertical line represents productivity in kg per hectare.]

3.04 Cost of Cultivation of Tea of the Sample Growers:

The analysis of cost of cultivation of crops grown by sample farm households is the most important factor of determining the economic feasibility of the crop. In other words, the various inputs used by the farmers in production of different crops plays an important role in agricultural farm business. Capital investment is the major factor in determining the production as well as productivity.

Tea cultivation is capital intensive farming. Tea cultivation requires large finances for development and plantation, payment to labours, fertilizers, machineries, processing etc. The small tea growers could not receive any income during the first two years of its cultivation. Hence, the expenditure incurred during the first two years is considered as investment or establishment cost. Table 3.04 and 3.05 shows the year wise establishment cost of tea cultivation in Titabar sub division and Mokokchung district.

Table 3.04 in Titabar sub division reveals that investment amount decreases with the increase in farm size. Out of total investment, the proportion of investment in the first year is considerably high ranging from 77.80 per cent of 1-2 hectare size group to 75.10 per cent of 10 & above hectare farm size group with overall average first year establishment cost is 76.41 per cent. Average establishment cost is declining in second and third year from 14.65 per cent to 8.94 per cent respectively.

Table 3.04: Year Wise Establishment Cost of Tea in Titabar Subdivision.

Size Groups	First Year	Second Year	Third Year	Total	Cost/ hectare
Below 1 hectare	-	-	-	-	-
1-2 hectare	1121970.69 (77.80)	187620.04 (13.01)	132530.99 (9.19)	1442121.72 (100.00)	92443.70
2-4 hectare	8880773.05 (77.30)	1602675.08 (13.95)	1005262.16 (8.75)	11488710.29 (100.00)	92219.54
4-10 hectare	18080006.80 (76.50)	3497831.38 (14.80)	2056157.64 (8.70)	23633995.82 (100.00)	91427.45
10 & above hectare	8145005.95 (75.10)	1653945.94 (15.25)	1046595.31 (9.65)	10845547.20 (100.00)	90379.56
Total	36227756.49 (76.41)	6942072.44 (14.65)	4240546.10 (8.94)	47410375.03 (100.00)	91405.83

Source: Primary, in 2015. **Note:** Figures in parenthesis indicate Percentage to Total, Value in Rs.

Table 3.05: Year Wise Establishment Cost of Tea in Mokokchung District.

Size Groups	First Year	Second Year	Third Year	Total	Cost/ hectare
Below 1 hectare	160296.84 (83.10)	17746.46 (9.20)	14853.02 (7.70)	192896.32 (100.00)	120560.20
1-2 hectare	1113625.39 (82.70)	150952.13 (11.21)	82006.99 (6.09)	1346584.51 (100.00)	120230.76
2-4 hectare	6696491.31 (82.30)	890966.94 (10.95)	549226.21 (6.75)	8136684.46 (100.00)	119833.35
4-10 hectare	12886634.32 (81.50)	1897418.55 (12.00)	1027768.38 (6.50)	15811821.25 (100.00)	119334.50
10 & above hectare	5103712.07 (80.10)	780530.25 (12.25)	487433.17 (7.65)	6371675.49 (100.00)	118432.63
Total	25960759.93 (81.48)	3737614.33 (11.74)	2161287.77 (6.78)	31859662.03 (100.00)	119324.58

Source: Primary, in 2015. **Note:** Figures in parenthesis indicate Percentage to Total, Value in Rs.

In Mokokchung district the maturity of tea plants come earlier compared to Assam. The plants required 1-2 years for maturity in Mokokchung district whereas, it required 3-4 years in Assam. However the farmers used both cutting and seed plant in their farm operations, the seed plant required 3-4 years for maturity in hill area also.

Table 3.05 shows that major investment is incurred in the first year as establishment cost ranges 83.10 per cent of farm size below 1 hectare to 80.10 per cent of 10 and above hectare. The average first year establishment cost is found 81.48 per cent which is more than Titabar sub division of 77.06 per cent. The average establishment cost gradually decreases in second and third years to 11.74 per cent and 6.78 per cent.

Table 3.06 and 3.07 shows the item wise establishment cost of small tea cultivation in Titabar sub division and Mokokchung district. Human labour and planting materials (seeding) are the two major costs of both the areas. Average seedling and human labour cost accounting for about 37.07 per cent and 32.86 per cent respectively in Titabar sub division whereas in Mokokchung district it is accounted for 38.58 per cent and 32.66 per cent respectively. The seedling cost in Mokokchung district is found slight higher than Titabar sub division because of higher transportation cost as maximum seedling is transported from Assam to the district. Apart from it, 18.68 per cent labour cost including land reclamation, levelling, ploughing, drainage etc other major expenses incurred in Titabar sub division. In Mokokchung district which is estimated higher than Titabar sub division of about 19.35 per cent implies that agricultural practices is costlier in the district compared to plains. Thus, it is clear that tea cultivation is not only a capital intensive farming rather it is a capital cum labour intensive farming. In Table 3.06 and 3.07 indicate that relatively higher amount of labour is used in small size group of farm compared to bigger one. The labour cost in the Table 3.06 of Titabar sub division shows that in farm size group 1-2 hectares is estimated 34.16 per cent decreases to 30.58 per cent in farm size of 10 hectares and above. In Mokokchung district Table 3.07 also indicate the same. The labour cost estimated 34.30 per cent of farm size below 1 hectare decreases to 31.58 per cent of farm size 10 hectares and above.

Table 3.06: Item Wise Establishment Cost of Sample Tea Growers by Farm Size Groups in Titabar Sub division.

Items of Cost	1-2 hectare	2-4 hectare	4-10 hectare	10 & above hectare	Total (Value in Rs.)
Area (hectare) ---›	**15.60**	**124.58**	**258.50**	**120**	**518.68**
1. Land reclamation, Levelling, Ploughing, Drainage, etc.					
a) Machine Labour	24371.85	193010.34	406504.72	189797.07	813683.98
b) Human Labour	259149.27	1965718.33	3892519.12	1926169.18	8043555.9
	(19.66)	(18.79)	(18.19)	(19.51)	(18.68)
2. Seedling	523345.97	4218654.42	8768212.44	4065995.65	17576208.48
	(36.29)	(36.72)	(37.1)	(37.49)	(37.07)
3. Shade Tea	9806.43	85016.45	193798.77	105201.80	393823.45
	(0.68)	(0.74)	(0.82)	(0.97)	(0.83)
4. Fencing	14853.86	112589.37	248156.96	113878.25	489478.44
	(1.03)	(0.98)	(1.05)	(1.05)	(1.03)
5. Human Labour*	492628.77	3886630.69	7881937.60	3316568.34	15577765.4
	(34.16)	(33.83)	(33.35)	(30.58)	(32.86)
6. Manure & Fertiliser	88690.49	765148.10	1633109.12	842699.02	3329646.73
	(6.15)	(6.66)	(6.91)	(7.77)	(7.02)
7. Plant Protection	29275.08	261942.59	609757.09	285237.89	1186212.65
	(2.03)	(2.28)	(2.58)	(2.63)	(2.50)
Total	1442121.72	11488710.29	23633995.82	10845547.20	47410375.03
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
Cost/hectare	92443.70	92219.54	91427.45	90379.56	91405.83

Source: Primary **Note:** Figures in parenthesis indicate Percentage to Total. * Plucking, Fertiliser application, cleaning, weeding, etc.

Table 3.07: Item Wise Establishment Cost of Sample Tea Growers by Farm Size Groups in Mokokchung district.

Items of Cost	Below 1 hectare	1-2 hectare	2-4 hectare	4-10 hectare	10 & above hectare	Total (Value in Rs.)
Area (hectare) ---›	**1.60**	**11.20**	**67.90**	**132.50**	**53.80**	**267**
1. Land reclamation, Levelling, Ploughing, Drainage, etc.						
a) Machine Labour	4243.72	28682.26	149714.99	278288.05	108955.65	569884.67
b) Human Labour	35492.92	246020.98	1468671.54	2773393.45	1070441.49	5594020.38
	(20.60)	(20.40)	(19.89)	(19.30)	(18.51)	(19.35)
2. Seedling	75711.80	527726.46	3181443.63	6119174.82	2388741.14	12292797.85
	(39.25)	(39.19)	(39.10)	(38.70)	(37.49)	(38.58)
3. Shade Tea	1388.86	9156.78	60211.47	126494.57	57982.24	255233.92
	(0.72)	(0.68)	(0.74)	(0.80)	(0.91)	(0.80)
4. Fencing	3530.02	27335.67	161106.35	324142.34	153557.38	669671.76
	(1.83)	(2.03)	(1.98)	(2.05)	(2.41)	(2.11)
5. Human Labour*	66163.43	458242.70	2693242.56	5178371.45	2012175.12	10408195.26
	(34.30)	(34.03)	(33.10)	(32.75)	(31.58)	(32.66)
6. Manure & Fertiliser	5439.67	42417.42	297802.65	776360.43	399504.05	1521524.22
	(2.82)	(3.15)	(3.66)	(4.91)	(6.27)	(4.77)
7. Plant Protection	925.90	7002.24	124491.27	235596.14	180318.42	548333.97
	(0.48)	(0.52)	(1.53)	(1.49)	(2.83)	(1.73)
Total	192896.32	1346584.51	8136684.46	15811821.25	6371675.49	31859662.03
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
Cost/hectare	120560.20	120230.76	119833.35	119334.50	118432.63	119324.58

Source: Primary **Note:** Figures in parenthesis indicate Percentage to Total. * Plucking, Fertiliser application, cleaning, weeding, etc.

3.05 Returns from Small Tea Cultivation:

Return implies the value of green tea leaves received by the growers. The return from small tea cultivation started generally from third years of planting in plain areas and it gradually increases and reached the optimum stage of production of green leaves remain stable up to end of its economic life. In hill area it is mentioned that return is come earlier than plains normally from 1-2 years.

The production and price of tea leaves varies time to time and season to season of a year. From the month of March to May referred as first season when productivity is less but the growers received highest price. From June to August is the second season, this is the peak season of the growers due to rain and high temperature the growers received highest production during this season of a calendar year. This is the period during which the growers not getting the expected price. Because of high production, some time factory owner's refuses to purchase tea leaves from the growers and they offered fewer price. During this period the small and marginal farmers are affected more as their cost of production is more compared to bigger one.

The production of green leaves decreases gradually in the third season from September to Mid-November. During this period the growers normally received higher price compared to second period.

Table 3.08 indicate that the maximum tea leaves are produced in the 2nd season June to August. During this period 56.30 per cent of tea leaves produced in Titabar sub division and in Mokokchung district which is accounted about 49.92 per cent. Production of tea leaves comes earlier in Mokokchung district beginning of a year accounted of 32.05 per cent, which is more compared to Titabar sub division of

24.58 per cent. At the end period the productivity decreases for both the areas to 19.12 per cent and 18.03 per cent respectively.

Table 3.08: Season Wise Production of Tea Leaves.

Seasons of production of Tea	Titabar subdivision (Production in kg.)	Mokokchung district (Production in kg.)
1st Season (March to May)	3145.47 (24.58)	4841.59 (32.05)
2nd Season (June to August)	7204.63 (56.30)	7541.10 (49.92)
3rd Season (Sept to Mid Nov)	2446.77 (19.12)	2723.68 (18.03)
Average production in kg	**12796.87 (100.00)**	**15106.37 (100.00)**

Source: Primary. Figures in parenthesis indicate percentage of production of tea in different seasons.

Table 3.09: Farm Size wise and Season wise Productivity of Tea.

Farm Size	Areas	1st Season	2nd Season	3rd Season	Total
Below 1 hectare	Titabar	-	-	-	-
	Mokokchung	6730.49 (4206.56)	10483.20 (6552.00)	3786.31 (2366.44)	21000.00 (13125.00)
1-2 hectare	Titabar	45600.99 (2923.14)	104448.25 (6695.41)	35471.59 (2273.82)	185520.83 (11892.37)
	Mokokchung	50203.10 (4482.42)	78194.59 (6981.66)	28242.26 (2521.63)	156639.95 (13985.71)
2-4 hectare	Titabar	369294.98 (2964.32)	845860.82 (6789.70)	287261.55 (2305.84)	1502417.35 (12059.86)
	Mokokchung	306006.96 (4506.73)	476626.76 (7019.54)	172146.87 (2535.30)	954780.59 (14061.57)
4-10 hectare	Titabar	818641.06 (3166.89)	1875086.62 (7253.72)	636796.66 (2463.43)	3330524.33 (12884.04)
	Mokokchung	654055.77 (4936.27)	1018735.52 (7688.57)	367944.55 (2776.94)	2040735.84 (15401.78)
10& above hectare	Titabar	397953.60 (3316.28)	911505.60 (7595.88)	309556.80 (2579.64)	1619016.00 (13491.80)
	Mokokchung	275708.32 (5124.69)	429433.21 (7982.03)	155102.17 (2882.94)	860243.70 (15989.66)
Total	Titabar	**1631490.63 (3145.47)**	**3736901.29 (7204.63)**	**1269086.60 (2446.77)**	**6637478.51 (12796.87)**
	Mokokchung	**1292704.64 (4841.59)**	**2013473.28 (7541.10)**	**727222.16 (2723.68)**	**4033400.08 (15106.37)**

Source: Primary. **Note:** Figure in parenthesis indicates productivity per hectare.

Table 3.09 shows the farm wise and season wise productivity of tea, which are increases along with increase in farm sizes. The productivity of tea per hectare in Titabar sub division is 11892.37 kg of farm size 1-2 hectare increases to 13491.80 kg of farm size 10 and above hectare. In Mokokchung district it is increases from 13985.71kg of farm size 1-2 hectare to 15989.66 kg of farm size 10 and above hectare. The overall productivity per hectare is found 12796.87 kg in Titabar subdivision and 15106.37 kg in Mokokchung district.

3.05.1 Pricing of Tea Leaves:

Price policy is another component or incentive of increasing production as well as sustainability of a sector. Price policy is not very important for subsistence agriculture but in commercial agriculture it plays an important role not only development of that sector but also it acts as a link between the developments of the other sectors. The tea plucking season period starts from March to mid of November. Generally, price is high in starting of season and decreases in end season. Price of tea leaves in both the areas almost same and majority leaves produced in Mokakchung district is send to the factories located at the foot hills adjoining Assam to Amguri and Mariani. Table 3.10 shows the price structure of tea leaves.

Table 3.10: Price of Tea Leaves.

Seasons of Tea	**2011**	**2012**	**2013**	**2014**	**2015**	**Average**
March to May	18.50	18.70	19.30	22.00	21.20	19.94
June to August	13.00	12.60	10.70	13.10	11.20	12.12
Sept to Mid Nov	14.15	14.30	13.20	15.40	13.60	14.13
Average price	**15.21**	**15.20**	**14.40**	**16.83**	**15.33**	**15.39**

Source: Primary. (Price in Rs)

Table 3.10 reveals that price of tea leaves is not same in all seasons. Farmers received highest price in the month of March to May of average price Rs 19.94 which decreases to Rs 12.12 in June-August and increases in the end period Sept- Mid November to Rs 14.13. The average price from 2011 to 2015 is found Rs 15.39.

Table 3.11 and 3.12 shows the farm wise and season wise production and returns of tea leaves of the study areas.

Table- 3.11: Farm Size Wise and Season Wise Production and Value of Green Leaves in Titabar Subdivision.

Size Groups (hectares)	1st Season		2nd Season		3rd Season		Total	
	Production	Value	Production	Value	Production	Value	Production	Value
1-2 hectare	45600.99	701799.24	104448.25	1607458.56	35471.59	545907.77	185520.83	2855165.57
2-4 hectare	369294.98	5683449.74	845860.82	13017798.01	287261.55	4420955.26	1502417.35	23122203.01
4-10 hectare	818641.06	12598885.92	1875086.62	28857583.08	636796.66	9800300.59	3330524.33	51256769.59
10 & above ha.	397953.60	6124505.90	911505.60	14028071.19	309556.80	4764079.15	1619016.00	24916656.24
Total	**1631490.63 (3145.47)**	**25108640.80 (48408.73)**	**3736901.29 (7204.63)**	**57510910.84 (110879.36)**	**1269086.60 (2446.76)**	**19531242.77 (37655.67)**	**6637478.51 (12796.87)**	**102150794.41 (196943.76)**

Source: Primary. (Production in kg, Value in Rs)

Table- 3.12: Farm Size Wise and Season Wise Production and Value of Green Leaves in Mokokchung District.

Size Groups (hectares)	1st Season		2nd Season		3rd Season		Total	
	Production	Value	Production	Value	Production	Value	Production	Value
Below 1 hectare	6730.49	103582.25	10483.20	161336.44	3786.31	58271.31	21000.00	323190.00
1-2 hectare	50203.10	772625.70	78194.59	1203414.75	28242.26	434648.38	156639.95	2410688.83
2-4 hectare	306006.96	4709447.12	476626.76	7335285.83	172146.87	2649340.33	954780.59	14694073.28
4-10 hectare	654055.77	10065918.30	1018735.52	15678339.66	367944.55	5662666.62	2040735.84	31406924.58
10 & above ha.	275708.32	4243151.05	429433.21	6608977.10	155102.17	2387022.39	860243.70	13239150.54
Total	**1292704.64 (4841.59)**	**19894724.42 (74512.07)**	**2013473.28 (7541.10)**	**30987353.78 (116057.50)**	**727222.16 (2723.68)**	**11191949.03 (41917.42)**	**4033400.08 (15106.37)**	**62074027.23 (232486.99)**

Source: Primary. (Production in kg, Value in Rs)

3.06 Cost and Return from Small Tea Cultivation:

Table 3.13 shows per hectare cost and return from small tea cultivation in Titabar sub division. It is evident from the analysis of Benefit Cost Ratio (BCR) that all the categories of the farmers enjoyed some profit by small tea cultivation as the positive BCR varied from 1.97 to 2.29 with an overall average BCR of 2.15. The farmers of large farm size enjoyed the highest profit as per hectare cost is comparatively low than the farmers of small farm size.

Table 3.13: Cost and Return of Small Tea Cultivation in Titabar Sub Division.

Size Groups	Cost	Return	Net Return	BCR
1-2 hectare	92443.70	183023.44	90579.74	1.97
2-4 hectare	92219.54	185601.24	93381.70	2.01
4-10 hectare	91427.45	198285.37	106857.92	2.16
10 & above hectare	90379.56	207638.80	117259.24	2.29
Total	**91405.83**	**196943.76**	**105537.93**	**2.15**

Source: Primary.

Table 3.14: Cost and Return of Small Tea Cultivation in Mokokchung District.

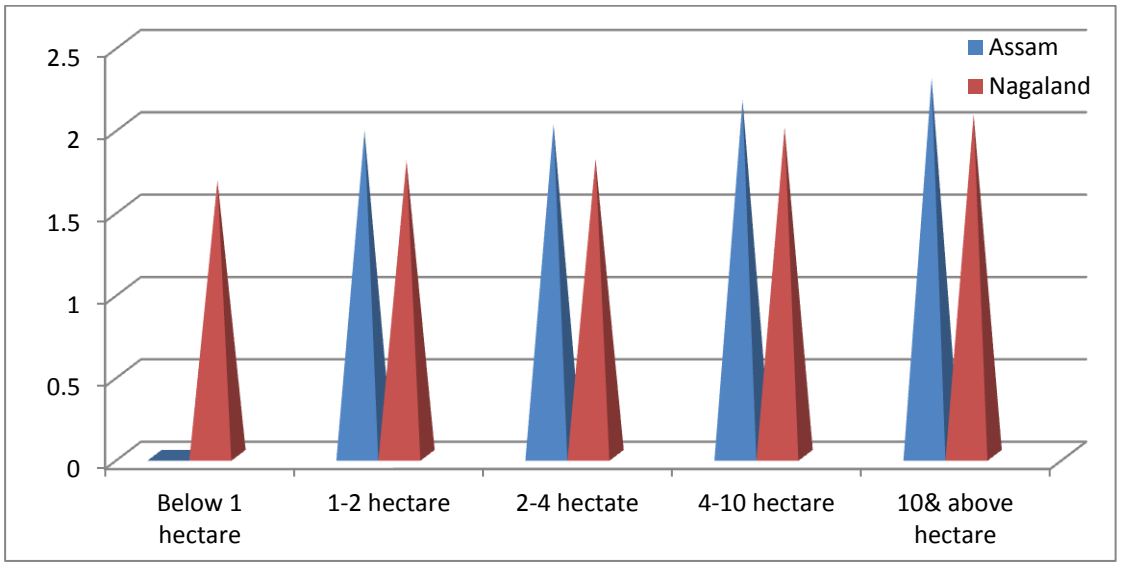
Size Groups	Cost	Return	Net Return	BCR
Below 1 hectare	120560.20	201993.75	81433.55	1.67
1-2 hectare	120230.76	215240.07	95009.31	1.79
2-4 hectare	119833.35	216407.55	96574.20	1.80
4-10 hectare	119334.50	237033.39	117698.89	1.99
10 & Above hectare	118432.63	246080.86	127648.23	2.07
Total	**119324.58**	**232486.99**	**113162.41**	**1.94**

Source: Primary.

Table 3.14 shows the cost and return from tea cultivation in Mokokchung district. The positive Benefit Cost Ratio indicates tea cultivation in the district is profitable. The net return in all farm size groups of the district is found higher compared to Titabar sub division. The average net return is estimated Rs 113162.41 per hectare whereas in Titabar sub division it is estimated Rs 105537.93 per hectare. The overall average BCR of the district 1.94 is less than 2.15 of Titabar sub division as

the cost per hectare in the district is high. The overall average cost per hectare in the district is Rs 119324.58 which is Rs 27918.75 costlier per hectare than Titabar sub division.

Fig 3.03: Comparative BCR in Assam and Nagaland.



[Horizontal line represents farm sizes and vertical line represents BCR.]

Table 3.15: Generation of Income of Different Farm Sizes.

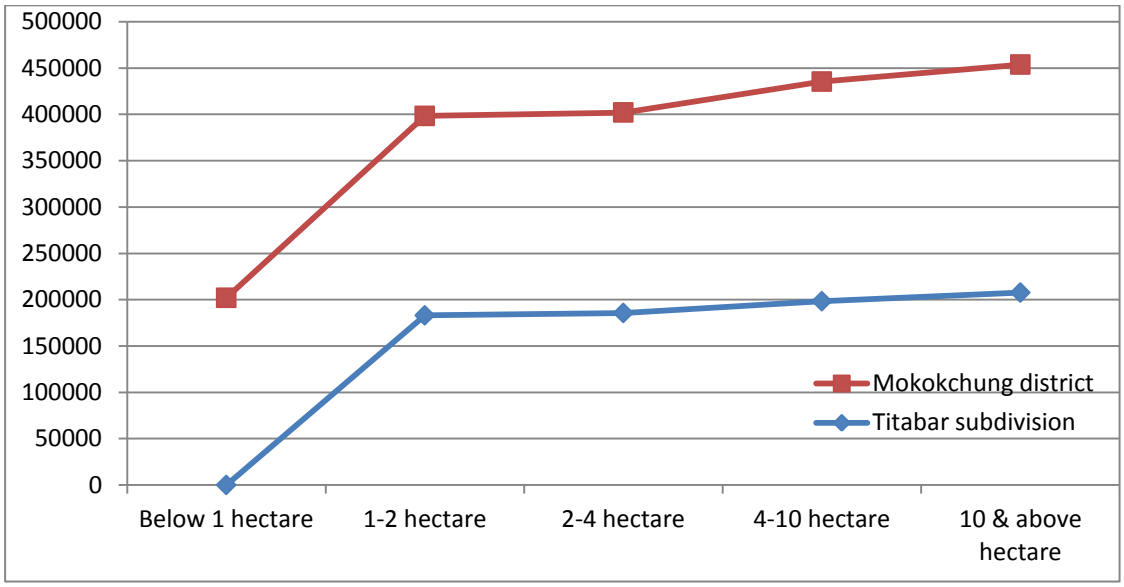
Farm Sizes	Study Areas	Production (In kg.)	Income (In Rs.)	Income/hectare (In Rs.)
Below 1 hectare	Titabar	-	-	-
	Mokokchung	21000.00	323190.00	201993.75
1-2 hectare	Titabar	185520.83	2855165.57	183023.44
	Mokokchung	156639.95	2410688.83	215240.07
2-4 hectare	Titabar	1502417.35	23122203.01	185601.24
	Mokokchung	954780.59	14694073.28	216407.55
4-10 hectare	Titabar	3330524.33	51256769.59	198285.37
	Mokokchung	2040735.84	31406924.58	237033.39
10 &above hectare	Titabar	1619016.00	24916656.24	207638.80
	Mokokchung	860243.70	13239150.54	246080.86
Total	Titabar	**6637478.51**	**102150794.41**	**196943.76**
	Mokokchung	**4033400.08**	**62074027.23**	**232486.99**

Source: Primary

Table 3.15 shows the generation of income of different farm sizes. The per hectare income of Rs183023.44 of farm size 1-2 hectare increases to Rs 207638.80

of farm size 10 & above hectare in Titabar subdivision. In Mokokchung district which is varies from Rs 201993.75 of farm size below 1 hectare to Rs 246080.86 of farm size 10 & above hectare. The average income generation per hectare is estimated Rs 196943.76 in Titabar subdivision and Rs 232486.99 in Mokokchung district.

Fig 3.04: Generation of Income of Different Farm Sizes.



(Vertical line shows income per hectare and horizontal line shows farm sizes.)

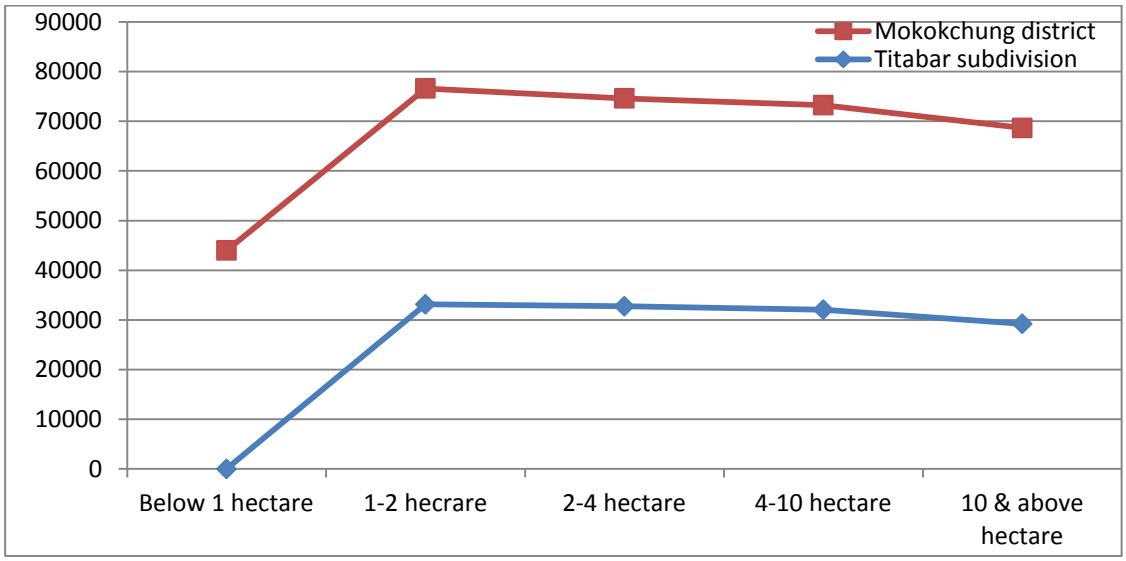
Table 3.16: Generation of Employment of Different Farm Sizes.

Farm Sizes	Study Areas	Manual Labour	Machine labour	Total	Average
Below 1 hectare	Titabar	-	-	-	-
	Mokokchung	66163.43	4243.72	70407.15	44004.46
1-2 hectare	Titabar	492628.77	24371.85	517000.62	33141.06
	Mokokchung	458242.70	28682.26	486924.96	43475.44
2-4 hectare	Titabar	3886630.69	193010.34	4079641.03	32747.15
	Mokokchung	2693242.56	149714.99	2842957.55	41869.78
4-10 hectare	Titabar	7881937.60	406504.72	8288442.32	32063.61
	Mokokchung	5178371.45	278288.05	5456659.50	41182.35
10&above hectare	Titabar	3316568.34	189797.07	3506365.41	29219.71
	Mokokchung	2012175.12	108955.65	2121130.77	39426.23
Total	Titabar	**15577765.40**	**813683.98**	**16391449.38**	**31602.24**
	Mokokchung	**10408195.26**	**569884.67**	**10978079.93**	**41116.41**

Source: Primary

Table 3.16 shows the generation of employment of different farm sizes. The cost for generation of employment per hectare is estimated of Rs 33141.06 of farm size 1-2 hectare decreases to Rs 29219.71of farm size 10 & above hectare in Titabar subdivision. In Mokokchung district which is varies from Rs 44004.46 of farm size below 1 hectare to Rs 39426.23 of farm size 10 & above hectare. The table 3.16 indicate that relatively higher amount of labour is used in small size group compared to bigger one. The reason behind is that the bigger farm size used machinery extensively and employs labour more efficiently and thereby reduces their cost but, their total cost of employment of labour is higher than small farm sizes. The average employment generation per hectare is estimated Rs 31602.24 in Titabar subdivision and Rs 41116.41in Mokokchung district.

Fig 3.05: Money Value of Generation of Employment of Different Farm Sizes.



(Vertical line shows employment in Rs. per hectare and horizontal line shows farm sizes.)

3.07 Marketing Channels of Tea:

Marketing of product is another component which determines sustainability and longevity of a sector. The small tea growers generally disposing

their product to the local agents, big tea factory owners and the local privately managed brought leaf factories. In Titabar sub division the small tea growers are organized and majority of them are now dispose their product in local brought leaf factories yet, less portion of growers basically from small size groups depend on local agents. The organization of Tea Growers Association in Tuli and Changtangya subdivision of Mokokchung district is found satisfactory, they commonly protest their demand in various issues relating with tea cultivation. The growers in these areas are marketing their product by their agents or by personally with brought leaf tea factories located in Tuli and Amguri areas. But the growers in Mangkolemba sub division is yet to be organized though there is a huge potentiality of growing tea in this area. The growers in this area marketing their product by agents not directly with brought leaf factories and most of tea leaves sent to the factories nearby Mariani of Assam. Table 3.17 shows the marketing channels of the growers.

Table 3.17: Marketing Channels of Tea Leaves.

Size Groups	**Titabar Subdivision**		**Mokokchung District**	
	Frequency	Per cent	Frequency	Per cent
Local agents	22	18.33	48	80
Middle man	4	3.34	3	5
Bought leaf factories	94	78.33	9	15
Total	120	(100)	60	(100)

Source: Primary

Table 3.17 reveals that maximum portion of leaves 78.33 per cent is marketed by the growers directly with bought leaf factories in Titabar subdivision and less amount of 3.34 per cent is marketed by middle man. In Mokokchung district maximum portion of 80.00 per cent leaves is marketed by agents and fewer amounts of 5.00 per cent is marketed by middle man.

3.08 Price fluctuation of Tea Leaves:

Price fluctuation of tea leaves is now considered as one of the hottest and debatable issue in last few years. The unexpected falling of price in the market threats the growers for their survival. The small tea growers have no control over production of tea leaves, price of input cost, manufacturing process as well as national and international trade of made tea. Besides poor agricultural practices some time lead to production of low quality leaf, weak extension services along with absence of adequate policy protection hinders smooth functioning as well as receiving reasonable price in the market.

Production of high quality leaf tend to high quality made tea and also high return of price. Tea is such type of crop it should be plucked in proper time and send to the factories within very short period. Conceptually the tea growers should plucked two leaves and a bud within 24 hours of every alternate 6-7 days and the distance of the factory should not exceed 10-15 km of their plantation area. The growers of Chantongya and Mangkolemba suffer such type of problems as their plantation area is far from the factories. Few amount of leaves damaged during transportation in hilly terrain which also affect the quality of made tea. The growers uses the quality of inputs e.g. fertilizer, pesticides etc from the global marker with high cost but they received less price of their product. A positive price policy with marketable surplus is very essential for existence of a sector. From global point view of free market operation, the growers therefore, need to provide special attention to its quality and reduce the cost of production such that they can improve their existing position and less effect on price fluctuation. The Government of India at the very initial stage of new agricultural economic policy proposed Tea Marketing Controlling Order (TMCO 2003) against price fluctuation of tea with minimum support price.

According to the proposal the share between tea growers and bought leaf factories should be 65:35 whereas, 65 per cent goes to the growers and 35 per cent to the bought leaf factories after marketing of the product. But in the study areas the TMCO order is not followed by the factory owners and price is determined on the basis of supply and demand conditions in the market.

Considering fluctuation of price of tea leaves interacting with sample growers and with personal observation in the area it is found that the supply of tea leaves is less price elastic i.e. falling the price of tea leaves, the growers has no control to reduce its supply. At the same time, they have no alternative to absorb their productivity instead of supplying brought leaf factories limits their bargaining power. Simultaneously some grower receiving advance money from the factory owners and some of them have no idea about cost and return of their product also encourages the falling of price and exploitation of factories.

From demand side considering the problem of price fluctuation in the study area it is observed that bought leaf factories are the main out lets where the growers disposing their tea leave. The demand of green tea leaves mainly constituted by these industries only nominal portion leaves absorbed by big tea factories. The maximum capacity of these industries is 14,000 – 30,000 kg tea leaves per day. But in season period in the months of June to August supply increases up to 35,000 kg tea leaves to their factories. So, these excess supplies also encourage decreasing the price of tea leaves. Three bought leaf factories are purposively selected for the study one from Mokokchung district and two from Titabar subdivision considering the problem of price fluctuation. Table 3.18 shows the absorbing capacity of bought leaf factories and supply of tea leaves.

Table 3.18: Absorbing Capacity of Bought Leaf Factories and Supply of Tea Leaves.

Name of Industries	Capacity to Absorb Tea Leaves	Supply of Tea Leaves in Season Period
Balaji Tea Industry (Titabar Subdivision)	14,000 – 15,000 kg/day	Up to 25,000 kg
Dhanshree Tea Industry (Titabar Subdivision)	30,000 kg/day	Up to 35,000 kg
Echahaba Tea Factory (Tuli, Mokokchung)	15000 kg/day	Up to 18000 kg

Source: Primary

Table 3.18 shows that the local bought leaf factories are out of their productive capacity in season period (July-August). As they are suffering from excess supply so, naturally they offering lesser price, which implies the emergence of establishment of new bought leaf factories in the area either from individual or from cooperative basis.

3.09 Mode of Transportation of Tea Leaves:

Proper and safe transportation maintain the quality of product, reduce uncertainties and indirectly increase income. Table 3.19 shows the distribution of respondent based on their mode of transport.

Table 3.19: Mode of Transportation of Tea leaves of the Sample Growers.

Category	Titabar Subdivision		Mokokchung District	
	Frequency	Per cent	Frequency	Per cent
Bicycle	3	2.50		
Hand cart	10	8.34		
Jeep	5	4.17	5	8.33
Ape (Three wheeler)	40	33.33	2	3.33
Tractor	15	12.50		
Mini Truck	45	37.50	45	75.00
Truck	2	1.66	8	13.34
Total	**120**	**(100)**	**60**	**(100)**

Source: Primary

Table 3.19 reveals that majority 37.50 per cent respondent in Titabar sub division and 75.00 per cent in Mokokchung district used mini truck as their mode of transportation followed by 33.33 per cent three wheeler and 13.34 per cent truck is the second highest mode of transportation in the areas respectively.

3.10 Plucking, Handling and Quality of Tea Leaves of the Growers:

The quality of tea varies with the types of leaves plucked and manufacturing process adopted. There are some agricultural practices like careful handling of tea leaves should be undertaken in garden level and during transportation for maintain its quality.

Tea plucking may be two kinds, namely fine and coarse plucking. Fine plucking involves plucking of two or three leaves and a bud. Quality of tea is manufactured from leaves gathered through fine plucking. A minimum level of output comes by fine plucking. On the other hand, coarse plucking is that plucking of coarse leaves which requires less time and care in plucking to some extent and meets the demand in any season or year. The small tea growers in some extent followed the second method of plucking to increase their production or to meet the excess demand of tea leaves in the market. At the same time less care undertaken in handling of tea leaves result a portion of tea leaves damage and low returns. Table 3.20 shows the standard of tea leaves of the sample respondents in the study area.

Table 3.20 Standard of Tea Leaves.

Category	**Range**	**Titabar Subdivision**		**Mokokchung District**	
		Frequency	Per cent	Frequency	Per cent
High quality	Two leaves and a bud	20	16.66	10	16.67
Medium quality	Three leaves and a bud	72	60.00	43	71.66
Low quality	Four leaves and a bud	28	23.34	7	11.67
Total		**120**	**(100)**	**60**	**(100)**

Source: Primary

Table 3.20 shows that in Titabar subdivision majority (60.00 per cent) of the respondent disposing medium quality of tea leaves, 23.34 per cent of the respondent disposing low quality and only less portion 16.66 per cent produce good quality of tea leaves. On the other hand in the Mokokchung district 71.66 percent produced medium quality leaves, 16.67 per cent produce good quality and 11.67 per cent produced low quality leaves.

Table 3.21 (I, II, III): Model Summary, Tea Growers of Titabar Subdivision.

Table 3.21 (I) Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.938[a]	0.880	0.874	184.29290

a. Predictors: (Constant) x5, x2, x3, x1, x4

Table 3.21 (II): ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.826E7	5	5652187.633	166.418	0.000[a]
Residual	3871881.72	114	33963.87		
Total	3.213E7	119			

a. Predictors: (Constant) x5, x2, x3, x1, x4

b. Dependent Variable: y.

Table 3.21 (III): Coefficients[a]

Model	Unstandardized Coeffcients		Standardzed Coeffcients	t	Sig.
	B	Std. Error	Beta		
(Constant)	12210.006	67.980		179.611	0.000*
X1	-0.533	0.047	-7.406	-11.292	0.000*
X2	0.722	0.080	11.601	8.985	0.000*
X3	-0.805	0.181	-2.325	-4.443	0.000*
X4	-0.292	0.038	-2.272	-7.607	0.000*
X5	0.464	0.111	0.476	4.185	0.000*

Notes: *=1% level of significance.

Based on Table 3.21 (I, II, III) from the beta coefficient the regression line of the growers in Titabar subdivision is found Y= 12210.006 -0.533 labour +

0.722 Capital -0.805 Fertilizer -0.292 Machinery + 0.464 Irrigation and Plant protection. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation are -0.533, 0.722, -0.805, -0.292 and 0.464 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. The collective effect of all independent variables on the dependent variable combined effect R^2 is 0.880. It explained that 88.00 per cent of variation in total income by all selected independent variables. From F test statistics it is observed, the collective effect of independent variable is significant at 1 per cent probability level.

Table 3.22 (I, II, III): Model Summary, Tea Growers of Mokokchung District.

Table 3.22 (I) Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.927[a]	0.860	0.847	308.91273

a. Predictors: (Constant) x5, x2, x3, x1, x4

Table 3.22 (II): ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.169E7	5	6337880.527	66.416	0.000[a]
Residual	5153061.942	54	95427.073		
Total	3.684E7	59			

a. Predictors: (Constant) x5, x2, x3, x1, x4

b. Dependent Variable: y.

Table 3.22 (III): Coefficients[a]

Model	Unstandardized Coeffcients		Standardzed Coeffcients	t	Sig.
	B	Std. Error	Beta		
(Constant)	15175.912	198.738		76.362	0.000*
X1	-0.040	.020	-0.398	-2.034	0.047**
X2	-0.058	.017	-0.788	-3.338	0.002*
X3	0.727	.051	1.189	14.304	0.000*
X4	0.020	.048	0.128	0.411	0.683
X5	-0.108	.111	-0.065	-0.970	0.336

Notes: *=1% level of significance, **=5% level of significance

Based on Table 3.22 (I, II, III) from the beta coefficient the regression line of the growers in Mokokchung district is found Y= 15175.912 - 0.040 labour -0.058 Capital + 0.727 Fertilizer + 0.020 Machinery -0.108 Irrigation and Plant protection. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation are -0.040, -0.058, 0.727, 0.020 and -0.108 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. The collective effect of all independent variables on the dependent variable combined effect R^2 is found 0.860. It explained that 86.00 per cent of variation in total income by all selected independent variables. From F test statistics it is observed, the collective effect of independent variable is significant at 1 per cent probability level.

Notes:

- The average production of tea per hectare in Titabar sub division is 12796.87 kg per year. On the other hand the average production in Mokokchung district per hectare is found 15106.37 kg per year which is higher than Tiitabar subdivision.
- The average cost per hectare of tea cultivation is found Rs 91405.83 in Titabar sub division and Rs 119324.80 in Mokokchung district. The return per hectare is found Rs 196943.76 and Rs 232486.99 respectively.
- The overall average BCR of Mokokchung district is found 1.94 which is less than 2.15 of Titabar sub division as the cost per hectare in the district is high.
- The net return in all farm size groups of Mokokchung district is found higher compared to Titabar sub division. The average net return is estimated Rs 113162.41 per hectare whereas in Titabar sub division it is estimated Rs 105537.93 per hectare
- The average price of tea leaves from 2011-2015 is found Rs 15.39 per kg.

- The average income generation per hectare is estimated Rs 196943.76 in Titabar subdivision and Rs 232486.99 in Mokokchung district.
- The average cost of employment generation per hectare land is estimated Rs 31602.24 in Titabar subdivision and Rs 41116.41in Mokokchung district.
- The positive overall average BCR, 1.94 in Mokokchung district and 2.15 in Titabar sub division implies tea cultivation is profitable and there is positive impact of generation income and employment.
- Maximum 78.33 per cent of leaves are marketed by the growers directly with bought leaf factories in Titabar subdivision. But in Mokokchung district maximum potion of leaves are marketed by agents, accounted about 80 per cent.
- Local bought leaf factories in both the areas cannot absorb all tea leaves produced so, it emerge new factories nearby plantation areas.
- The growers have no bargaining power as well absorbing capacity of their own product.
- TMCO (2003) order of Govt. of India is not followed by the bought leaf factories in the study area.
- During peak season when production of tea leaves increases in the month of June - August the factory owners offered fewer prices to the growers.
- Majority growers produced medium quality tea leaves which are accounted 60.00 per cent in Titabar sub division and 71.66 per cent in Mokokchung district.
- The regression line of the growers in Titabar subdivision is found Y= 12210.006 - 0.533 labour + 0.722 Capital -0.805 Fertilizer -0.292 Machinery + 0.464 Irrigation and Plant protection. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation are -0.533, 0.722, -0.805, -0.292 and 0.464 per cent respectively. These values represent 1 per cent increase in income

per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. R^2 represents 88.00 per cent of variation explained by independent variables. From F test statistics it is observed, the collective effect of independent variable is significant at 1 per cent probability level.

- The regression line of the growers in Mokokchung district is found Y= 15175.912 - 0.040 labour -0.058 Capital + 0.727 Fertilizer + 0.020 Machinery -0.108 Irrigation and Plant protection. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation are -0.040, -0.058, 0.727, 0.020 and -0.108 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. R^2 represents 86.00 per cent of variation explained by independent variables. From F test statistics it is observed, the collective effect of independent variable is significant at 1 per cent probability level.

CHAPTER-IV

4.01 Credit Facilities and Impact of Govt. Schemes on Tea Growers:

Institutional credit and financial support are other incentives of the development of a sector. Credit facilities and support of the Government by various schemas play a very crucial role in promoting faster growth of a sector. A United Nation Publication has stressed the need for credit for farmers when it observed, Most of the world's farmers have no borrow at some time many of them heavily. To raise agricultural production they will have to borrow still more. And more is almost always needed where there is redistribution of rights in land. It is thus in the interest of agriculture and essential to agriculture and general progress, that credit be available to farmers in adequate amount and appropriate cost.[89] Therefore, in connection with increasing total agricultural output in shorter time it must provide credit first and foremost. In practical sense it provides a flow to the system averting ruin which would have occurred due to lack of monetary capacity of a farmer.

The importance and necessities of credit is differs from person to person. To find out the credit requirement of tea growers, it is observed that some growers accept tea cultivation as a primary and some of them prefer it as secondary source of income and employment. On need basis credit may not be required to those growers who preferred it as secondary as they primarily engaged in Govt/private services, trade commerce, business and other professions, but credit may be indispensable one for those who preferred it as primary source of livelihood.

There are mainly two agencies especially designed for providing guidance and fund to small tea growers from the Central Govt., namely The Tea Board

[89] Rural Progress through Co-operatives, United Nations, 1954. Cited in *Fundamentals of Agricultural Economics,(Sadhu &Singh),* Himalaya Publishing House, Mumbai, 400004, 1997, p-291.

of India and Small Tea Growers Advisory Cell (STGAC), Tocklai. The STGAC provides technical support and guidance to the small tea growers. They do not deal with financing to small tea growers. The Tea Board of India provides finance through its various schemes like Subsidiary Schemes for tea planters (up to Rs 150000 per hectare according to 12 plan which is not refundable), KCC loan from nationalized banks through responsibility of Anchalik Tea Grower Samities, providing fund to SHGs at 50 per cent subsidiary rate, etc.

In Mokokchung district during survey it is observed that a small portion of growers are benefited by Tea Board subsidiary schemes provided for new plantation but the growers are not able to avail other benefits from State Govt. or other credit facilities from bank and other financial institutions. On the other hand in Titabar sub division the growers avail some benefits from Tea Board and apart from it the growers are indirectly benefited by various State Govt. schemes, like Assam Bikash Yojana, Chief Minister Swa Rojgar Yojana, Tribal Development Schemes, etc, which are not especially designed and allotted to small tea growers, yet they are indirectly benefited by these schemes. These schemes are implemented by Sub Divisional Agricultural Office, Agricultural Engineering Office of State, State Institute of Rural Development (SIRD), DRDA, etc. Some development plan and policies in Titabar sub division are also implemented by Thengal Kachari Autonomous Council. So, the benefit received by the small tea growers are categorised by three heads as Tea Board, State Govt. and Banks and other financial institutions. Table 4.01 shows receive of Govt. schemes and credit by sample growers.

Table 4.01: Benefits Availed from Govt. Schemes by Sample Growers.

Fund Delivery Agencies	Titabar Subdivision		Mokokchung District	
	Sample	Credit amount in Rs	Sample	Credit amount in Rs
State Govt. Schemes	7 (5.84)	2350000		
Tea Board	10 (8.33)	1544910	20 (33.34)	4754100
Bank & other institutions	13 (10.83)	3200000		
Not Received Benefit	90 (75.00)		40 (66.66)	
Total Received Benefit	30 (25.00)	7094910	20 (33.34)	4754100

Source: Primary. (Figure in parenthesis indicate per cent position)

Table 4.01 reveals that 25 per cent of growers of Titabar sub division availed some benefits from various sources of which 5.84 per cent from State Govt. 8.33 per cent from Tea Board and 10.83 per cent from Bank and financial institutions. Majority growers of 75 per cent yet not received any support from any agencies. On the other hand in Mokokchung district except Tea Board initiative the activity of other fund delivery agencies are seems too weak. In the district 33.34 per cent of growers are benefitted by Tea Board subsidiary schemes which is funding for new plantation, but majority 66.66 per cent yet to cover by beneficiary schemes of State Govt. or Bank and financial institution. Table 4.02 shows farm size wise benefit availed by growers in Titabar sub division.

Table 4.02: Farm Size Wise Benefit Availed by Growers in Titabar Sub division.

Sl. Nos. (Sample)	Farm Size (hectares)	State Govt.	Tea Board	Bank	Rate of interest/ subsidy	Cash/ kind
1	1.60			150000	12.50	Cash
2	1.45			150000	12.50	Cash
3	2.29		106260		Subsidy	Cash
4	3.49	350000			12.50	Kind
5	2.68		138000		Subsidy	Cash
6	3.69		172500		Subsidy	Cash
7	3.18	350000			12.50	Kind
8	3.28			250000	12.50	Cash
9	3.00			250000	12.50	Cash
10	2.78		138000		Subsidy	Cash
11	3.43		162150		Subsidy	Cash
12	3.12		138000		Subsidy	Cash
13	2.78	350000			12.50	Kind
14	3.58		172500		Subsidy	Cash
15	2.88			200000	12.50	Cash
16	2.58		138000		Subsidy	Cash
17	3.60			250000	12.50	Cash
18	2.73			150000	12.50	Cash
19	4.80			300000	12.50	Cash
20	4.70		172500		Subsidy	Cash
21	4.32			250000	12.50	Cash
22	5.50	350000			12.50	Kind
23	4.70	250000			12.50	Cash
24	5.10		207000		Subsidy	Cash
25	4.02			250000	12.50	Cash
26	4.55	350000			12.50	Kind
27	4.98	350000			12.50	Kind
28	4.51			250000	12.50	Cash
29	10.87			350000	12.50	Cash
30	11.22			400000	12.50	Cash
Total	**121.41**	**2350000**	**1544910**	**3200000**		

Source: Primary.

Table 4.02 shows that total 30 nos. of growers in Titabar sub division covering plantation area of 121.41 hectares are availed support from State Govt. schemes of amounting Rs 2350000, Tea Board subsidiary schemes of amounting Rs 1544910 and Bank credit amounting of Rs 3200000. In Mokokchung district few amount of growers are supported by Tea Board Subsidiary schemes. Table 4.03 shows farm size wise benefit availed by the growers.

Table 4.03: Farm Size Wise Benefit Availed by Growers in Mokokchung District.

Sl. Nos. (Sample)	Farm Size (hectares)	Tea Board	Rate of interest/ subsidy	Cash/ kind
1	3.11	172500	Subsidy	Cash
2	2.77	138000	Subsidy	Cash
3	3.00	172500	Subsidy	Cash
4	2.72	110400	Subsidy	Cash
5	3.11	172500	Subsidy	Cash
6	3.60	207000	Subsidy	Cash
7	3.40	193200	Subsidy	Cash
8	4.66	207000	Subsidy	Cash
9	5.60	276000	Subsidy	Cash
10	5.70	276000	Subsidy	Cash
11	4.90	276000	Subsidy	Cash
12	5.70	276000	Subsidy	Cash
13	5.00	276000	Subsidy	Cash
14	5.09	276000	Subsidy	Cash
15	4.90	276000	Subsidy	Cash
16	5.00	276000	Subsidy	Cash
17	4.66	276000	Subsidy	Cash
18	5.66	276000	Subsidy	Cash
19	4.90	276000	Subsidy	Cash
20	15.77	345000	Subsidy	Cash
Total	**99.25**	**4754100**	Subsidy	Cash

Source: Primary.

Table 4.03 shows that 20 nos. of growers covering plantation area of 99.25 hectares in Mokokchung district are availed support from Tea Board of amounting Rs 4754100.

4.02 Impact of credit and Government Schemes on Tea Grower Beneficiaries:

Capital is a part of resource which is utilized for further production and output. Capital plays a strategic role to increase the levels of income, employment and productivity per unit of inputs introduced in production process. The small tea growers avail credit and financial support from bank and financial institutions definitely influences on production, expansion of plantation area, reduction of cost, increase introduction of inputs etc.

4.02.1 Increases in Productivity of Tea:

Capital is helpful in rising productivity per capita and leads to an increase supply of tools and machinery per worker. The relatively short term measures for increasing yields rate, that is, output per capita per hectare would involve adaptation of improved methods of tea culture in the existing plantation. These measures include, filling of gaps or available spaces in the existing plantation, interpolating of rows in the existing area coupled with rejuvenation, improvement of drainage, optimum use of fertilizer, control of diseases etc. on the other hand long term measures mostly comprise extension replanting and replacement activities along with expansion of productive capacity and manufacturing facilities for processing the additional crop planted. With credit and financial support the growers can enjoy the advantage of large scale of production and thereby increase productivity.

Table 4.04: Impact of Credit and Govt. Support on productivity of Tea:

Sl. Nos.	**Change in Productivity in Titabar Sub division (Kg in hectares)**			**Change in Productivity in Mokokchung District (Kg in hectares)**		
	Farm Size	Before	After	Farm Size	Before	After
1	1.60	11892.37	19027.79	3.11	8577.56	43731.49
2	1.45	11892.37	17243.94	2.77	10827.41	38950.55
3	2.29	9044.89	27617.07	3.00	7030.79	42184.71
4	3.49	41678.70	42088.92	2.72	15748.96	38247.47
5	2.68	8200.70	32320.43	3.11	8577.56	43731.49
6	3.69	14351.24	44500.89	3.60	8436.95	50621.66
7	3.18	37976.57	38350.36	3.40	8436.94	47809.34
8	3.28	24119.72	39556.34	4.66	25566.96	71772.29
9	3.00	24119.72	36179.58	5.60	24642.85	86249.97
10	2.78	9406.69	33526.41	5.70	26183.03	87790.15
11	3.43	13024.65	41365.32	4.90	13861.61	75468.73
12	3.12	13507.05	37626.77	5.70	26183.03	87790.15
13	2.78	33199.64	33526.41	5.00	15401.78	77008.90
14	3.58	13024.65	43174.29	5.09	16787.95	78395.07
15	2.88	10612.68	34732.39	4.90	13861.60	75468.73
16	2.58	6994.72	31114.44	5.00	15401.78	77008.90
17	3.60	19295.77	43415.49	4.66	10165.18	71772.29
18	2.73	24119.72	32923.42	5.66	25566.96	87174.08
19	4.80	38652.12	61843.39	4.90	13861.61	75468.73
20	4.70	28344.89	60554.99	15.77	172208.64	252156.94
21	4.32	42775.02	55659.06			
22	5.50	70171.56	70862.22			
23	4.70	38652.12	60554.99			
24	5.10	27056.49	65708.60			
25	4.02	26025.76	51793.85			
26	4.55	58051.02	58622.38			
27	4.98	63537.12	64162.51			
28	4.51	32338.94	58107.02			
29	10.87	106180.47	146655.87			
30	11.22	107934.40	151377.99			
Total	**121.41**	**966181.80**	**1534193.00**	**99.25**	**467329.00**	**1508802.00**

Source: Primary.

Table 4.05 (I,II,III): Paired-T Test of Change in Productivity in Titabar Subdivision and Mokokchung District.

Table 4.05 (I): Paired Sample Statistics.

Areas		Mean	N	Std.Deviation	Std. Error Mean
Titabar	Pair 1 Before	3.2206E4	30	26276.55561	4797.42075
	After	5.1140E4	30	30010.33771	5479.11297
Mokokchung	Pair 1 Before	2.3366E4	20	35660.63432	7973.96025
	After	7.5440E4	20	45329.19155	10135.91537

Table 4.05 (II): Paired Sample Correlations.

Areas		N	Correlation	Sig
Titabar	Before & After	30	.904	.000
Mokokchung	Before & After	20	.958	.000

Table 4.05 (III): Paired Sample Test.

Areas	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of Difference				
	Mean	Std.Deviation	Std. Error Mean	Lower	Upper			
Titabar	-1.89337E4	12882.97173	2352.09807	-23744.29304	-14123.13163	-8.050	29	0.000
Mokokchung	-5.20736E4	15178.67389	3394.05466	-59177.46255	-44969.78645	-15.343	19	0.000

From the Table 4.05 (I, II, III) the‘t’ value in Titabar Subdivision and Mokokchung District is found -8.050 and -15.343 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that Government policies boost up productivity.

4.02.2 Expansion of Areas:

The small tea growers with credit and financial support may have the possibility to expand their plantation areas. This expansion either may new plantation or may leased in and mortgage in land. Table 4.06 shows the number beneficiaries expand their areas after avail credit and support from Govt. or financial institutions.

Table 4.06: Impact of Credit and Govt. Support on Expansion of Areas.

Sl. Nos.	Expansion of Areas in Titabar Sub division. (in hectares)			Expansion of Areas in Mokokchung District. (in hectares)		
	Farm Size	Before	After	Farm Size	Before	After
1	1.60	1.00	1.60	3.11	0.61	3.11
2	1.45	1.00	1.45	2.77	0.77	2.77
3	2.29	0.75	2.29	3.00	0.50	3.00
4	3.49	3.49	3.49	2.72	1.12	2.72
5	2.68	0.68	2.68	3.11	0.61	3.11
6	3.69	1.19	3.69	3.60	0.60	3.60
7	3.18	3.18	3.18	3.40	0.60	3.40
8	3.28	2.00	3.28	4.66	1.66	4.66
9	3.00	2.00	3.00	5.60	1.60	5.60
10	2.78	0.78	2.78	5.70	1.70	5.70
11	3.43	1.08	3.43	4.90	0.90	4.90
12	3.12	1.12	3.12	5.70	1.70	5.70
13	2.78	2.78	2.78	5.00	1.00	5.00
14	3.58	1.08	3.58	5.09	1.09	5.09
15	2.88	0.88	2.88	4.90	0.90	4.90
16	2.58	0.58	2.58	5.00	1.00	5.00
17	3.60	1.60	3.60	4.66	0.66	4.66
18	2.73	2.00	2.73	5.66	1.66	5.66
19	4.80	3.00	4.80	4.90	0.90	4.90
20	4.70	2.20	4.70	15.77	10.77	15.77
21	4.32	3.32	4.32			
22	5.50	5.50	5.50			
23	4.70	3.00	4.70			
24	5.10	2.10	5.10			
25	4.02	2.02	4.02			
26	4.55	4.55	4.55			
27	4.98	4.98	4.98			
28	4.51	2.51	4.51			
29	10.87	7.87	10.87			
30	11.22	8.00	11.22			
Total	**121,41**	**76.24**	**121.41**	**99.25**	**30.35**	**99.25**

Source: Primary.

Table 4.07 (I,II,III): Paired-T Test of Expansion of Areas in Titabar Subdivision and Mokokchung District.

Table 4.07 (I): Paired Sample Statistics.

Areas		Mean	N	Std.Deviation	Std. Error Mean
Titabar	Pair 1 Before	2.5413	30	1.95571	0.35706
	After	4.0470	30	2.15548	0.39354
Mokokchung	Pair 1 Before	1.5175	20	2.21720	0.49578
	After	4.9625	20	2.75151	0.61526

Table 4.07 (II): Paired Sample Correlations.

Areas		N	Correlation	Sig
Titabar	Before & After	30	0.883	0.000
Mokokchung	Before & After	20	0.960	0.000

Table 4.07 (III): Paired Sample Test.

Areas	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of Difference				
	Mean	Std.Deviation	Std. Error Mean	Lower	Upper			
Titabar	-1.50567	1.01481	.18528	-1.88460	-1.12673	-8.127	29	0.000
Mokokchung	-3.44500	.88227	.19728	-3.85791	-3.03209	-17.462	19	0.000

From the Table 4.07 (I, II, III) the‘t’ value in Titabar Subdivision and Mokokchung District is found -8.127 and -17.462 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that Government policies increases the plantation areas.

4.02.3 Reduction of Cost:

The small tea growers with credit and financial support can use appropriate method of cultivation. They can introduce machinery tools and implements in production process and thereby reduce cost of production and. Table 4.08 shows the impact of credit and Govt. support on reduction of cost.

Table 4.08: Impact of Credit and Govt. Support on Reduction of Cost.

Sl. Nos.	Reduction of Cost in Titabar Sub division. (in hectares)			Reduction of Cost in Mokokchung District. (in hectares)		
	Farm Size	Before	After	Farm Size	Before	After
1	1.60	147909.92	92443.70	3.11	372681.72	200181.72
2	1.45	134043.37	92443.70	2.77	331938.38	193938.38
3	2.29	211182.75	104922.75	3.00	359500.05	187000.05
4	3.49	321846.20	315532.87	2.72	325946.72	215546.72
5	2.68	247148.37	109148.37	3.11	372681.72	200181.72
6	3.69	340290.11	167790.11	3.60	431400.06	224400.06
7	3.18	293258.14	287505.58	3.40	407433.39	214233.39
8	3.28	302480.09	184439.07	4.66	556098.77	349098.77
9	3.00	276658.62	184439.08	5.60	668273.20	392273.20
10	2.78	256370.33	118370.33	5.70	680206.65	404206.65
11	3.43	316313.02	154163.02	4.90	584739.05	308739.05
12	3.12	287724.96	149724.96	5.70	680206.65	404206.65
13	2.78	256370.33	251341.36	5.00	596672.50	320672.50
14	3.58	330145.96	157645.96	5.09	607412.60	331412.60
15	2.88	265592.28	81153.20	4.90	584739.05	308739.05
16	2.58	237926.42	99926.42	5.00	596672.50	320672.50
17	3.60	331990.35	147551.27	4.66	556098.77	280098.77
18	2.73	251759.35	184439.09	5.66	675433.27	399433.27
19	4.80	438851.76	274282.35	4.90	584739.05	308739.05
20	4.70	429709.02	257209.02	15.77	1867682.58	1522682.58
21	4.32	394966.59	303539.14			
22	5.50	502850.98	492221.64			
23	4.70	429709.02	274282.36			
24	5.10	466279.99	259279.99			
25	4.02	367538.35	184683.45			
26	4.55	415994.89	407201.53			
27	4.98	455308.71	445684.33			
28	4.51	412337.79	229482.89			
29	10.87	982425.82	711287.14			
30	11.22	1014058.67	723036.48			
Total	**121.41**	**11119042.0**	**7445171.00**	**99.25**	**11840557.0**	**7086457.00**

Source: Primary.

Table 4.09 (I,II,III): Paired-T Test of Reduction of Cost in Titabar Subdivision and Mokokchung District.

Table 4.09 (I): Paired Sample Statistics.

Areas		Mean	N	Std.Deviation	Std. Error Mean
Titabar	Pair 1 Before	3.7063E5	30	1.93781E5	35379.39670
	After	2.4817E5	30	1.64998E5	30124.44304
Mokokchung	Pair 1 Before	5.9203E5	20	3.25031E5	72679.06293
	After	3.5432E5	20	2.85167E5	63765.17417

Table 4.09 (II): Paired Sample Correlations.

Areas		N	Correlation	Sig
Titabar	Before & After	30	0.915	0.000
Mokokchung	Before & After	20	0.989	0.000

Table 4.09 (III): Paired Sample Test.

Areas	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of Difference				
	Mean	Std.Deviation	Std. Error Mean	Lower	Upper			
Titabar	1.22462E5	78967.90436	14417.50085	92975.26657	1.51949E5	8.494	29	0.000
Mokokchung	2.37705E5	60876.41039	13612.37919	2.09214E5	2.66196E5	17.462	19	0.000

From the Table 4.09 (I, II, III) the ‘t’ value in Titabar Subdivision and Mokokchung District is found 8.494 and 17.462 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that with aid of Government policies growers reduce their cost of production.

4.02.4 Increase Introduction of Inputs:

Human labour, fertilizer, various pesticides, machinery tools and implements are the main inputs of small tea cultivation. The small tea growers with credit and financial support likely to increase introduction of these inputs in production process and thereby increase productivity of their farm. Table 4.10 shows impact of credit and Govt. support on introduction of these inputs.

Table 4.10: Impact of Credit and Govt. Support on Introduction of Inputs in Titabar Subdivision.

Farm Size	labour Employment		Use of Fertilizer		Use of Machinery	
	Before	After	Before	After	Before	After
1.60	31578.76	50526.03	5685.28	9096.46	18174.44	29079.09
1.45	31578.76	45789.22	5685.28	8243.67	18174.44	26352.93
2.29	23398.40	71443.13	4606.37	14064.77	12996.04	39681.24
3.49	108880.56	111016.35	21434.96	21855.43	60474.89	61661.16
2.68	21214.56	31197.88	4176.44	6141.83	11783.08	17328.06
3.69	52412.43	115120.15	10318.26	22663.33	29111.13	63940.52
3.18	99209.23	101155.31	19530.99	19914.11	55103.21	56184.11
3.28	62395.75	102329.02	12283.65	20145.15	34656.11	56836.01
3.00	62395.75	93593.62	12283.65	18425.47	34656.11	51984.16
2.78	24334.34	86730.08	4790.63	17074.27	13515.89	48171.99
3.43	33693.70	107008.69	6633.17	21066.44	18714.30	59435.22
3.12	34941.62	97337.36	6878.84	19162.49	19407.42	54063.53
2.78	86730.08	88431.37	17074.27	17409.20	48171.99	49116.93
3.58	33693.71	111688.38	6633.17	21987.73	18714.29	62034.43
2.88	27454.13	89849.87	5404.80	17688.45	15248.69	49904.79
2.58	18094.77	80490.51	3562.26	15845.89	10050.27	44706.38
3.60	49916.59	112312.34	9826.92	22110.56	27724.89	62380.99
2.73	62395.75	85170.19	12283.65	16767.18	34656.11	47305.59
4.80	91473.17	146357.07	18952.92	30324.66	49891.96	79827.14
4.70	67080.33	143307.96	13898.80	29692.89	36587.44	78164.07
4.32	101230.31	131721.36	20974.56	27292.19	55213.77	71844.43
5.50	167700.81	171245.69	34747.01	35481.49	91468.59	93402.06
4.70	91473.17	143307.96	18952.92	29692.89	49891.96	78164.07
5.10	64031.22	155504.38	13267.04	32219.95	34924.38	84816.34
4.02	61591.94	122574.04	12761.63	25396.89	33593.92	66855.23
4.55	138734.29	141666.87	28745.25	29352.87	75669.48	77269.00
4.98	151845.46	155055.19	31461.84	32126.88	82820.66	84571.33
4.51	76532.55	137514.66	15857.27	28492.55	41742.94	75004.25
10.87	217511.62	300425.82	55267.02	76334.49	138772.12	191671.28
11.22	221104.56	310099.14	56179.94	78792.36	141064.42	197842.85
Total	**2314628.0**	**3639970.0**	**490158.8**	**764862.50**	**1312975.0**	**2059599.00**

Source: Primary. (Figure shows the Money value of labour, Fertilizer and Machinery).

Table 4.11 (I,II,III): Paired-T Test of Change in Introduction of Inputs in Titabar Subdivision.

Table 4.11 (I): Paired Sample Statistics.

Inputs		Mean	N	Std.Deviation	Std. Error Mean
Employment of Labour (In Rs.)	Pair 1 Before	7.7154E4	30	54951.51383	10032.72790
	After	1.2133E5	30	60200.44948	10991.04805
Use of Fertilizer (In Rs.)	Pair 1 Before	1.6339E4	30	13466.53832	2458.64227
	After	2.5495E4	30	15922.85589	2907.10245
Use of Machinery (In Rs.)	Pair 1 Before	4.3766E4	30	33680.27575	6149.14892
	After	6.8653E4	30	38694.31601	7064.58324

Table 4.11 (II): Paired Sample Correlations.

Inputs		N	Correlation	Sig
Employment of Labour	Before & After	30	0.872	0.000
Use of Fertilizer	Before & After	30	0.915	0.000
Use of Machinery	Before & After	30	0.897	0.000

Table 4.11 (III): Paired Sample Test.

Inputs	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std.Deviation	Std. Error Mean	95% Confidence Interval of Difference				
				Lower	Upper			
Employment of Labour	-4.41780E4	29620.09229	5407.86423	-55238.36823	-33117.71977	-8.169	29	0.000
Use of Fertilizer	-9.15679E3	6528.81726	1191.99350	-11594.69210	-6718.89124	-7.682	29	0.000
Use of Machinery	-2.48875E4	17110.00441	3123.84512	-31276.45531	-18498.49402	-7.967	29	0.000

From the Table 4.11 (I, II, III) the 't' value of employment of labour, use of fertilizer and use of machinery in Titabar Subdivision is found -8.169, -7.682 and -7.967 respectively. The p value is found 0.00 in all three inputs, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected and there is strong evidence that Government policies encourage to introduce more inputs.

Table 4.12: Impact of Credit and Govt. Support on Introduction of Inputs in Mokokchung District.

Farm Size	labour Employment		Use of Fertilizer		Use of Machinery	
	Before	After	Before	After	Before	After
3.11	24195.56	123357.65	2675.39	13640.16	14539.27	74126.39
2.77	30541.93	109871.61	3377.15	12148.95	18352.84	66022.55
3.00	19832.42	118994.52	2192.96	13157.71	11917.43	71504.56
2.72	44424.62	107888.37	4912.20	11929.65	26695.04	64830.80
3.11	24195.56	123357.65	2675.39	13640.16	14539.27	74126.39
3.60	23798.91	142793.42	2631.55	15789.25	14300.92	85805.48
3.40	23798.91	134860.46	2631.55	14912.07	14300.92	81038.50
4.66	64876.21	182122.35	9726.48	27304.45	38232.39	107327.07
5.60	62531.28	218859.48	9374.92	32812.22	36850.49	128976.73
5.70	66439.49	222767.68	9960.86	33398.15	39153.65	131279.89
4.90	35173.85	191502.04	5273.39	28710.68	20728.41	112854.64
5.70	66439.49	222767.68	9960.86	33398.15	39153.65	131279.89
5.00	39082.05	195410.25	5859.33	29296.62	23031.56	115157.79
5.09	42599.44	198927.63	6386.67	29823.96	25104.39	117230.64
4.90	35173.85	191502.04	5273.39	28710.68	20728.41	112854.64
5.00	39082.05	195410.25	5859.33	29296.62	23031.56	115157.79
4.66	25794.16	182122.35	3867.16	27304.45	15200.83	107327.07
5.66	64876.21	221204.39	9726.48	33163.78	38232.39	130358.63
4.90	35173.85	191502.04	5273.39	28710.68	20728.41	112854.64
15.77	402809.03	589814.16	79975.07	117103.69	236098.65	345708.05
Total	**1170839.0**	**3865036.0**	**187613.5**	**574252.10**	**690920.50**	**2285822.00**

Source: Primary. (Figure shows the Money value of labour, Fertilizer and Machinery).

Table 4.13 (I,II,III): Paired-T Test of Change in Introduction of Inputs in Mokokchung District.

Table 4.13 (I): Paired Sample Statistics.

Inputs		Mean	N	Std.Deviation	Std. Error Mean
Employment of Labour (In Rs.)	Pair 1 Before	5.8542E4	20	82627.29277	18476.02434
	After	1.9325E5	20	1.01623E5	22723.67902
Use of Fertilizer (In Rs.)	Pair 1 Before	9.3807E3	20	16839.72270	3765.47647
	After	2.8713E4	20	22371.50151	5002.41981
Use of Machinery (In Rs.)	Pair 1 Before	3.4546E4	20	48371.32473	10816.15702
	After	1.1429E5	20	59146.84707	13225.63707

Table 4.13 (II): Paired Sample Correlations.

Inputs		N	Correlation	Sig
Employment of Labour	Before & After	20	0.956	0.000
Use of Fertilizer	Before & After	20	0.966	0.000
Use of Machinery	Before & After	20	0.957	0.000

Table 4.13 (III): Paired Sample Test.

Inputs	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std.Deviation	Std. Error Mean	95% Confidence Interval of Difference Lower	Upper			
Employment of Labour	-1.34710E5	33182.72396	7419.88265	-1.50240E5	-1.19180E5	-18.155	19	0.000
Use of Fertilizer	-1.93319E4	7491.14284	1675.07046	-22837.89077	-15825.96523	-11.541	19	0.000
Use of Machinery	-7.97451E4	19067.50852	4263.62452	-88668.95168	-70821.21432	-18.704	19	0.000

From the Table 4.13 (I, II, III) the 't' value of employment of labour, use of fertilizer and use of machinery in Mokokchung district is found -18.155 , -11.541 and -18.704 respectively. The p value is found 0.00 in all three inputs, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected and there is strong evidence that Government policies influencing to introduce more inputs in the district.

4.03 Overall Impact of Credit and Financial Support on Grower Beneficiaries:

(Table 4.04, 4.06, 4.08, 4.10 and 4.12 are represented in Table 4.14)

Table 4.14: Overall Impact of Credit and Financial Support on Tea Grower Beneficiaries.

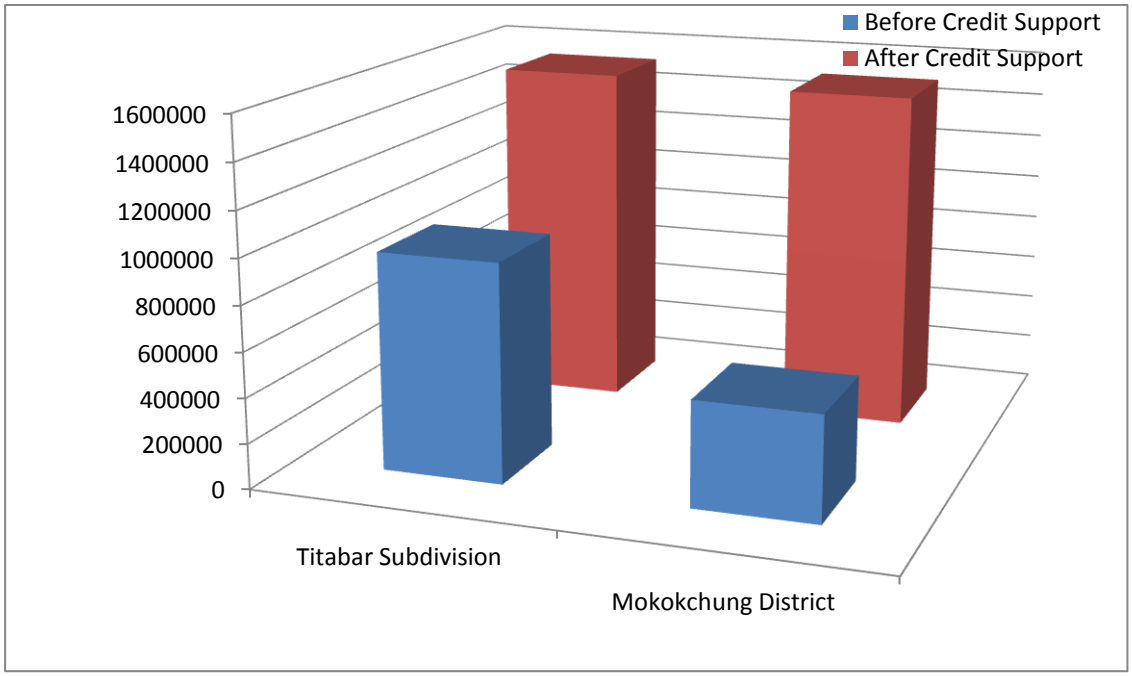
Impacts of Credits & Govt. Supports.	Titabar Subdivision		Mokokchung District	
	Before	After	Before	After
Increase in production. (In kg)	966181.80	1534193.00	467329.00	1508802.00
Reduction of Cost. (In Rs.)	11119042.00	7445171.00	11840557.00	7086457.00
Expansion of Areas. (In hectares)	76.24	121.41	30.35	99.25
*Increase of Inputs. (In Rs.)	4117761.80	6464431.50	2049373.00	6725110.10

Source: Primary. (*Money value of labour, Fertilizer and Machinery).

Table 4.14 shows the overall impact of Government policies on tea grower beneficiaries. After avail credit and support the total production increases from 966181.80 kg to 1534193.00 kg in Titabar Subdivision and in Mokokchung district which is increases from 467329.00 kg to 1508802.00 kg. Government support influences to total reduction of cost of Rs.11119042.00 to Rs.7445171.00 in Titabar subdivision and Rs.11840557.00 to Rs.7086457.00 in Mokokchung district. It also resulted to expansion of total tea plantation area of 76.24 hectare to 121.41 hectare in Titabar subdivision and 30.35 hectare to 99.25 hectare in Mokokchung district. The total money value of input introduction of labour, fertilizer and machinery in Titabar

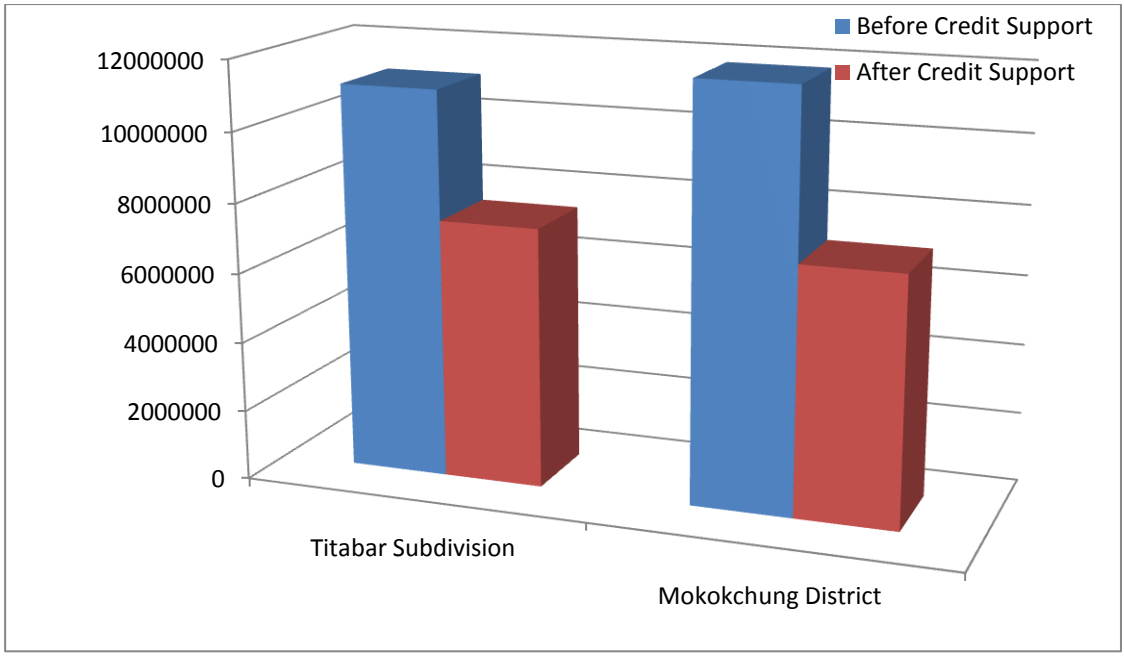
subdivision increases from Rs. 4117761.80 to Rs. 6464431.50 and in Mokokchung district increases from Rs. 2049373.00 to Rs. 6725110.10.

Fig 4.01: Overall Impact of Credit and Financial Support on Production.



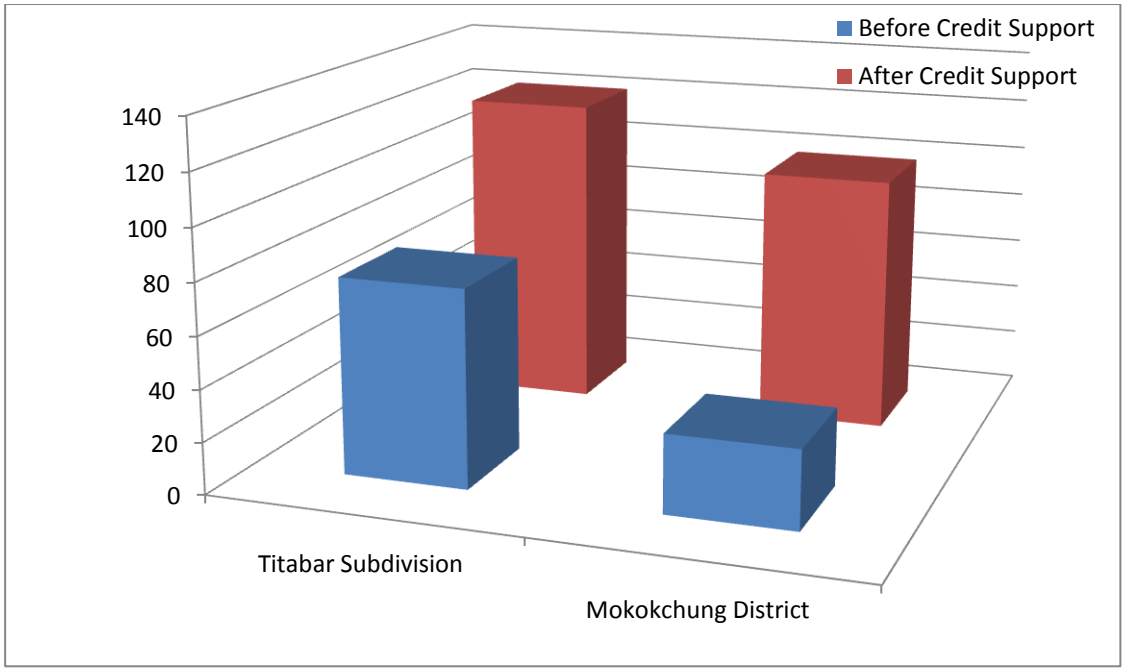
(Vertical line shows production in Kg, horizontal line shows Study areas)

Fig 4.02: Overall Impact of Credit and Financial Support on Reduction of Cost.



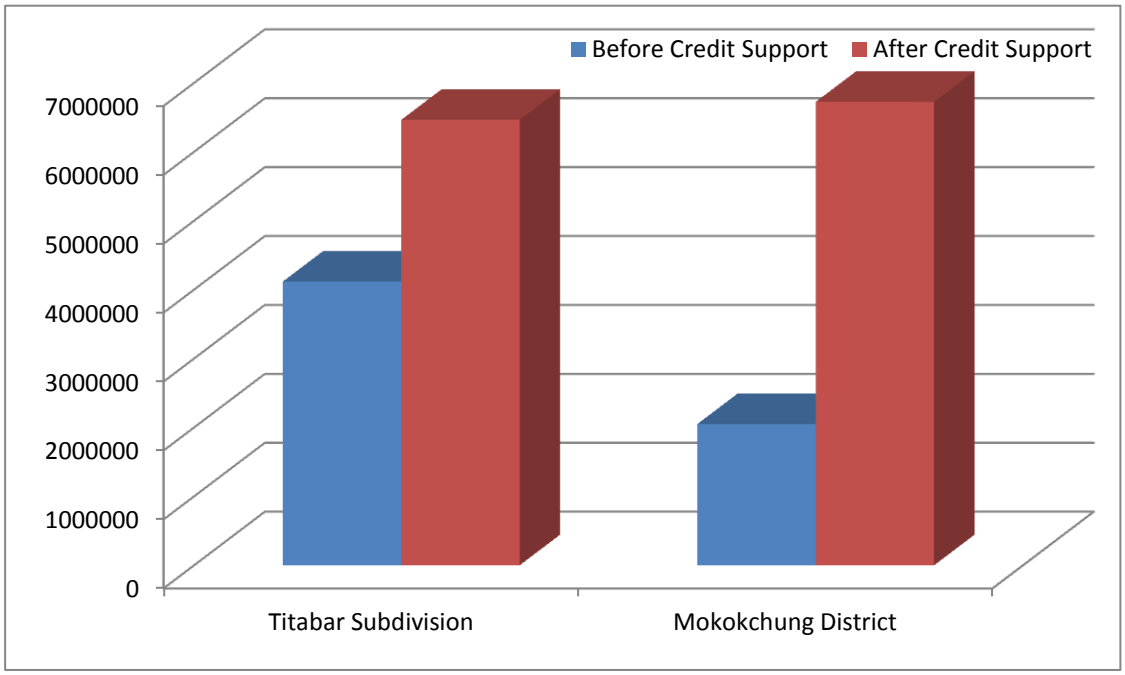
(Vertical line shows Cost in Rs, horizontal line shows Study areas)

Fig 4.03: Overall Impact of Credit and Financial Support on Expansion of Areas.



(Vertical line shows Area in hectare, horizontal line shows Study areas)

Fig 4.04: Overall Impact of Credit and Financial Support on Introduction of Inputs.



(Vertical line shows Total Money value of labour, Fertilizer and Machinery, horizontal line shows Study areas)

Table 4.15 (I, II, III): Model Summary of Govt. Policies in Titabar Subdivision.

Table 4.15 (I) Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.964[a]	0.929	0.911	147.79046

a. Predictors: (Constant), x6, x5, x2, x3, x1, x4

Table 4.15 (II): ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	6600413.885	6	1100068.981	50.365	0.000[a]
Residual	502366.493	23	21842.021		
Total	7102780.378	29			

a. Predictors: (Constant), x6, x5, x2, x3, x1, x4

b. Dependent Variable: y.

Table 4.15 (III): Coefficients[a]

Model	Unstandardized Coeffcients		Standardzed Coeffcients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11783.932	207.578		56.769	0.000*
X1	-1.235	0.157	-19.820	-7.872	0.000*
X2	1.762	0.258	32.663	6.817	0.000*
X3	-2.828	0.638	-9.261	-4.431	0.000*
X4	-0.426	0.098	-3.799	-4.361	0.000*
X5	0.397	0.152	0.449	2.607	0.016**
X6	0.006	0.003	0.198	2.162	0.041**

Notes: *=1% level of significance, **=5% level of significance

Based on Table 4.15 (I, II, III) from the beta coefficient the regression line of the growers with Government policies in Titabar subdivision is found Y= 11783.932 -1.235 labour + 1.762 Capital -2.828 Fertilizer -0.426 Machinery + 0.397Irrigation and Plant protection + 0.006 Government Policies. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation and Government Policies are -1.235, 1.762, -2.828, -0.426, 0.397 and 0.006 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. The collective effect of all independent variables on the dependent variable combined effect R^2 is 0.929. It explained that 92.90 per cent of variation in total

income by all selected independent variables. From F test statistics it is observed, the collective effect of independent variable is significant at 1 per cent probability level.

Table 4.16 (I, II, III): Model Summary of Govt. Policies in Mokokchung District.

Table 4.16 (I) Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.995[a]	0.991	0.986	80.21762

a. Predictors: (Constant), x6, x5, x2, x3, x1, x4

Table 4.16 (II): ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	8903967.807	6	1483994.635	230.618	0.000[a]
Residual	83653.268	13	6434.867		
Total	8987621.075	19			

a. Predictors: (Constant), x6, x5, x2, x3, x1, x4

b. Dependent Variable: y.

Table 4.16 (III): Coefficients[a]

Model	Unstandardized Coeffcients		Standardzed Coeffcients	t	Sig.
	B	Std. Error	Beta		
(Constant)	13468.809	664.074		20.282	0.000*
X1	0.142	0.022	0.403	6.514	0.000*
X2	-0.503	0.077	-2.970	-6.540	0.000*
X3	1.766	0.065	2.106	27.016	0.000*
X4	0.495	0.105	1.559	4.688	0.000*
X5	-0.026	0.050	-.015	-.519	0.612
X6	0.013	0.006	0.240	2.117	0.054**

Notes: *=1% level of significance, **=5% level of significance

Based on Table 4.16 (I, II, III) from the beta coefficient the regression line of the growers with Government policies in Mokokchung district is found Y= 13468.809 + 0.142 labour - 0.503 Capital + 1.766 Fertilizer + 0.495 Machinery - 0.026 Irrigation and Plant protection + 0.013 Government Policies. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation and Government Policies are 0.142, 0.503, 1.766, 0.495, -0.026 and 0.013 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to

income. The collective effect of all independent variables on the dependent variable combined effect R^2 is 0.991. It explained that 99.10 per cent of variation in total income by all selected independent variables. From F test statistics it is observed that the collective effect of independent variable is significant at 1 per cent probability level.

Notes:

- In Titabar sub division 25 per cent of growers availed some benefits from various sources of which 5.84 per cent from State Govt. 8.33 per cent from Tea Board and 10.83 per cent from Bank and financial institutions. Majority 75 per cent yet not received any support from any agencies.
- In Mokokchung district except Tea Board initiative the activity of other fund delivery agencies are seems too weak. In the district 33.34 per cent of growers are benefitted by Tea Board subsidiary schemes which is funding for new plantation, but majority 66.66 per cent yet to cover by beneficiary schemes of State Govt. or Bank and financial institution.
- In Titabar sub division total 30 nos. of growers covering plantation area of 121.41 hectares are availed support from State Govt. schemes of amounting Rs 2350000, Tea Board subsidiary schemes of amounting Rs 1544910 and Bank credit amounting of Rs 3200000.
- In Mokokchung district 20 nos. of growers covering plantation area of 99.25 hectares are availed supports from Tea Board of amounting Rs 4754100.
- The Paired‘t’ value of change in productivity in Titabar Subdivision and Mokokchung District is found -8.050 and -15.343 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in

both the areas and there is strong evidence that Government policies boost up productivity of tea.

- The Paired't' value of expansion of areas in Titabar Subdivision and Mokokchung District is found -8.127 and -17.462 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that Government policies increases the plantation areas.
- The Paired't' value of reduction of cost in Titabar Subdivision and Mokokchung District is found 8.494 and 17.462 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that with aid of Government policies growers reduce their cost of production.
- The Paired't' value of employment of labour, use of fertilizer and use of machinery in Titabar Subdivision is found -8.169, -7.682 and -7.967 respectively. The p value is found 0.00 in all three inputs, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected and there is strong evidence that Government policies encourage to introduce more inputs.
- The Paired't' value of employment of labour, use of fertilizer and use of machinery in Mokokchung district is found -18.155 , -11.541 and -18.704 respectively. The p value is found 0.00 in all three inputs, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected and there is strong evidence that Government policies influencing to introduce more inputs in the district.
- The regression line of the growers with Government policies in Titabar subdivision is found Y= 11783.932 -1.235 labour + 1.762 Capital -2.828 Fertilizer -0.426 Machinery + 0.397Irrigation and Plant protection + 0.006 Government Policies. The elasticity coefficient of labour, capital, fertilizer, machinery, plant

protection and irrigation and Government Policies are -1.235, 1.762, -2.828, -0.426, 0.397 and 0.006 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. The collective effect of all independent variables on the dependent variable combined effect R^2 is 0.929. It explained that 92.90 per cent of variation in total income by all selected independent variables. From F test statistics it is observed that the collective effect of independent variable is significant at 1 per cent probability level.

- The regression line of the growers with Government policies in Mokokchung district is found Y= 13468.809 + 0.142 labour - 0.503 Capital + 1.766 Fertilizer + 0.495 Machinery - 0.026 Irrigation and Plant protection + 0.013 Government Policies. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation and Government Policies are 0.142, 0.503, 1.766, 0.495, -0.026 and 0.013 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. The collective effect of all independent variables on the dependent variable combined effect R^2 is 0.991. It explained that 99.10 per cent of variation in total income by all selected independent variables. From F test statistics it is observed that the collective effect of independent variable is significant at 1 per cent probability level.

CHAPTER- V

The fifth chapter deals with the problems of tea cultivation in Assam and Nagaland, suggestions, and finally findings summary and conclusion.

5.1 Problems of Small Tea Cultivation:

The plantation industry which was developed over 150 years has a colonial origin. It is now a valuable asset to the nation. Among the different plantation crops, tea is considered to be the most important crop of our country. It is the second biggest foreign exchange earner and also contributes a sizable amount to the national income. At the same time it provides direct gainful employment to a large number of people and helps in providing indirect employment in various sectors like transport, storage, marketing, packaging, manufacturing of plywood, aluminum, tin plate, paper, card board, fertilizers, pesticides, iron, steel, coal, natural gas, electricity etc.

Small tea cultivation by individual farmers is a new venture in Assam and after that in Nagaland since 1990's. The small tea growers may face number of problems starting from land acquisition till the marketing and pricing of green leaves. To analyze the problem faced by the growers in production and marketing of tea Garret ranking technique has been used. The respondents were asked to rank the different problems which create problem to them in production and marketing of tea. The order of merit given by the respondents has been converted in to ranks by using the following formula.

Per cent position = $\frac{\mathbf{100}(\boldsymbol{R_{ij}}-\mathbf{0.5})}{\boldsymbol{N_j}}$

Where R_{ij}= Rank given for ith factor by the jth individual.

N_j=Number of factors ranked by the jth individual.

The per cent position of each rank thus obtained has converted in to scores by referring to the table given by Garret and Woodworth (1969). Then for each

factor the scores of the respondent has been added together and divided by the total number of respondents for whom the scores added. The mean scores thus obtained and ranks have been given.

5.1.01 Land Settlement Problem (P_1):

The biggest problem faced by the small tea growers are they acquired Govt. land, ceiling surplus land for tea cultivation. Ownership right of land has not been transferred to the occupants. As a result they could not avail the benefit of plantation subsidy and the bank loan. Although there is a provision of issuing provisional registration to the growers with annual patta, normal land etc. on the basis of certificate of enjoyment of holding for tea plantation, the revenue authorities are making in ordinate delay in this regard. The district administration sometimes issues eviction orders to small tea growers leading to insecurity.

In absence of Registration of land holding, the growers could not register their farm with Tea Board and hence could not take financial benefit offered by the Tea Board. To register their farm in the Tea Board the growers need permanent Patta (Myadi Patta) of land allocated for tea cultivation. The small tea growers faced the problems of land registration and settlement because of the complex procedure and inactive role played by the Government's Land Revenue and Settlement Department in giving 'Patta' to small tea growers. Therefore, some of the growers growing tea on Government land have to face the problem of eviction notices. Some of the Government land allotted to the growers as 'Tea patta land', but the Government increased premium revenue on such land which posed as one the problems for the growers.

5.1.02 Financial Problem (P_2):

Tea cultivation is a capital intensive farming system. The small tea growers need to invest a considerable amount of capital in establishment, operation and maintenance of the garden every year during the period of its economic life. The entire expenditure of development of small tea cultivation has to be arranged by the growers themselves. The small tea growers, with their small savings, cannot afford to take up this profession either as a new planter or to expand the existing plantation to new areas without the help of external borrowing. For operation and maintenance cost the growers are mostly dependent on their own farm income or loan managed from private sources at a high rate of interest. Lack of finance, particularly the term finance stands as a major problem for the growers in the study area. On the other hand, lengthy and complex procedure adopted by the Banks discouraged most of the small tea growers in seeking institutional credit. Out of the farmers visited only few small tea growers had availed of loan from banks. All others raised plantation with their own funds or borrowed from relatives. Many of them did not approach bank for loan with the apprehension that they will have to waste their time running after bank officials without any effective result. It is observed that most of the small tea growers did not have patta land and proper documents in obtaining loan from banks. The growth of small tea sector has slowed down due to limited availability of funds and limited availability of suitable high land for future expansion of tea plantation as most of the land has already been put under cultivation. At the same time majority of tea planters are observed 8 to 12 years old in the study area and they have already overcome the period when heavy fund was actually needed in plantation period. But the farmers expressed their view that, yet they have need working capital for purchase of fertilizer, pesticides, and payment of wages including advances in different festivals.

5.1.03 Lack of Technical Know How (P_3):

Tea bushes are a commercial perennial crop, so its method of cultivation is quite different from that of other plantation crops and field crops. There are some important practices like pruning, shade regulation, plucking, cleaning, proper drainage system; spraying of plant protection chemicals etc., require technical knowledge. Besides this accomplishment of cultivation practices in time is a pre-requisite to reap the benefits of commercial cultivation. It is important to follow a series of appropriate practices right from selection of variety of clone as planting material, proper layout of the farm, proper method of planting, drainage etc. to avoid any future loss. All these require a sound knowledge and skill on the part of the small tea growers. As the farmers are new to this profession, many of them could not acquire required knowledge on cultivation practices of tea due to lack of training. There is huge technological gap between trained and untrained small tea growers. Small tea growers may impart training in certain areas like drainage, use of manure, weed/pest control; pruning etc helps in enhancing the productivity of tea crops. Although Small Tea Growers Advisory Programme has been setup in Assam Agricultural University at the instance of Tea Board it can hardly meet the requirements of large number of tea growers. Lack of proper business plan, improper structure and unscientific method of cultivation tend to poor economic return to the small tea growers. Most of the farmers of the sample area therefore, considered lack of technical knowledge and guidance create many problems to them in their production process.

5.1.04 Labour Problems (P_4):

Labour in agriculture constitutes one of the most important factors of production as machine and labour cannot be perfect substitutes in the agricultural

production process. Tea is a labour consuming industry from plantation and then to final preparation made tea. Lots of labourers are demanded by the industry in every stages of production process. In spite of significant technological advance in this sector human labourers are continue play an important role from the birth of the tea industry. The supply of human labour and the demand for it is another important line of discussion on the subject. The inequality between the supply and demand for farm labour has led to create several problems in production. Similarly, the quality of farm labour play a curtail role to increase productivity save time and money. At the same time seasonal variations makes the problem of agricultural employment a complex one for the small farm holders.

Most of the laborers used in various operations in tea cultivation are unskilled laborers engaged on daily and weekly wage basis. The small tea gardens located far away from the big tea gardens and the laborers also do not want to negotiate long distances for piece meal wage employment. So the owners of small tea gardens faced the problem of shortage of skilled labour. Besides, small tea gardens nearer to big tea gardens also faced same type of problems during the peak plucking months of the year as the big gardens engaged the needed labour on weekly wage basis and also provided ration for the family. Almost all the sample growers considered non-availability of labour and higher wage rates as a problem. This problem has increased with the increase in farm sizes because of increasing demand for hired labour in larger size group of farms.

5.1.05 Poor Infrastructural Facilities (P_5):

Poor infrastructural facilities like connecting roads to tea farm and factory, lack of power supply to use modern inputs in production process, lack of

irrigation facilities, poor mode of transportation etc create many problems to the small tea growers in their production process and also marketing of tea.

5.1.06 Problem of Transportation (P_6):

Small tea gardens are generally located in rural areas with poor road communication and poor means of transportation. Hence, lack of developed transportation is one of the crucial problems for marketing of green tea leaves of the small tea growers. This problem is found to be acute for the growers located in remote areas. In hill areas some time leaves has been extensive damaged by travelling long distance from farm area to brought leaf factories.

5.1.07 Inadequate Availability of Quality Planting Materials (P_7):

Non-availability of suitable quality planting material is yet another problem faced by the small tea growers. Private tea nurseries located in different areas failed to provide quality planting materials to the small tea growers. The private commercial tea nurseries are not giving importance of collecting clone from the improved mother plant for higher production in future. A study conducted by Tea Board in recent years revealed that there has been stagnation in export of tea during the last 10 years due to emergence of new competitors; high cost of production fall in quality and growing domestic surplus. The Tea Association of India admits that there is not quality assurance to ensure plucking of only two leaves and a bud and some estates permit 4 leaves and a bud. Thus, India although the largest producer of tea in the world shared 50 per cent of world tea trade has come down drastically at present. This may be mainly due to inadequate attention for improvement of quality by introducing the quality planting materials.

5.1.08 Price Fluctuations of Green Leaves (P_8):

A fluctuation of prices of tea leaves is the greatest hurdle in the way of development of the sector. The persistent imbalance between supply and demand of the product causes poor economic returns to the farmers. In the last few years the prices of green tea leaves falling drastically; this forced the small tea growers to suffer losses. At present, this has become a serious problem for them as the prices of inputs like fertilizers, pesticides, insecticides; wages to labour etc. has continuously increased. The sample small tea growers reported that they are now incurring losses due to lower prices of green leaves or price of tea leaves fluctuate frequently.

5.1.09 Lack of Institutional Credit and Banking Services (P_9):

The flow of credit to the tea growers is an important criterion to encourage them for extensive cultivation. The per capita credit disbursement to farmers in the study area is very low. Most of farmers faced financial problem to run and maintain their tea gardens. Institutional credits are not available for the farmers within easy reach. Moreover, lots of formalities are to be followed to obtain institutional credit and time lags are substantial for which the tea growers failed to avail institutional credit. Majority of the sample farmers reported that they have to go to the loan disbursing authorities several times and need a quite long time to acquire credit from the time of application of the loan.

5.1.10 Lack of Orientation Programme and Awareness Campaign (P_{10}):

No worth mentioning training programme and awareness campaign have taken up by the state government about the adoption of different measures in different stages of plant growth. Due to absence of field demonstration programmes the small tea growers unable to fulfil their needs or technical supports. In many cases the

orientation and demonstration programme is not successful due to less attendance of tea grower's, lack of co ordination among the growers, lack of need base training, in adequate method of training programmes etc.

5.1.11 Marketing Problems (P_{11}):

Marketing of product is an important component which, determine the longevity of a sector. The brought leaf factories of the study area cannot absorb all tea leaves produced by the growers. So, it creates problems of marketing of their product. In spite of these brought leaf factories less portion of tea leaves are marketed by local agents, privately managed big tea factories and middleman. The major problem in marketing of tea leaves is the poor handling of transportation, lack of knowledge of proper marketing channels, lack of knowledge about cost fixation etc. The factory owners also sometime buy on 'first come first served' basis or at competitive price which is more favourable to factory owners.

5.1.12 High Investment (P_{12}):

In regards of the problems of tea industry in Assam and Naagaland, the biggest one is high cost of production. The plantation cost of the industry is high up to first plucking period (up to 3years) and after that cost gradually decreases than the returns. But the cost of production cannot be afforded by low income groups of people though; they are interested on the profession. The high cost of production of the industry is mainly due to various factors such as low productivity of land and labour, high cost of labour and inputs, non remunerative price of tea leaves and high taxation. All these resulted low retention of profits and thereby pouch back the small tea growers. This has contributed to production growth legging behind the growth in domestic demand; and hence, to decline in exports. The low level of investment is also caused due to declining profitability, which has been fuelled by in adequate financial

system with high interest rates, high taxation, low prices, high transportation cost and rising cost of production. The financing system is critical to the industry because of the capital intensive nature of the industry. So all the above components are connecting each other and moves in low level equilibrium trap in cyclic ling mode.

5.1.13 less Initiative of Tea Board (P_{13}):

The Tea Board of India is a separate body to look after tea industry. Tea Board is responsible to regulate output quality and marketing of tea. It provides approval of tea cultivation on virgin soil, subject to fulfillment of certain conditions such as proof of ownership of land and size of holding on which plantation of tea is proposed; proof of suitability of soil; proof of financial soundness etc. All these conditions laid down by Tea Board hurdles to the growth of tea cultivation on small holdings. Due to the conditions the registration drive of small tea growers with Tea Board is not picked up so far and deprived the growers to avail various subsidy and credit from banks and other financial institutions

5.1.14 Insecurity and Helplessness:

Another major problem of small tea industry is felling of insecurity and helplessness in the face of terrorism. Various terrorist groups are working in force in Assam and Nagaland. These groups some time demanded huge amount of money from the socially or economically strong tea growers time to time. The demand of money from the terrorist groups of Nagaland in the border area in Titabar and Mariani and threatening them to occupy their tea farm is now a common phenomenon. The security forces in the border area of Assam are not strong therefore, the tea growers now feeling insecurity and helplessness in their profession.

Table 5.1.01: Problems of Tea Cultivation in Titabar Subdivision.

Problems of Tea cultivation	1	2	3	4	5	6	7	8	9	10	11	12	13	**Total**
Land settlement problem (**P_1**)	2	15	9	4	33	34	11	6	6	-	-	-	-	120
Financial Problem (**P_2**)	66	40	7	7	-	-	-	-	-	-	-	-	-	120
Lack of technical Knowledge **(P_3**)	-	-	-	7	10	27	31	22	13	3	3	-	4	120
Labour Problem (**p_4**)	-	-	2	-	8	8	11	5	20	18	21	17	10	120
Poor Infrastructural Facilities (**P_5**)	-	-	-	-	-	-	-	15	15	32	9	14	35	120
Transportation Problem (**P_6**)	-	-	-	-	-	-	-	3	3	14	22	34	44	120
Lack of Planting Materials (**P_7**)	-	-	-	-	-	-	-	-	7	20	34	34	25	120
Price Fluctuation of Tea (**P_8**)	49	24	26	5	7	3	5	-	-	1	-	-	-	120
Lack of Institutional Credit (**P_9**)	-	12	10	33	14	13	7	7	13	7	2	2	-	120
Lack of Awareness Campaign (**P_{10}**)	3	6	-	6	9	6	7	25	22	12	10	13	1	120
Marketing Problem (**P_{11}**)	-	-	-	3	4	7	20	33	21	8	17	6	1	120
High Investment (**P_{12}**)	-	11	36	25	14	16	14	-	-	4	-	-	-	120
Less Initiative of Tea Board (**P_{13}**)	-	12	30	30	21	6	14	4	-	1	2	-	-	120

Source: Primary.

Table 5.1.02: Garret Values.

Sl. Nos.	$100(R_{ij}-0.5)/N_j$	Calculated Value	Garret Value
1	100(1-0.5)/13	3.85	84
2	100(2-0.5)/13	11.43	74
3	100(3-0.5)/13	19.23	67
4	100(4-0.5)/13	26.92	62
5	100(5-0.5)/13	34.61	58
6	100(6-0.5)/13	42.30	54
7	100(7-0.5)/13	50.00	50
8	100(8-0.5)/13	57.69	46
9	100(9-0.5)/13	65.38	42
10	100(10-0.5)/13	73.07	38
11	100(11-0.5)/13	80.76	33
12	100(12-0.5)/13	88.46	26
13	100(13-0.5)/13	96.15	16

Table 5.1.03 Calculated Garret Score in Titabar Subdivision.

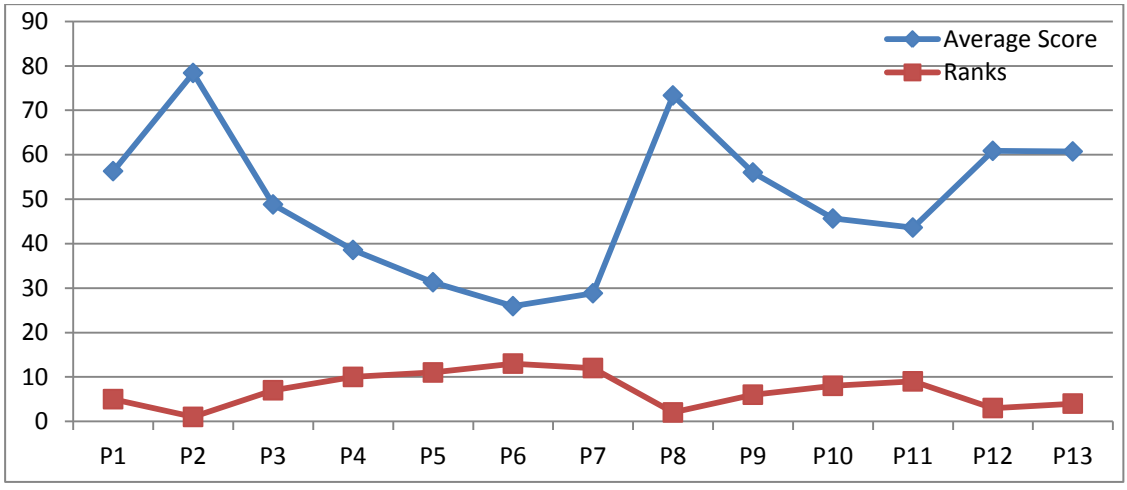
Problems of Tea cultivation	1	2	3	4	5	6	7	8	9	10	11	12	13	**Total**
Land settlement problem (**P_1**)	168	1110	603	248	1914	1836	550	276	252	-	-	-	-	6957
Financial Problem (**P_2**)	5544	2960	469	434	-	-	-	-	-	-	-	-	-	9407
Lack of technical Knowledge **(P_3)**	-	-	-	434	580	1458	1550	1012	546	114	99	-	64	5857
Labour Problem (**p_4**)	-	-	134	-	464	432	550	230	840	684	693	442	160	4629
Poor Infrastructural Facilities (**P_5**)	-	-	-	-	-	-	-	690	630	1216	297	364	560	3757
Transportation Problem (**P_6**)	-	-	-	-	-	-	-	138	126	532	726	884	704	3110
Lack of Planting Materials (**P_7**)	-	-	-	-	-	-	-	-	294	760	1122	884	400	3460
Price Fluctuation of Tea (**P_8**)	4116	1776	1742	310	406	162	250	-	-	38	-	-	-	8800
Lack of Institutional Credit (**P_9**)	-	888	670	2046	812	702	350	322	546	266	66	52	-	6720
Lack of Awareness Campaign (**P_{10}**)	252	444	-	372	522	324	350	1150	924	456	330	338	16	5478
Marketing Problem (**P_{11}**)	-	-	-	186	232	378	1000	1518	882	304	561	156	16	5233
High Investment (**P_{12}**)	-	814	2412	1550	812	864	700	-	-	152	-	-	-	7304
Less Initiative of Tea Board (**P_{13}**)	-	888	2010	1860	1218	324	700	184	-	38	66	-	-	7288

Table 5.1.04: Calculated Garret Score, Average Score and Rank of Problems in Titabar Sub division.

Problems of Tea cultivation	Garret Score	Average Score	Ranks
Land settlement problem (P_1)	6957	57.97	V
Financial Problem (P_2)	9407	78.39	I
Lack of technical Knowledge (P_3)	5857	48.81	VII
Labour Problem (p_4)	4629	38.57	X
Poor Infrastructural Facilities (P_5)	3757	31.31	XI
Transportation Problem (P_6)	3110	25.92	XIII
Lack of Planting Materials (P_7)	3460	28.83	XII
Price Fluctuation of Tea (P_8)	8800	73.34	II
Lack of Institutional Credit (P_9)	6720	56.00	VI
Lack of Awareness Campaign (P_{10})	5478	45.65	VIII
Marketing Problem (P_{11})	5233	43.61	IX
High Investment (P_{12})	7304	60.87	III
Less Initiative of Tea Board (P_{13})	7288	60.74	IV

Table 5.1.04 reveals that financial problem is the major problem with highest Garret score 9407 and average score 78.39 in Titabar sub division. Accordingly price fluctuation of tea leaves is represent second with average score 73.34, high investment is third with average score 60.87 and transportation problem with average score 25.92 is the least problem in the area. The average score and rank of different problems are shown in Fig 5.1.01.

Fig 5.1.01: Average Score and Rank of Problems in Titabar Subdivision.



(Horizontal line represents problems and vertical line represents Average Score and Ranks)

Table 5.1.05: Problems of Tea Cultivation in Mokokchung District.

Problems of Tea cultivation	1	2	3	4	5	6	7	8	9	10	11	12	13	**Total**
Land settlement problem (**P_1**)	-	-	-	-	-	-	-	-	-	-	6	22	32	60
Financial Problem (**P_2**)	33	12	13	2	-	-	-	-	-	-	-	-	-	60
Lack of technical Knowledge **(P_3**)	-	-	5	4	-	4	-	5	15	8	5	9	5	60
Labour Problem (**p_4**)	19	11	4	-	8	2	10	-	-	6	-	-	-	60
Poor Infrastructural Facilities (**P_5**)	-	-	-	-	-	-	8	5	10	11	10	6	10	60
Transportation Problem (**P_6**)	-	9	15	5	-	14	2	10	-	5	-	-	-	60
Lack of Planting Materials (**P_7**)	-	-	-	-	-	-	-	-	17	10	21	8	4	60
Price Fluctuation of Tea (**P_8**)	-	-	-	2	8	18	15	13	4	-	-	-	-	60
Lack of Institutional Credit (**P_9**)	-	10	12	9	16	13	-	-	-	-	-	-	-	60
Lack of Awareness Campaign (**P_{10}**)	-	4	6	10	10	-	2	13	6	4	5	-	-	60
Marketing Problem (**P_{11}**)	-	-	-	-	-	-	-	8	8	7	13	15	9	60
High Investment (**P_{12}**)	-	5	-	4	13	4	19	6	-	9	-	-	-	60
Less Initiative of Tea Board (**P_{13}**)	8	9	5	24	5	5	4	-	-	-	-	-	-	60

Source: Primary

Table 5.1.06 Calculated Garret Score in Mokokchung District.

Problems of Tea cultivation	1	2	3	4	5	6	7	8	9	10	11	12	13	**Total**
Land settlement problem (**P_1**)	-	-	-	-	-	-	-	-	-	-	198	572	512	1282
Financial Problem (**P_2**)	2772	888	871	124	-	-	-	-	-	-	-	-	-	4655
Lack of technical Knowledge **(P_3**)	-	-	335	248	-	216	-	230	630	304	165	234	80	2442
Labour Problem (**p_4**)	1596	814	268	-	464	108	500	-	-	228	-	-	-	3978
Poor Infrastructural Facilities (**P_5**)	-	-	-	-	-	-	400	230	420	418	330	156	160	2114
Transportation Problem (**P_6**)	-	666	1005	310	-	756	100	460	-	190	-	-	-	3487
Lack of Planting Materials (**P_7**)	-	-	-	-	-	-	-	-	714	380	693	208	64	2059
Price Fluctuation of Tea (**P_8**)	-	-	-	124	464	972	750	598	168	-	-	-	-	3076
Lack of Institutional Credit (**P_9**)	-	740	804	558	928	702	-	-	-	-	-	-	-	3732
Lack of Awareness Campaign (**P_{10}**)	-	296	402	620	580	-	100	598	252	152	165	-	-	3165
Marketing Problem (**P_{11}**)	-	-	-	-	-	-	-	368	336	266	429	390	144	1933
High Investment (**P_{12}**)	-	370	-	248	754	216	950	276	-	342	-	-	-	3156
Less Initiative of Tea Board (**P_{13}**)	672	666	335	1488	290	270	200	-	-	-	-	-	-	3921

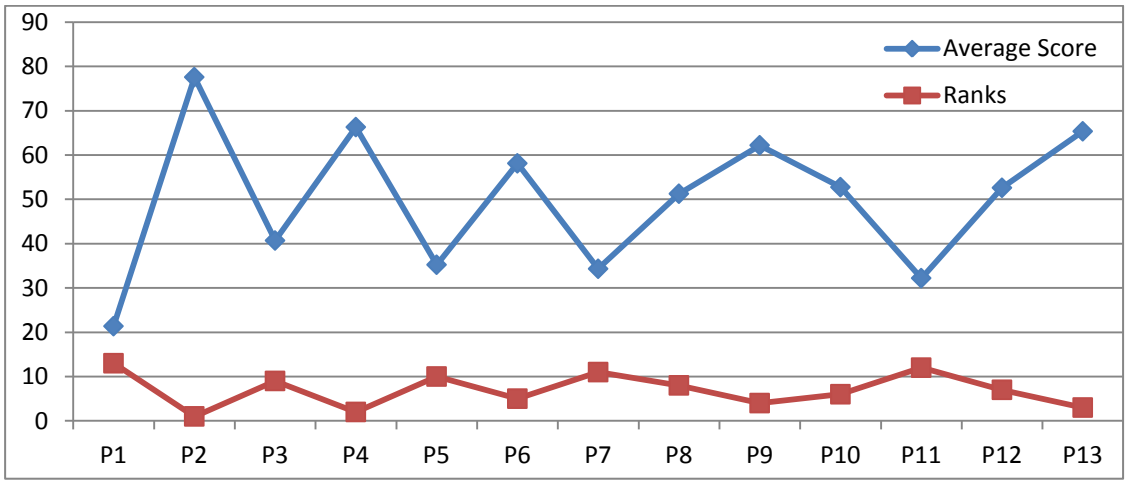
Source: Primary

Table 5.1.07: Calculated Garret Score, Average Score and Rank of Problems in Mokokchung District.

Problems of Tea cultivation	Garret Score	Average Score	Ranks
Land settlement problem (P_1)	1282	21.36	**XIII**
Financial Problem (P_2)	4655	77.58	**I**
Lack of technical Knowledge (P_3)	2442	40.70	**IX**
Labour Problem (p_4)	3978	66.30	**II**
Poor Infrastructural Facilities (P_5)	2114	35.23	**X**
Transportation Problem (P_6)	3487	58.12	**V**
Lack of Planting Materials (P_7)	2059	34.32	**XI**
Price Fluctuation of Tea (P_8)	3076	51.26	**VIII**
Lack of Institutional Credit (P_9)	3732	62.20	**IV**
Lack of Awareness Campaign (P_{10})	3165	52.75	**VI**
Marketing Problem (P_{11})	1933	32.21	**XII**
High Investment (P_{12})	3156	52.60	**VII**
Less Initiative of Tea Board (P_{13})	3921	65.35	**III**

Table 5.1.07 reveals that financial problem is the major problem with highest Garret score 4655 and average score 77.58 in Mokokchung district. Accordingly labour problem with average score 66.30 is represent second, less initiative of Tea Board with average score 66.35 is third and land settlement problem with average score 21.36 is the least problem in the area. The average score and ranks of different problems are shown in Fig 5.1.02.

Fig 5.1.02: Average Score and Rank of Problems in Mokokchung District.



(Horizontal line represents problems and vertical line represents Average Score and Ranks)

5.2 Suggestion and Policy implications

The cultivation of tea is starts from preparation of seed bed and after several stages it goes to the packing of made tea. Seedlings are grown in the nursery generally for one or two years and are transplanted in the fields. The transplanted young tea plants require leveling and deep hoeing under shade trees. Proper growth of tea plants demand planting of shade trees, timely application of manure and fertilizers, maintenance of good drainage, control of pest attack and plant diseases. Besides time to time proper nurturing the plants, proper plucking of tea leaves at specific time intervals and sending tea leaves to the factories as quick as possible are the main practices associated with production of improve quality of manufactured tea. Therefore, lots of problem may arise in every stages of production of tea leaves. In this regard proper investment, application of modern technical equipment for plantation and processing as well as co ordination among the Government, Tea Board, tea growers, buyers and sellers are much essential to overcome these problems.

From the analysis of previous Chapters it is clear that the small tea growers are rendering some basic services by employing themselves gainfully and also created employment opportunities to weaker section of people on daily or weekly basis. So, the problems faced by the small tea growers have to be settled as soon as earlier as possible to make the small tea cultivation a viable enterprise. Based on the field level information and observations the following suggestions are offered in this regard.

5.2.01 Settlement of Land Problem:

Settlement of land problem is one of the major issues faced by the small tea growers. Complicated procedure and formalities of mobilization of Govt. Land is the main problem of the small tea growers which restrict the growers to received credit

and other support from the Government or from Bank and other financial institutions. The small tea growers faced problems due to non-allotment of land or pattas and occupancy right on the government allotted land or Tarji patta land or even on their own land for which they have faced the problem of registration of their tea area with Tea Board and thus they were deprived of the credit facilities of the Commercial Banks and subsidies provided by the Tea Board. So, the procedure and rules in getting land documents should be simplified and necessary action should be taken by the State Government immediately to settle this vexed problem faced by the small tea growers**.** At the same time it is also suggested that the Tea Board should take up extensive registration drive in Assam and Nagaland by simplifying the registration procedure and the Tea Board should consider to extending the benefits of various schemas to all the registered and non registered small tea growers for the betterment of the industry.

5.2.02 Fixation of Price:

The remunerative price for green leaves should be fixed by the Tea Board or by the State Government. Since the price is fixed through mutual agreement between the factories and the small tea growers or through the commission agents and the growers, the factory owners exploited the small growers by giving them fewer price. This appears as an acute problem in the lower size group of farms due to small quantity of produce and on account of their poor bargaining power. So, the Government should take necessary action on fixation of suitable price for green leaf produced by small tea growers. In regard of price fluctuation of tea leaves following measures may be taken.

- From global point of view for existence of small tea sector in free market operation need special attention to its quality of product at the same time have

to reduce its cost of production such that they improve their existing condition and less effect of fluctuation of price by reducing cost of production.

- Proper plan and strategy of tea cultivation is much more essential of getting reasonable price. Proper plan and strategy includes proper training, reduction of cost with maximum returns.
- The official and technical person of prescribed bodies (Tea Board, Small Tea Grower Advisory Cell, Tea Husbandry and technology) come willingly to the small tea growers for guidance, technical and financial support to them.
- Proper implementation of T.M.C.O. order and strict action against exploitation of factory owners by Govt. can also control the price fluctuation of tea leaves some extent.
- Setting up brought leaf factories on cooperative basis by small tea growers may be another measure to relax the pain of price fluctuation.

5.2.03 Establishment of Tea Factories:

Generally small tea growers depend on big factories for the disposal of green tea leaves. Some time factory owners refused to accept their produce when they have huge amount of green leaves of their own. So, establishment of tea factories at public sector is necessary action**.** Concerned department should take necessary action in this regard. From demand side considering the problem of price of tea leaves in the study area it is observed that the demand of green tea leaves constituted by these industries. The maximum capacity of these industries is 14000 – 30000 kg tea leaves per day. But in season period supply increases up to 35000 kg tea leaves to their factories. So these excess supplies encourage to falling the price of tea leaves. This implies the need of establishment of more brought leaf factories to absorb the excess production of tea leaves in the study area.

5.2.04 Infrastructural Development:

Road Communication and Infrastructural facilities should be developed to supply fertilizers, plant protection chemicals, agricultural machinery and implements to the small growers at subsidized rate through cooperatives and concerned State Government Departments. Poor infrastructural facilities like connecting roads to tea farm and factory, lack of power supply to use modern inputs in production process, lack of irrigation facilities, poor mode of transportation etc create many problems to the small tea growers in their production process. So Govt. and concerned department should take necessary action in this regard.

5.2.05 Introduction of Latest Technology:

Since the small tea cultivation is a relatively new venture so, the growers suffered from lack of technical knowledge and guidance on culture and practices of tea cultivation. So, introduction of latest technology among the growers is necessary. Hence, measures should be taken for giving appropriate services to the growers by the concerned departments**.**

5.2.06 Introduction of Latest Technology for Production of Export Quality Tea:

Introduction of latest improved technology such as, use of soil nutrients, selection of mother plant, stages of pruning evolved by Tea Research Association and Tea Husbandry and Technology Department in Assam Agricultural University should be followed by the farmers.

The small tea growers may use short term and long term measures to increase tea production. The short term measures for increasing yield rate that is output of tea per hectare would involve adoption of improved methods of tea culture in the existing plantations. These measures include filling of gaps in available spaces in the existing plantations, interpolating of rows in the existing areas coupled with

rejuvenation, improvement of drainage, extension of pruning cycle, optimum output of fertilizers and control of weeds, pests and diseases etc in the plantations. The long term measures on the other hand mostly comprise extension relating and replacement activities along with expansion of productive capacity and innovation in manufacturing processing etc.

The quality of tea varies with the type of leaves and manufacturing process adopted. The manufactured tea is fairly perishable, after one year of its manufacturing its quality starts deteriorating rapidly. Therefore, care and advanced method should be undertaken in each and every stages of production process and stocks should be cleared before its quality starts damaged.

5.2.07 Improvement of Credit Facilities:

Lack of finance stands as a major problem for the growers in the study area. Without institutional credit, the small tea growers with their small savings cannot afford wholly to take up this profession either as a new planter or to expand the existing plantation to new areas. So, the lengthy and complex procedure imposed by the credit institutions should be minimized. They should follow an easy procedure for disbursing loans. Concerned Department should take necessary action.

The NABARDs model scheme for financing small tea plantation should be implemented and necessary steps should be taken to provide loans as simply and quickly as possible through nationalized and cooperative banks.

Recently Self Help Groups is new concept to avail benefit from Govt. or from other financial institutions. Small tea Growers should merged in to small cohesive groups i.e. SHG which help to link small tea growers to value chain of increasing productivity and reducing poverty collaboration and partnership of STG-SHG_S reduces risk and increases chances for success. The development of groups is

also being supported by the Government of Assam and Tea Board of India which aims at formation of 200 SHG_S during the 11^{th} five years plan and also providing training and funding facilities to $SHGS_S$ members only. SHGs are the voluntary association of poor people, preferably from the same socio economic background. It is an informal group, whose member's pool savings and relend within the group on rotational or need basis. It also provides conductive atmosphere for cooperation and group environment and a cost effective delivery mechanism for small credit to its members and also to the outside members.

5.2.08 Soil Testing Services:

Soil testing is considered to be in dispensable for using scientific package of practices and for better production. The basic objective of soil testing is to guide the farmers for efficient and economic use of soil nutrients and other required inputs for production. In fact, proper use of soil testing services leads to better use of fertilizer and soil management practices. But soil testing services are not satisfactory in the sample area. Although both the State has the soil testing centres, yet most of the farmers are not aware about the benefit of soil testing. Therefore Government and State Agriculture Department should take initiatives to test the soil of the cultivable land of each and every farmer to ensure better harvest.

5.2.09 Proper Plucking of Tea Leaves:

Proper plucking of tea leaves is one of the important components which provide better price to the growers. But some time due to lack of technical knowledge the product of tea leaves of small tea growers is below standard. Therefore, an effective monitoring unit should be established to ensure that the quality of green tea leaf plucked is fine and uniform and also to disseminate market intelligence to small

tea growers. Conceptually the small tea growers should plucked two leaves and a bud within 24 hours of every alternate of 6-7 days and the distance of the factory should not be more than 10-15 km of plantation area. But some time the growers plucked one bud and four leaves definitely lowering the quality of their product which further tend to received low returns. The brought leaf factories commonly opinion that the leaves supplied by small tea growers is low quality and hence the price of their product is low. Therefore, to receive reasonable price of tea leaves the tea growers have to maintain the quality of tea by proper plucking.

5.2.10 Market Services:

Due to non availability of adequate marketing infrastructure like public buying agencies and transportation, small tea growers in the study area are deprived of getting remunerative price of their product. An efficient transport system should be put in place for transportation of green tea leaf without deteriorating the quality and immediate step should be taken to strength the marketing infrastructure so that the small tea growers can reap maximum benefit. Reasonable and remunerative prices of green tea leaves are to be ensured to the growers. Tea Board and Government agents should enter to the rural areas for procurement of green leaf with price incentives. The Tea Board and Government may fix up the price of green leaves in accordance with agricultural support price. At present agents are involved in transporting of green leaves from farmers to brought leaf factories in some remote areas. This has resulted in reduction of net gain to the growers and quality of made tea also not maintained therefore, the growers should also aware to sell their products to brought leaf factories only.

5.2.11 Supports to the Growers:

Proper guidance from Government and other non-governmental organizations should be incorporated with the small tea growers. Qualified growers should be included in small tea growers training and demonstrations should be organized to remove the constraints faced by small tea growers. The Small Tea Grower's Advisory Program in Assam Agricultural University funded by Tea Board imparted required training and provides technical supports free of cost. Tea Board also sanctioned another Small Tea Advisory Cell at Tocklai Experimental Station for benefit of small tea growers. But these agencies are not sufficient to meet the demand of training needs of small tea growers. Therefore, setting up multi point advisory centers at different locations is essential to encourage small tea growers with proper and scientific backup.

5.2.12 Equation between Supply and Demand of Tea:

The equation between demand and supply play an important role of determination price of tea leaves. The periodic slumps of tea prices tend to threaten the viability of the industry time to time. The supply of tea leaves is less price elastic. Fall of price of tea leaves the growers have no control to reduce its supply. In the peak period June to August tea leaves production reached in optimum and during which period the factory owner offer less price to the growers. Therefore, to maintain equality between demand and supply to receive higher price the growers should operate tea cultivation proper plan and strategy.

5.2.13 Research and Development:

Research is a matter of rising questions and then trying to find a solution, it is an academic activity which gives creativity thinking and knowledge. In regard current production capacity of Indian tea industry there are limits to scope of

expansion of capacity through further increase in acreage under tea plantation primarily because of constrains in respect of availability additional land suitable for tea cultivation. India records one of the lowest rates of growth in terms of expansion of its blank land. At the same time various constrain associated in various stages of production process restricts to increase productivity and yields. Therefore, to increase productivity and yield a systematic and organized research is necessary for developing technique as well as finding answers to emerging constrains and limitations. Adequate investment in research, therefore, is crucial for safeguarding the interests of industry in the future.

5.2.14 Export Promotion:

The domestic tea market of India is by far, the largest single tea market in the world. The internal market gives a strong support to the Indian producer in terms of demand and price. But in international market India faces stiff competition in terms of price which does not in domestic market. The effect of Government policies on the export performance of the tea industry has been quite adverse. There has never been a cohesive long-term policy of the Central Government which would take in to account all aspects of tea export.

Imposition of heavy export duty seriously affected the exports of Indian tea. Recently to encourage Indian exports the following incentives have been accounted by the Government.

- Abolition of excise duty on all types of teas.
- Abolition of duel exchange rate arrangements under the liberalized exchange rate management system (LERM).
- Reduction of interest rate on rupee export credit and full exemption from levy of interest tax on export credit provided by the banking companies.

- Exemption of export profit from income tax.

Although efforts have been made to boost exports in order to retain India's market share in world tea export, in face of stiff competition posed by other countries, it has became imperative to gear up promotional activities in a more systematic manner for which substantial investment needs to be made. Efforts are being made to use the World Bank's assistance for market development covering the following aspects.

- Market research survey in various identified markets; matured, developing, and new.
- Campaign for Indian tea in selected markets based on such market research.
- Generic campaign for tea in such markets.
- Setting up an umbrella unit in India to meet the requirements of product and packing standard in international markets, including development 'of ready-to-drink' products.

5.2.15 Proper Field practices:

The productivity of tea leaves relates to proper field practices which is starts from preparation of 'seed bed' and goes on to the packing tea. Seedlings are grown in the nursery generally for one or two years and are transplanted in the field. Care should be taken in various stages of production for better quality of tea. Generally following practices are associated for increasing yield and improving quality of tea.

- **Land preparation and planting**: Deep cross plough along with 45cm x 30cm at 105 cm spacing between drain is need for tea cultivation. The planting density varies from 14000-17000 bushes per hectare.

- **Variety of plant**: The tea bushes grown out of seedling yield leaves for a much longer period than cutting plant. But the gestation period is more in seedling plant. The small tea growers are generally using both type of tea plant. The grower should use approved planting seed recommended by Tea Board, Tea Grower Advisory Cell, Tea Husbandry and Technology AAU Jorhat.
- **Proper use of manure and fertilizer**: The doses of manure and fertilizer should be proper for better yield of tea. Generally ring method is used for maturing and fertilizer. However in some cases broadcasting method also applied.
- **Shade Tree Management**: Tea is grown under shade. These shade trees help in regulating temperature and humidity and minimizing the loss of water through evaporation and transpiration. Therefore, care should be taken in shade tree management.
- **Pruning:** The bushes are pruned to maintain the desired shape and height of the plantation. Pruning is carried out in pre monsoon or post monsoon period since the adequate soil moisture is prerequisite. Advice should be taken from the concerned authorities in pruning weeding etc.
- **Pest Control**: Tea bushes may attack by various dieses and pest; it should be controlled by using of proper medicines and pesticides for desired yield.
- **Irrigation**: Irrigation is another important input of tea production. Proper irrigation especially in draught period increase productivity of tea.
- **Drainage**: The drains of 2^{ft} wide and 3^{ft} deep should be spread over the area of 40^{ft} intervals along with the slope of the land such that water cannot be blocked for long time.

5.2.16 Tea Board Initiative:

The Tea Board was established by the Tea Act, 1953 to control tea industry including control of cultivation and export. The main objectives of Tea Board are.

- Rendering financial and technical assistance for cultivation, manufacture and marketing of tea.
- Export promotion of tea.
- Adding research and development activities for augmentation of tea production and improvement of quality.
- Extend financial assistance in a limited way to plantation workers through labor welfare schemes.
- To encourage and assist both financially and technically the unorganized small tea growers.

The objectives of Tea Board are designed to cover small tea growers, but in practical field less portion of growers are covered by technical and financial support from Tea Board. To avail various subsidiary schemes and bank loans registration with Tea Board is must. The complicated procedure and absence of proper documents majority of growers unable to register themselves with Tea Board and deprived them to avail financial support from Tea Board or from banks. Therefore, Tea Board should extend its benefits to all registered and nonregistered tea growers for the betterment of the industry and should simplify the procedure of registration such that various schemes are assessable to the growers.

5.3 Findings and summary of the Study:

The present work "A Comparative Study of Small Tea Cultivation in Assam and Nagaland with Special Reference to Titabar Subdivision (Assam) and

Mokokchung District" made through 120 sample tea growers of Titabar subdivision and 60 numbers of tea growers of Mokokchung district Nagaland might have some limitations, because a sample of larger dimension might reflect little different picture. Yet after analyzing the data collected from the respondents the following findings are observed in the study.

- The sex ratio in Titabar sub division is found 48.52 per cent of female against 51.48 per cent of male. The average family size in the area 6.45 is more than state average family size of 4.9 as per 2011 census.
- The sex ratio in Mokokchung district comprises 48.74 per cent of females against 51.26 per cent of male. The average family size is found 5.95 which is more than state average family size of 4.95 as per 2011 census in the district.
- Educational level in both the areas satisfactory. In Titabar subdivision 16.65 per cent and in Mokokchung district 11.49 per cent including child not going to school are illiterate, left out person in both the areas are literate.
- In Titabar subdivision 53.81 per cent and in Mokokchung district 51.26 per cent are workers. The dependence ratio is found 23.23 per cent and 17.65 per cent respectively, which is not very high in both the areas.
- The population of the sample area performed their occupation from both primary and secondary sources. Out of total tea grower respondent 29.92 per cent in Titabar subdivision and 22.45 per cent in Mokokchung district primarily engaged in small tea cultivation.
- In Titabar subdivision 40.39 per cent and in Mokokchung district 36.82 per cent land are under tea cultivation. More per cent of land covered under tea cultivation implies its importance in generating income and employment opportunities in rural areas as a source of livelihood.

- No leased-in, leased-out and mortgaged-in, mortgaged-out land is found in Mokokchung district.
- Soil testing services and technical support by the concerned official person is not found satisfactory in the study area.
- Growers in Mangkolemba subdivision is purely new growers and they yet to be organized though there is a huge potentiality of growing tea by right direction of the concerned department.
- The average production of tea per hectare in Titabar sub division is 12796.87 kg per year. On the other hand the average production in Mokokchung district is found 15106.37 kg per year which is higher than Tiitabar subdivision.
- The average cost per hectare of tea cultivation is found Rs 91405.83 in Titabar sub division and Rs 119324.80 in Mokokchung district. The return per hectare is found Rs 196943.76 and Rs 232486.99 respectively.
- The overall average BCR of Mokokchung district is found 1.94 which is less than 2.15 of Titabar sub division as the cost per hectare in the district is high.
- The net return in all farm size groups of Mokokchung district is found higher compared to Titabar sub division. The average net return is estimated Rs 113162.41 per hectare whereas in Titabar sub division it is estimated Rs 105537.93 per hectare
- The average price of tea leaves from 2011-2015 is found Rs 15.39 per kg.
- The average income generation per hectare is estimated Rs 196943.76 in Titabar subdivision and Rs 232486.99 in Mokokchung district.
- The average cost of employment generation per hectare is estimated Rs 31602.24 in Titabar subdivision and Rs 41116.41in Mokokchung district.

- The positive overall average BCR, 1.94 in Mokokchung district and 2.15 in Titabar sub division implies tea cultivation is profitable and there is positive impact of generation income and employment.
- Maximum 78.33 per cent of leaves are marketed by the growers directly with bought leaf factories in Titabar subdivision. But in Mokokchung district maximum potion of leaves are marketed by agents, accounted about 80 per cent.
- Local bought leaf factories in both the areas cannot absorb all tea leaves produced so, it emerge new factories nearby plantation areas.
- The growers have no bargaining power as well absorbing capacity of their own product.
- TMCO (2003) order of Govt. of India is not followed by the bought leaf factories in the study area.
- During peak season when production of tea leaves increases in the month of June - August the factory owners offered fewer prices to the growers.
- Majority growers produced medium quality tea leaves which are accounted 60.00 per cent in Titabar sub division and 71.66 per cent in Mokokchung district.
- The regression line of the growers in Titabar subdivision is found Y= 12210.006 - 0.533 labour + 0.722 Capital -0.805 Fertilizer -0.292 Machinery + 0.464 Irrigation and Plant protection. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation are -0.533, 0.722, -0.805, -0.292 and 0.464 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. R^2 represents 88.00 per cent of variation explained by independent variables. From F test statistics it is observed, the

collective effect of independent variable is significant at 1 per cent probability level.

- The regression line of the growers in Mokokchung district is found Y= 15175.912 - 0.040 labour -0.058 Capital + 0.727 Fertilizer + 0.020 Machinery -0.108 Irrigation and Plant protection. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation are -0.040, -0.058, 0.727, 0.020 and -0.108 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. R^2 represents 86.00 per cent of variation explained by independent variables. From F test statistics it is observed, the collective effect of independent variable is significant at 1 per cent probability level.
- In Titabar sub division 25 per cent of growers availed some benefits from various sources of which 5.84 per cent from State Govt. 8.33 per cent from Tea Board and 10.83 per cent from Bank and financial institutions. Majority 75 per cent yet not received any support from any agencies.
- In Mokokchung district except Tea Board initiative the activity of other fund delivery agencies are seems too weak. In the district 33.34 per cent of growers are benefitted by Tea Board subsidiary schemes which is funding for new plantation, but majority 66.66 per cent yet to cover by beneficiary schemes of State Govt. or Bank and financial institution.
- In Titabar sub division total 30 nos. of growers covering plantation area of 121.41 hectares are availed support from State Govt. schemes of amounting Rs 2350000, Tea Board subsidiary schemes of amounting Rs 1544910 and Bank credit amounting of Rs 3200000.

- In Mokokchung district 20 nos. of growers covering plantation area of 99.25 hectares are availed supports from Tea Board of amounting Rs 4754100.
- The Paired ‘t’ value of change in productivity in Titabar Subdivision and Mokokchung District is found -8.050 and -15.343 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that Government policies boost up productivity.
- The Paired ‘t’ value of expansion of areas in Titabar Subdivision and Mokokchung District is found -8.127 and -17.462 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that Government policies increases the plantation areas.
- The Paired ‘t’ value of reduction of cost in Titabar Subdivision and Mokokchung District is found 8.494 and 17.462 respectively. The p value is found 0.00, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected in both the areas and there is strong evidence that with aid of Government policies growers reduce their cost of production.
- The Paired ‘t’ value of employment of labour, use of fertilizer and use of machinery in Titabar Subdivision is found -8.169, -7.682 and -7.967 respectively. The p value is found 0.00 in all three inputs, which is less than 0.05 (0.00 < 0.05) since the hypothesis is rejected and there is strong evidence that Government policies encourage to introduce more inputs.
- The Paired ‘t’ value of employment of labour, use of fertilizer and use of machinery in Mokokchung district is found -18.155 , -11.541 and -18.704 respectively. The p value is found 0.00 in all three inputs, which is less than 0.05

(0.00 < 0.05) since the hypothesis is rejected and there is strong evidence that Government policies influence to introduce more inputs in the district.

- The regression line of the growers with Government policies in Titabar subdivision is found Y= 11783.932 -1.235 labour + 1.762 Capital -2.828 Fertilizer -0.426 Machinery + 0.397Irrigation and Plant protection + 0.006 Government Policies. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation and Government Policies are -1.235, 1.762, -2.828, -0.426, 0.397 and 0.006 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. The collective effect of all independent variables on the dependent variable combined effect R^2 is 0.929. It explained that 92.90 per cent of variation in income by all selected independent variables. From F test statistics it is observed that the collective effect of independent variable is significant at 1 per cent probability level.
- The regression line of the growers with Government policies in Mokokchung district is found Y= 13468.809 + 0.142 labour - 0.503 Capital + 1.766 Fertilizer + 0.495 Machinery - 0.026 Irrigation and Plant protection + 0.013 Government Policies. The elasticity coefficient of labour, capital, fertilizer, machinery, plant protection and irrigation and Government Policies are 0.142, 0.503, 1.766, 0.495, -0.026 and 0.013 per cent respectively. These values represent 1 per cent increase in income per hectare resulting in increasing corresponding values of the said inputs significantly influencing to income. The collective effect of all independent variables on the dependent variable combined effect R^2 is 0.991. It explained that 99.10 per cent of variation in total production by all selected independent

variables. From F test statistics it is observed that the collective effect of independent variable is significant at 1 per cent probability level.

- Financial problem is the major problem with highest Garret score 9407 and average score 78.39 in Titabar sub division. Accordingly price fluctuation of tea leaves with average score 73.34 is represent second, high investment with average score 60.87 is third and transportation problem with average score 25.92 is the least problem in the area.
- Financial problem is the major problem with highest Garret score 4655 and average score 77.58 in Mokokchung district. Accordingly labour problem with average score 66.30 is represent second, less initiative of Tea Board with average score 65.35 is third and land settlement problem with average score 21.36 is the least problem in the district.

5.4 Conclusion:

Although India has been continuing to be the largest producer of tea in the world, it has however been losing its primacy due to increasing internal consumption, and sluggish growth of production. Currently India produce 23 per cent of total world production (which was 38.9 per cent in 1971 and 29.90 per cent in 1996) and consume about 21 per cent of total would consumption of tea, nearly 80 per cent of the tea produced is consumed within India. Over the past 20 years India's world ranking as an exporter has come down from number 1 to number 4 the face of stiff competition from Sri Lanka and China. Therefore, to regain the past small tea cultivation may be the one alternative to increase the productivity as well as regain the past glory by its contribution to socio economic sphere of the state of Assam and Nagaland.

In the development of tea plantation of our country small tea cultivation is considered as a blessing of tea sector. From the available literature, it has been observed that small tea growers have attained respectable position in the society of our country. The role of tea in our social system is enormous. There is hardly any family who does not drink tea in morning or evening hours sitting together discussing various household matters.

In the present context of India there are limited scopes for growth of big tea gardens as after independence lots of changes have taken place in the Government legislation to improve the socio economic framework of the country. So alternative for the growth of tea industry in India is left only setting up small tea gardens. Finally Government of India as well as Assam and Nagaland Government allowed to local people to established small tea gardens by abolishing all the barriers relating to growth of this sector.

The concept of small tea cultivation in Nagaland is relatively new concept compared to Assam and the growers have lack of technical knowledge on tea cultivation. They do not have any idea about most advantageous size of tea farm and many problems arise due to their small size of holdings which in turn have an effect on the viability of the farms. Monetary constrains faced by the small tea growers also restricted further expansion of area under tea. More over the growers mostly rely on factory owners for disposing their green leaves at a price fixed by factory owners. In spite of various problems of small tea industry in Nagaland and Assam the future prospect in short and long terms appear to be good. This is because of following reasons.

- Demand for tea is always increasing both inside and outside of the country.

- Internal consumption of tea within India is increasing. 80 per cent of total production of tea is consumed domestically and only 20 per cent left out for export.
- Tea is the cheapest beverage next to water. Most of the people of the world both rich and poor take tea as a common beverage.
- Land and climate is suitable for tea cultivation in North East India.

In the field of production low productivity of small tea growers may be attribute to several problems and the constraints such as inadequate use of fertilizers herbicides, fungicides, pesticides, shade tree management, use of out dated machinery in the processing units lack of management personal in adequacy of working finance etc. In the marketing aspect small tea producers may have suffered from obtaining a reasonable price for the produces and this may affect their profitability to a considerable extent, so training has became vital and essential to induce motivation create confidence and increase efficiency of an individual.

Despite various constraints the small tea growers in **Nagaland** are now gradually organised. They throw up their challenges by their limited opportunities and led to exploring the possibility of extending tea cultivation in non traditional areas of the state. Simply by selling green leaves the industry cannot sustain in the long run. So, the Tea Board, Agricultural Department of the Govt. and the tea growers have to emphasise on setting up of small but viable tea factories inside the state so that the tea planters from interiors could be benefited. Hill areas of India whose ecology is fragile, have a crucial role in determining the ultimate rainfall and availability of water for the whole economy. Preservation of the hills is necessary not only for the benefit of the people living in the hills but also for the benefit of people living in the plains. At the same time the interest of the people living in the hills should not be neglected. They

need programmes which can help the people to improve their economic condition. Hence, the concept of 'sustainable development' by tea cultivation is highly relevant to the hill areas. So, by right direction of the concerned departments of the state may be helpful to the growers to overcome their difficulties and for improvement their existing position to build up state as well as nation's economy.

The study was designed to cover Titabar sub division within the district of Jorhat, Assam and Mokokchung district of Nagaland could be adequately collected. After analysing the data collected from 120 respondents from Titabar subdivision and 60 respondents of Mokokchung district the study reached the conclusion that.

Small tea cultivation plays an important role in generating income and employment opportunities in the rural areas of Assam and Nagaland. The population of the study area performed their occupation from both primary and secondary sources. Out of total tea grower respondent 29.29 per cent in Titabar subdivision and 22.45 per cent in Mokokchung district primarily engaged in small tea cultivation. Besides 40.39 per cent land in Titabar subdivision and 36.82 per cent land in Mokokchung district are under tea cultivation. More per cent of land covered under tea cultivation implies its importance in generating income and employment opportunities in rural areas as a source of livelihood. The positive overall average Benefit Cost Ratio 2.15 in Titabar subdivision and 1.94 in Mokokchung district implies tea cultivation is profitable and there is positive impact of generation income and employment. The average income generation per hectare is estimated Rs 196943.76 in Titabar subdivision and Rs 232486.99 in Mokokchung district. On the other hand the average cost of employment generation per hectare is estimated of Rs 31602.24 and Rs 41116.41 respectively. This is representing as a major contribution to build up state as well as nations economy.

The present study emphasises the need of Government policies and support to boost up tea cultivation in rural areas. Credit facilities and support of the Government by various schemes are represented as indispensable in promoting faster growth of the sector. Capital is helpful in rising productivity per capita and leads to an increase total productivity of 966181.80 kg to 1534193.00 kg in Titabar sub division and 467329.00 kg to 1508802.00 kg in Mokokchung district. It also helps in total expansion of plantation area of 76.24 hectare to 121.41 hectare in Titabar subdivision and 30.35 hectare to 99.25 hectare in Mokokchung district.

The small tea growers with credit and financial support introduce machinery tools and implements in production process and thereby reduce their total cost of production of Rs11119042.00 to Rs 7445171.00 in Titabar sub division and Rs 11840557.00 to Rs 7086457.00 in Mokokchung district.

Credit and financial support helps the growers to increase introduction inputs like labour employment, fertilizer, machinery etc in production process and thereby increase productivity of their farm. With credit and Government support the total money value of introduction of inputs increases from Rs 4117761.80 to Rs 6464431.50 in Titabar subdivision and Rs 2049373.00 to Rs 6725110.10 in Mokokchung district. The paired ‘t’ value of change in productivity, expansion of area, reduction of cost and introduction of inputs are found negative in all cases and p value is found 0.00 less than 0.05 ($0.00<0.05$) and there is strong evidence that Government policies boost up tea cultivation in the rural areas.

The small tea growers are facing various problems of marketing of tea leaves and some other problems as highlighted in the present chapter. The Small Tea Growers Association in both the areas claimed that the leaves produced by them are

much superior in quality compared to tea leaves produced by big tea estates yet they receive less price of their product. Therefore, they demanded own processing unit nearby their plantation areas. Financial problem is represent as common major problem in both the study areas with highest Garret score 9407 and 4655 respectively besides, other problems i.e. lack of skilled labour, lack of institutional credit, lack of technical knowledge are also pose some constrains in the growth of the sector Therefore, it emerges a collaborative effort from growers, from the Central as well as State Government to overcome these problems.

Despite various constrains of the sector the tea growers are now organized gradually. It is encouragement to the growers that demand for tea is increasing both in national and international markets day by day. In the recent past, green tea leaf produced by small tea growers is also substantially increased. It is expected that more area will be covered under small tea gardens in the near future as more educated youths are interested to be an owner of a tea garden. It will definitely help to tackle the unemployment issue of the State of Assam and Nagaland. Since, the cultivator occupies significant elite strata in the society; it is expected that more and more young educated generation will be attracted towards tea cultivation rather than being involved in cultivation of traditional crop in the near future.

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Schedule- I

(Questionnaire)

A Comparative Study of Small Tea Cultivation in Assam and Nagaland with Special Reference to Titabar Sub division (Assam) and Mokokchung District.

(For Small Tea Growers)

There are few questions in this statement before you please response to all of them without any hesitation, preferences, and consultation with others. Your response will be kept strictly confidential. These information's will be used only for Ph.D. purpose.

(**The study relates to the year 2011-12 & 2014-15)**

Name of the Supervisor

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Department of Economics.

Nagaland University Lumami.

Name of the Scholar

Debojit Konwar

Research Scholar.

Department of Economics.

Nagaland University Lumami.

Date of survey.....

Place .....

About the Respondent:

1. Name of the Respondent: .....

2. District: ..... Subdivision: .....

3. Block: ..... Mobile No. .....

4. Your farm is under..... Sub Samiti and.....Anchalik/Block Small Tea Growers Samiti.

5. Educational qualification: (Up to H.S.L.C/H.S.S.L.C/B.A/B.S.C/P.G/Other Degree)

6. Year of experience of tea Cultivation: .....

7. Your tea cultivated area covered.....bighas/hectares/acres.

Selection or Preferences of Small Tea Cultivation:

1. Choice of small tea cultivation as: ..... Primary/Secondary/No comment.

2. Main source of income: ..... Small Tea Cultivation/Govt. Service/ Private Service/Business/Others.

3. Reason of selection small tea cultivation: .....Tea cultivation is Profitable profession/other people engaged in this profession/No alternative way/ Available land/Own interest.

4. Monthly income from small tea cultivation per hectare: .....

5. Number of dependent from S.T.C.: .....

6. Do you register with Tea Board? : .....Yes/No.

7. Do you register with S.T.G.A.P? : .....Yes/No.

8. Tea cultivation is made by: ..... Family labour/hired labour/Both hired and family labour.

9. Have you any record about cost of production of per kg tea leaves?: ..... Yes/No.

Irrigation Facility:

1. Whether irrigation facility is available in your field? .... Yes/No. If yes, from what source?: ..... STW/Cannel/Tank/Pond, area under irrigation.

2. Are there any unfavourable weather condition during the crop season?..... Yes/No.

3. What is the rains fall during crop growth period?..... Low/Heavy/Normal.

4. Do you think that present irrigation facility is adequate?..... .....Yes/No. If No, what are your suggestions: .....

Credit Facilities:

1. Do you interest any credit facilities from Tea Board/Bank/or from other Institutions: ..... Yes/No.

2. Do you get any financial help? .....Yes/No. If Yes, from which sources?.....from Tea Board/Banks/Subsidiary Schemes of Govt./Other financial Institutions.

3. How do you meet the expenses for the purchase of fertilizer, seeds, pesticides etc?..... From farm income/by taking loan. If by taking loan whether it is cash or kind.....

a) Cash Amount Rs. .....

b) Kind: .....

4. What are the sources of credit? Whether it is formal or informal: .....

5. If it is formal institutional credit,

a) What is the main source? .....

Commercial Bank/Cooperative Bank/Tea Board/Other Institutions.

b) What are the rate of interest?.....Duration .....

6. If it is informal institutional credit,

a) What are the main sources? ..... Commission agents/Whole seller/Middle man/Bought leaf factories.

b) Rate of interest. Commission agents ..... Whole seller ..... Middle man ..... Bought leaf factory .....

7. Have you own KCC? ..... If yes, state the details including issuing authority and facilities availed.....

Extension Services:

1. What are the major sources of information to determine the cropping pattern and new farm technology on tea cultivation? ..... Tea Board/Small Tea Grower Advisory Programme (AAU)/ Friends/Relatives/Radio/TV/State Extension Agency/Others.

2. Did any person from Extension agency/University person visit your tea farm or village?.....Yes/No. If yes, how much?..... When? .....

3. Had any Extension Agency organized and demonstrated Farmer camps in your village to increase the production of tea cultivation?..... Yes/No.

a) If yes, what are lessons learn from it? .....
.....

b) If No, why?.....
.....

4. Have you got tested your soil and water? ..... Yes/No. If yes, in which year.....Where .....

5. Whether planting materials i.e. fertilizer, pesticides and other input materials are available in your locality ..... Yes/No.

6. Do you use proper recommended fertilizer, pesticides, etc. .....Used properly/Not used/Used excessively.

6. Do you engage any S.H.Gs? ..... Yes/No.

a) If yes, why you think that benefit is more engaged in S.H.Gs?.....

b) If Not, why? .....

Pricing of Tea Leaves:

1. Where you disposing your tea leaves?.....Local agents/Direct Bought leaf Factories/Big tea Estate.

2. Do you have any agreement with factory owners of disposing tea leaves?.....Yes/No. If yes, mention about agreement.....

3. Whether you get remunerative price of your product? ..... Yes/ No. If No, what are the reasons?.....

4. Is Tea Marketing Control Order (TMCO) is followed by Bought Leaf Factories? .....Yes/No. If Not, why?..... ....

5. Are you aware of the price at which the produce is likely to be sold in the market? .....Yes/No. If yes, from which source?.....

6. Which price policy of the Government do you prefer? Subsidy on inputs or increase in the support price:.....

7. Do you receiving any advance money from Commission agents/Brought leaf factories/Big Tea Estate owners? ..... Yes/ No. If yes, you received money because of, Family needs/Lured by factory Owners/ Lured by commission agents/Forced by any one: ....

8. Do you think you received reasonable price of your product? ..... Yes/No. If Not, why?.....

9. Whether you pay any tax/Cess/Local tax/at the time of disposing your tea leave? If yes, on which ground?.....How much?.....

10. Whether Government have taken any steps of price fluctuation of tea leaves? .....Yes/No. If Yes, which type of steps?.....
.....

11. What is the average price of tea leaves in the following years?

Year	Price/kg
2010 -11	
2011-12	
2012-13	
2013- 14	
2014-15	

12. Month wise price of tea leaves in 2011-2015.

Months	2010- 2011	2011 - 2012	2012-2013	2013-14	2014-2015
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

Marketing:

1. Have you any alternative of absorbing your tea leaves instead of supplying to Bought leaf factory or Commission agents?..... Yes/ No. If yes, where you absorbed?.....

2. Distance of Bought Leaf Factory from your tea farm:..... km.

3. Do you have Bought Leaf Factory of your own or group ownership? ..... Yes/ No.

4. What are theconstrains you face marketing of your product?

a) .....b).....

c) ..... d).....

5. What are the problems arise storing of your product?

a)..... b).....

6. Are you comfortable with various rules, fees and charges levied from you to undertake transactions?.....Yes/No. If No, why? (a).....(b).....(c).....

7. What are the constrains and hurdles in transporting the product?
a) ..... b) .....
c) .....d) .....

Problems and Amelioration:

1. If you are asked to record problems, how do you rank them?

a) ..... b) .....
c) ....d) .....

2. What are your suggestions to the Government with respect to the market facilities in putting supply and credit delivery?

a) .....b) .....
c) .....d).....

Prospect of Small Tea Cultivation:

1. What do you think about the future prospect of tea cultivation? It is Profitable/ Average/ Not profitable: .....

2. Do you think that the quality of tea leaves produced by small tea growers is Superior?.....Yes/No. If No, why?.....

3. Do you think that the small tea cultivation is profitable than other competiting crops? .....Yes/ No. (a) If yes, it is profitable because, Tea has organized market/Other crop perishable/ climate and land is suitable for tea cultivation/ Cost gradually decreases/ All of these.

(b) If No, why?.....

4. Whether the activities of Tea Board/S.T.A.P/S.T.G.A.C/Govt. is satisfactory? .....Yes/No.

a) If it is satisfactory from which ground?.....

b) If it is not satisfactory why? .....

Which steps have to undertake by these agencies for the future prospect and benefit of small tea growers.....

5. Do you interest to established Bought leaf Factory of your own or group ownership? .....Yes/No. (a) If yes, what is your movement?.....

Schedule- II

(Farm Household Interview Schedule)

Demographic Characteristics:

Sl. No	Relationship with H.H.	Marital status	Age	Sex	Educational qualification	Economic status	Occupation
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Distribution of population of sample by age group and sex:

Age Groups	Male	Female	Total
1-15			
15-25			
25-35			
35-45			
45-55			
55-65			
65 and above			
Total			

Occupational Distribution of Sample Tea Growers:

Category of works	Primary occupation			Secondary occupation		
	Male	Female	Total	Male	Female	Total
Agriculture						
Tea cultivation						
Govt/private services						
Trade & commerce						
Agricultural labour						
Household/other work						
Total population						

Land Holding Pattern of sample Grower's according to Farm Size:

Farm size (hectares)	No. of Sample	Own land	Mortgaged-In land	Mortgaged-out land	Leased-in land	Leased-out land	Total
Below 1ha							
1-2 ha							
2-4 ha							
4-10 ha							
10- above							
Total							

Land Holding Details:

Types of land nature of utilisation	Own	Leased-in	Leased-out	Mortgage-in	Mortgage-out	Total
Cultivable Land in hectares:						
Field crops						
Horti. Crops						
Tea. Crops						
Other. Crops						
Non cultivable Land in hectares:						
Homestead						
M.Tree crop						
P.P. Grazing						
Cul. Waste						
Burren/others						
Fallow land						

[In the Table, Cultivable Lands are Field crops, Horticulture crop, Tea crops and other Misc. crops.

Non-Cultivable Lands are Homestead and Courtyard, Misc. Tree Crops and Groves, Permanent Pasture and Grazing Land, Cultivable Waste Land, Barren and others Land, and Fallow Land.]

Details of Crop Production:

Major Crops	Area	Production	Productivity
Kharif crops			
1.			
2.			
3.			
4.			
5.			
Rabi crops			
1.			
2.			
3.			
4.			
Tea			
Orange			
Total			

Productivity = Total Production/Total Area x 100. (One hectare = 7.47 Bighas.)

Area and Productivity of Crops by Different Seasons and Variety:

SL. No	Crops	Variety Local/ HYV	Area in hect.	Yield Kg/ hect.	Purpose		
					Domestic consume. (Quintal)	Marketing (Quintal)	Per unit Price Earned
1.	Rice						
2.	Tea						
3.	Orange						
4.	Mustard						
5.	Green Gram						
6.	Black Gram						
7.	Areca nut						
8.	Rabi						
9.	Sugarcane						
10	Banana						

Cost of Production in Quintal and Value in Rs:

Sl. No	Seeds/crop		Fertiliser		Pesticide		Human labour wage/day	Bullock/ labour wage/day	Irrigation Charge.(Rs)	Tractor Charge(Rs.)	Other Cost (Rs.)	Total
	Qty	Value	Qty	Value	Qty	Value						
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Pattern of Fertilizer Used by the Farmers:

SL.No	Fertilizer	Source of Procurement						Total
		Quantity	Govt. outlets	Retail Shops	Seed Corporation	Open Market	Others (If any)	
1								
2								
3								
4								
5								
6								
7								
8								
Total								

Marketing Information's and Cost:

SL. No.	Crops	Distance to factory	Transportation Cost/km	Cost of Sorting /cleaning	Cost of storage	Market Fees	Others	Total
1								
2								
3								
4								
5								
6								
7								

Item Wise Establishment Cost of Small Tea Growers by Farm Size Groups. (* Plucking, Fertiliser application, cleaning, weeding, etc).

Items of Cost	Below 1 hectare	1-2 hectare	2-4 hectare	4-10 hectare	10 & above hectare	Total
Area (hectare) ---›						
1. Land reclamation, Levelling, Ploughing, Drainage, etc.						
a) Machine Labour b) Human Labour						
2. Seedling						
3. Shade Tea						
4. Fencing						
5. Human Labour*						
6. Manure & Fertiliser						
7. Plant Protection						
Total						
Cost/hectare						

Farm size wise and season wise production and returns of farmers:

Size of Groups (Hectares)	1st season		2nd season		3rd season		Total	
	Production	Value	Production	Value	Production	Value	Production	Value
Below 1 hectare								
1-2 hectare								
2-4 hectare								
4-10 hectare								
10 & above hectare								
Total								

(Production in kg, Value in Rs.)

Benefit Availed from Govt. Schemes and Credit avail by Sample Growers:

Fund delivery Agencies	No of Sample	Amount of credit	Subsidy	Kind in Rs.	Rate of interest
State Govt.					
Central Govt.					
Tea Board.					
Bank and Institutions					
Total					

Impact of Govt. Schemes on Small Tea Growers:

No of Beneficieries	Productivity in hectare		Cost in hectare		Area expansion			Input introduction in Rs/-		
	Before avail credit	After avail credit	Before avail credit	After avail credit	New plantation	Mortgage-in land	Leased-in land	Labour employment	Fertilizer & pesticide	Machinary tools &implements
Total										

Ownership of Firm Machineries, Tools and Implements:

Sl. No.	Tools and implements	Year of Purchase	Nos.	Value (Rs.)
1	Tractor/ Power Tiler			
2	Power Pump			
3	Thresher			
4	Weedier			
5	Plough			
6	Sickles			
7	Sprayers			
8	Dusters			
9	Ghani			
10	Rice Hauler Mill			
11	407 Truck/Truck/Others			
12	Dao			
13	Hand hoe			
14	Farm House Shed			
15	Hand Cart			
16	Plastic/Bamboo Basket			
Total				

Livestock and Poultry:

Sl. No.	Items	Nos.	Year of Purchase	Value in Rs.
1	Bullock			
2	Cows			
3	Young Stock			
4	Buffalo			
5	Pig			
6	Goat			
7	Poultry			
8	Fishery			
9	Others			
Total				

Sources of Income of the Households:

Sl.No.	Sources	Income in Rs.
1	Salaried Job	
2	Casual Labour	
3	Trade and Commerce	
4	Carpentry	
5	Sericulture	
6	Weaving	
7	Sale of Bamboo/Timbers	
8	Sale of Horticultural Product	
9	Sale of Agricultural Products	
10	Sale of by Animal/Animal Products	
11	Rice Milling	
12	Others	
Total		