

# **SMALL-GROWERS TEA PLANTATIONS IN UTTARAKHAND**

**M.B. Tamang**

## **ABSTRACT**

The Uttarakhand Tea development project was launched in 1993 to re-introduce tea in this region which was the first area in India to introduce tea plantations during the early 19th century. The original tea plantation flourished well till they were abandoned in the beginning of the 20th century due to socio-economic factors. In this project, 485 farmers have been assisted till date to plant 573 hectares of tea during 2008-09, that utilised 3,58,000 mandays, for which Rs 29 million(US\$600,000) was paid as wages. Apart from generating employment in these hilly tracts on the land that was lying idle, quality tea comparable to Darjeeling, was produced. A very small quantity of white tea made by special technique on order from Korea, fetched a record price of \$800 per kg. The tea plantations on otherwise unused land, are environmentally friendly and are likely to become economically self sustaining in due course of time, turning the small scale tea enterprise into an engine of economic growth of the individual grower, the family involved and the community as a whole.

## **CONCEPT**

The Present-day State of Uttarakhand, also called Uttaranchal, was a Hill Division under the Government of the State of Uttar Pradesh till 8 years ago. There is hardly any heavy- or medium-scale industry in this hilly state; therefore, there is very little employment prospect for the people of the hills, and almost none in the rural areas.

Tea plantations, among the plantation industries, are known to be the best employer of the rural illiterates and semi-literates among the plantation industries, employing 2-3 persons per ha round the year, besides being environment-friendly and providing ample business opportunity of many small-scale enterprises.

The world's best tea is produced from the tender leaves of the sinensis (China hybrid) variety of tea bushes in the cool climate of hilly region of Darjeeling district in West Bengal. This tea is famous for its muscatel-flavour which is perceived when the tea is sipped gently. it fetches very high prices in the auction or private markets. in fact, darjeeling tea is the face of the of the true darjeeling tea. therefore, there is ample scope for the production and marketing of flavoury tea, akin to Darjeeling tea, in Uttarahand.

With this objective in view, the Uttarakhand tea Development project was launched in Uttarakhand in April 1993 with the following concept:

1. Tea plantations generate employment of self-employment prospect for the illiterate and semi-literate people in rural areas.

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2. Tea plantations generate income to the farmers the sale of green leaf produced in their tea-farms to tea factories.
3. Establishment of tea plantations in hilly areas of Uttarakhand with Darjeeling type of sinensis varieties has been known to produce tea with quality similar to Darjeeling tea, which can fetch high prices in export market. This can make the plantations commercially viable units in due course of time.
4. Tea plantations can make profitable use of the farmers' lands which have been lying fallow for many years for lack of water, or being prone to theft or cattle-damage due to their distant location from villages.
5. Tea plantations are eco-friendly enterprises, particularly the organic system of tea cultural practices.

## **SOIL AND CLIMATE OF TEA AREAS.**

In Uttarakhand, tea areas are located between 28°31' and 30°58' North latitudes and 77°35' and 80°09' East longitudes. The average altitude of the selected tea areas is 1500 m, ranging between 1200 m to 1900 m above m.s.l, the majority of the plantations being concentrated between 1400 m to 1700 m. The tea plantations are established on flat terraces on the hillsides and on medium slopes.

Generally, fallow lands have been offered for tea plantation purpose. More than 6000 samples of soils from various offered sites have been analysed to-date for their chemical characteristics. The soils of the tea plantations are found to be strongly to weakly acidic (pH level of 5.0 - 6.0), and coarse sandy loam to fine silty loam. Being grazed or long uncultivated fallow land, the organic matter content in the soil is generally poor. Most of the sites suffer from potassium deficiency. The agricultural value of the land offered by farmers for tea plantation is low; therefore, these were usually left fallow for some grasses to grow during the monsoon as cattle-fodder.

The climate is tropical type at the lower altitude (< 1400 m.) to temperate type at the higher altitude (>1600 m.). Average annual rainfall is about 1200 mm, with average minimum temperatures of 9°C in winter and 28°-30°C in the summer. The mid-day temperature goes up to 36° C on some hot days in the afternoon. The sky is mostly clear, or with little clouds. Wind movement is moderate, being shielded by high-rise mountain peaks. Average Relative Humidity is 60%, generally ranging from 40% in summer to 90% during the monsoon. Sunshine hours vary between 10 hours in winter to 14 hours in end-summer.

## **STRATEGY TO OVERCOME LIMITING FACTORS**

The higher latitudes and altitudes, and lower average rainfall and Relative Humidity, in Uttarakhand are the limiting factors to higher productivity, compared to those of tea areas in Darjeeling district. At the same time, these factors are favourable also for the production of Darjeeling-type quality with good flavour. To overcome the adverse effect of these four limiting factors on tea yield and economic viability, the following strategies were adopted:

1. High Density planting-pattern at higher (1500m and above) altitude (Table 1)).
2. Planting with T.R.A's Standard Category planting materials certified for Darjeeling hills to produce dominantly flavoury tea for export (Table 1). The composition of each tea estate is planned as follows: 60% of total planted area will be under flavoury Darjeeling clones, 20% under flavour Biclinal Seed stocks, and 20% under high yielding average flavoury Biclinal Seedstocks.
3. Balanced fertilizer application or manuring according to Soil Test Reports.
4. Adopting organic system of cultural practices to enhance sale prices.

## **LAND ACQUISITION AND PLANTATION ESTABLISHMENT**

Since large tracts of tea-plantable lands are not available in the hills, the uncultivated lands of the farmers were targetted. With some effort spent on surveying plantable lands and convincing the farmers of the advantages of planting tea in their lands under the Daily-wage Employment Scheme through local village-meetings, some headway was made. Some pioneering farmers offered their farm-lands on long-term lease of 30 years in Kausani (in Districts Almora) and Nauti (in District Chamoli), while a Forest Panchayat land was offered in Champawat (in District Champawat), and the Ghorakhal Army School offered a part of their vacant land situated at Shyamkhet village in Bhowali (District Nainital).

Four Tea Development Sub-Projects, viz. Kausani Sub-project, Ghorakhal Sub-project, Champawat Sub-project and Nauti Sub-project, were drawn under the Uttarakhand Tea Development Project (UTDP) in March 1993 under the Chairmanship of Dr. R.S. Tolia, the then Hill Development Secretary of Government of Uttar Pradesh, with proposal for establishment of a tea estate of 200 ha in each district of Nainital, Champawat and Almora in Kumaun Division, and in Chamoli district - an adjoining district of Garhwal Division, of the then State of Uttar Pradesh. The proposal envisaged the establishment by the UTDP of a tea factory, too in each of the four tea estates.

The soils of the offered land were initially tested for pH status to find out their suitability for tea plantations, in a Soil Testing Laboratory set up by the Uttarakhand tea Development Project at Bhowali in Nainital District. Lands found suitable were then examined for their plantation, signed a legal bond at the office of the state government Registrar, registering the land on lease in the name of the UTDP for a period of 30 years, according to a rule of the Tea Board of India, Kolkata. These were mostly fallow agricultural lands. Lease-rent for these

lands was paid to the farmers at the following rates revised April 2008.

Land- Lease Rent Paid to The Tea Farmers W.E.F. April 2008.

Sl. No.	Period After Planting (in Years)	RATE OF ANNUAL RENT (Rs. per Ha)
1	0-3	No rent payable
2	4-6	1500
3	7-9	2000
4	7-9	2500
5	10-15	3000

Under this project, land belonging to members of the Scheduled Castes (SC) and Scheduled Tribes (ST) could not be registered in the name of the UTDP (now converted to UTD Board) According to a Government law, for leasing the land for tea plantation purpose. A second scheme of planting in such land was launched in October 2006 under the Special Component Plan scheme under the financial support of the Central Government, in Garur Development Block in Bageshwar District and in Berinag-kapkote Development Block in Pithoragarh District, both in Kumaun Division of Uttarakhand. Under this scheme, tea was planted in the land of farmers belonging to the SC/ST category, as well as the General category, in the ratio of 80:20 % by area. The leased land was not required to be registered in the name of the UTD Board, but the land was offered to the UTDB for 7 Years for tea by the farmer through an Agreement drawn in a Non-judicial Stamp Paper of Rs. One Hundred denomination. By the end of January 2009, 130 ha belonging to 200 small farmers were planted under this scheme, the average holding size being 0.65 ha

Having acquired the lands and procured seeds of the sinensis variety from Kangra district of Himachal Pradesh in November 1993, the UTDP sought the consultancy service of the Hill

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Area Tea Science Division of the Council of Scientific and Industrial Research, Palampur Complex (now Institute of Himalayan Bioresource Technology, District Kangra, Himachal Pradesh) in May 1994, to swing into real action

The author, Dr. M. B. Tamang, visited the proposed tea areas in May 1994 as a Consultant and advised the UTDB that, since high tea yields like that in Assam, West Bengal or South India will not be achievable at high altitude In the hills of Uttarakhand, the loss in yield should be compensated for by high quality of tea with Darjeeling type of flavour. Therefore, planting materials that would produce tea with flavour similar to that of the Darjeeling tea, and certified by the Tea Research Association (: T.R.A.), Jorhat-Kolkata for planting in the tea estates of Darjeeling hills, were proposed to be imported from tea estates of Darjeeling.

The author, who joined the UTDP in June 1996 as the Tea Expert & Scientist, selected the following planting materials for the different altitudes, and different spacings were determined according to the type of planting materials and altitudes of the sites, as shown in Table 1. Planting Materials and Spacings for Different Altitude

ALTITUDE	PLANTING MATERIAL	SPACINGS	PLANT POPULATION PER HECTARE	
			ESTIMATED	ACTUAL
< 1400 m.	BLCLONAL SEEDSTOCKS TS. 449, TS. 520, & CLONE UPASI-9	120 cm X 60 cm in Regular Single Hedge Pattern	13888	11000-12000
1400-1599m.	BICLONAL SEEDSTOCKS	105 cm x 60 cm in	15873	13000-
	Ts. 378, ts.379 and ts.449.	Regular Single Hedge pattern.	Regular Single Hedge pattern.	14000
1600-1799 m.	CLONES T. 78, AV.2, P.312, RR.17/144, TS.379	105 cm x 60 cm in Regular Double-Hedge Pattern	20202	15000-
1800 m. and above	Clones T.78, AV. 2, P.312, RR.17/144, T.383, TS.379	100 cm X 55 cm 55 cm in Regular Double Hedge pattern	23529	17600-18800

## NURSERY RAISING.

Initially the UTDP procured 6 tonnes (6000 kilograms) seeds of the sinensis variety collected from plucked tea bushes of the tea Farm of Himachal Pradesh Agricultural University in the district of Kangra in December 1993, and saplings were raised from these seed in nurseries located at Nal Damayanti Tal in Nainitalk District. The plants raised from these seeds were called "Kangra Jat". The Tea Expert stopped the import of seeds of this variety in view of its very low yield, inspite of its assured good quality tea.

Subsequently, improved Biclinal Seedstocks (BSS) and Clones Certified by T.R.A. for planting in tea estates in the hills of Darjeeling were procurd in 1996 from Assam and Darjeeling district. The clonal scions collected from the famous Makaibari Tea Estate of Darjeeling were airlifted from Bagdogra to Delhi, and then delivered overnight 24 hours, made into cuttings and planted on Rooting Beds, even at night.

Nursery supervisors and workers were trained by the Tea Expert in the Techniques of Vegetative Propagation and Seed Propagation when the seeds and scions were received at the nurseries. Wherever possible, nurseries were established at lower altitudes of 1200m. and below on soil of suitable characters of produce fast growth of the saplings of seeds and clones; even then, only 25-50% of the saplings could become plantable in 12-14 month. It took upto 18 months for a total of 80% of the saplings to be sent out to the field. At 1500-1600 m. altitude, it took 24 months. BSS saplings became plantable earlier and in higher numbers (50%) than clonal saplings; the former showed higher success percentage of 80% compared to 70% of the clones.

## TRANSPLANTING IN THE FIELD.

On-the-job training on the entire process of transplanting of tea in the field, including land cleaning & levelling, staking tea rows in contour



lines, digging planting pits and transplanting the young tea plants and finally mulching was imparted to the labour force engaged in tea plantation operation. In each tea estate, the trained group was divided into two groups after a month of planting; each group was engaged in planting in other sites with addition of new workers. In this way, multiple groups were engaged in planting at several sites simultaneously to speed up the pace of planting. A group of 25 workers could plant one ha in 28 - 30 days; in this way, as much as 43 ha could be planted in a planting season of six months at Kausani T.E. in 1997. Spacings and planting materials described in Table 1 were adopted. By the end of January 2009, 570 ha have been planted in small growers' land. On completion of planting in a farmer's plot, the UTDB engaged the farmer or his representatives to work in the tea farm on daily wages prescribed by the Government from time to time. After planting, the farmer was given employment in his own field @ 1.6 mandays per day per ha till the completion of tipping after the first frame-forming prune, i.e. Decentering & Cut-across (= DC+CA). With the commencement of plucking, the workers were employed @ 2.00 mandays per day per ha. The farmers were trained in important cultural practices, e.g. spraying herbicides and pesticides, different methods of fertilizer application, pruning of young tea and different types of skiffing, tipping and plucking of different types.

The daily wage prescribed presently by the State Government to a tea plantation worker is Rs. 2106 per month, paid for 26 working days and 4 Sundays.

The total number of mandays employed by the UTDB during the financial year 2009-'10, and the wages paid to them, is shown in Table 2. Women workers account for about 55% of the total work-force, who are paid equal wages as the men workers.

Table 2. Number of Mandays Employed Regularly and Wages Paid in 2008-09 on Maintenance of Planted Plots.

YEAR	AREA UNDER TEA (Ha)	NO. OF TEA FARMS	NO. OF WORKERS EMPLOYED			WAGES PAID (Rs)
			MEN	WOMEN	TOTAL	
2002-'03	290	285	72384	108,576	180960	@ Rs. 58 per man-day = Rs. 10.49 million
2005-'06	380	287	106704	130416	237120	@ Rs. 68 per man-day = Rs. 16.12 million
2008-'09	573	485	143208	214344	357552	@ Rs. 80 per man-day = Rs. 28.60 million

### AGE-WISE YIELD & GREEN LEAF SAFE

The young tea plants came into bearing from the 2nd, year after planting following the first frame-forming prune, called the De-center (= Centre-out) between 8-15 cm, above ground level, coupled with Cut-across at 30 - 35 cm. above the ground level (= DC+CA). The yield increased considerably after the second frame-forming prune, called the Re-center and Cutacross at 5 cm. above the last CA level (= RC+CA). After a 6-year pruning cycle, a Light Prune (= LP) was done 5 cm. above the last CA level. Yield of the tea plots at different ages after planting are presented in Table 3.

Table 3. Yield of Green Leaf in 1997-Planted Plots at Different Ages.

Age After Planting (in Years)	Prune/Skiff Type	Yield of green leaf (in kilograms/ha)	Yield of made tea @ 23% recovery (in kilograms/Ha)
2	DC+CA	177	41
3	Level-off Skiff	867	199
4	Light skiff	1875	431
5	2 <sup>nd</sup> . Light skiff	1359 Drought	312
6	3 <sup>rd</sup> . Light skiff	1660 Drought	382
7	RC+CA	1227	282
8	Level-off skiff	2230	513
9	Light skiff	2735	629
10	Deep skiff	2417	556
11	Level-off skiff	2810	646

The green leaf produced in the farmer's plots are plucked and sold to the tea factory of the Uttaranchal tea co. Lte. established at Kausani and run by M/S P.L. Giria, under joint collaboration with the UTBB.

In 2002, the price of the green leaf was

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fixed as follows for a kperiod of 5 years:

% FINENESS OF CROP>	41-45	41-45	51-55	56-60	61-65	66-70	71-74	75 and more
Rate (in Rs.)	6.00	6.00	8.00	9.00	10.00	11.00	12.00	13.00

Green leaf of less than 41% fineness in not accepted by the twa factory.

#### **CONCLUSION**

The establishment of environment-

friendly tea plantations in the small-grower's lands have benefitted the land-holders by advantageous utilization of their otherwise uncultivable land, and the unemployed villagers by providing employment opportunities at their door-step and preventing large-scale exodus of village youths, while providing a source of revenue for the state government. With appropriate green leaf prices, these plantations can become economically viable units in due course of time.