PART – THREE

APPLICATION IN NATIONAL ECONOMY

CHAPTER – FOURTEEN

14.0 Comparative Study of the Existing Agricultural Practices in Hills and Plains

In this chapter an attempt has been made to analyse the comparative landuse pattern of hill and plain areas of Darjeeling district.

The Darjeeling district primarily consists of two distinct units – (1) Hill areas in the north consist of three subdivisions and (2) Siliguri Sub-division, which is a plain area, lies in the south. The total area of the district according to 2001 census is 325469 hectares. The hill area has three Sub-divisions viz., Darjeeling sub-division, Kalimpong sub-division and Kurseong sub-division. These sub-divisions have eight blocks. The Siliguri sub-division has only four blocks. (Fig. 14.1)

The hill area occupies 2466.31 sq.kms. of the total district area. Siliguri sub-division has 822.27 sq.kms. geographical areas. Altitudinal variation ranges from less than 100 m. to more than 3600 m. in the district.

The pattern of agriculture within the district changes from one place to another due to varied physiographical conditions. The types of corps cultivated are also different from one block to another. As a result there is a wide variations in the production and yield rate of crops.

The crops of the district of Darjeeling can be broadly catagorised into two groups – plantation crops like tea and orange and non-plantation crops like rice, wheat, maize, millet, potato, barley, pulses, oilseeds and jute.

In order to assess the progress and expansion of agricultural sector an attempt has been made to study Hill agriculture and plain agriculture separately

DISTRICT DARJEELING
SHOWING HILL AND PLAIN AREAS

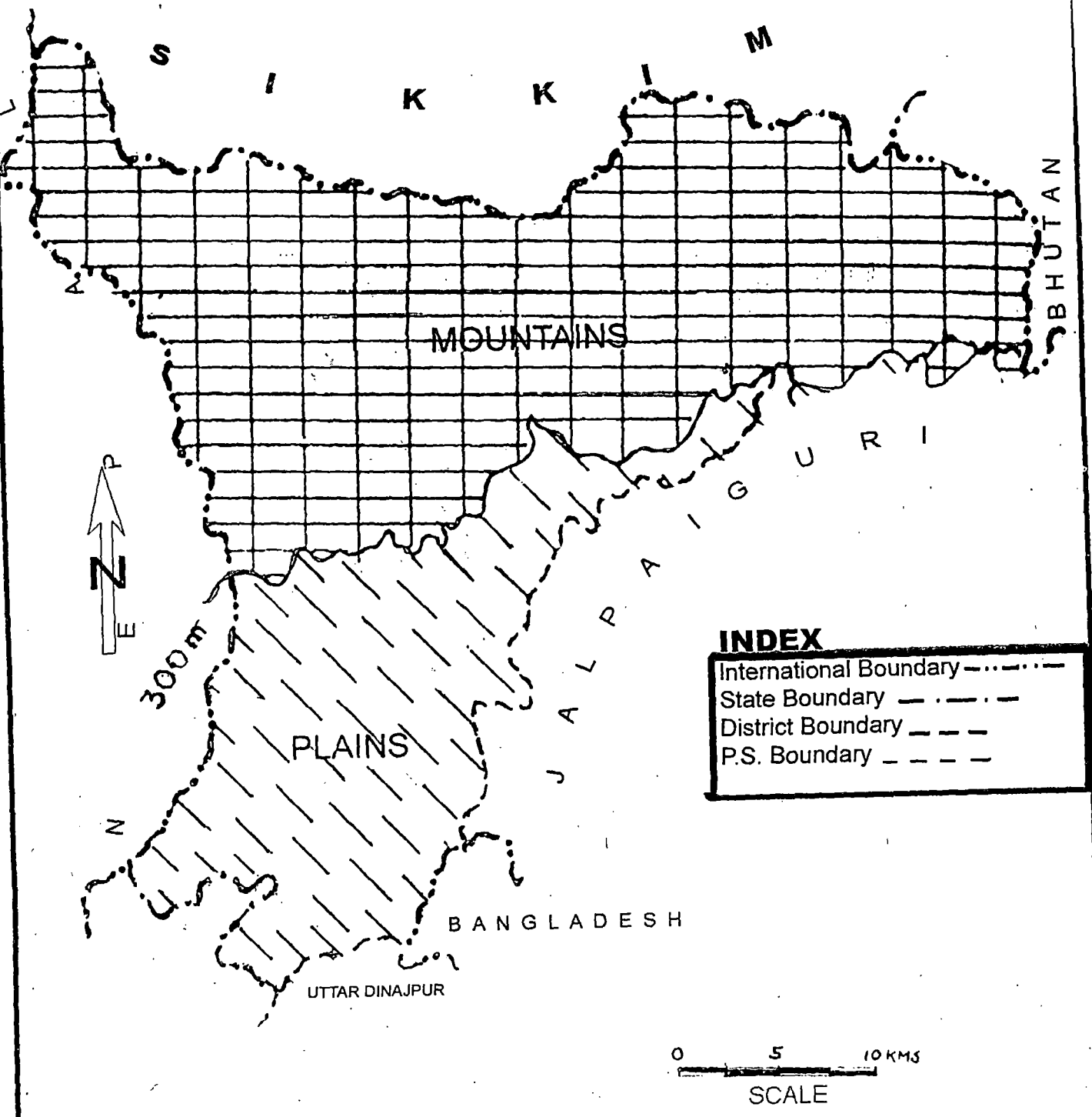


Fig- 14.1

Geographical area of the Darjeeling hill is much bigger than the plain area of the district. Land available for cultivation is extremely low in hill area than the plain area of the district. The use and distribution of land in the hill and plain areas of Darjeeling are given in Table 14.01 and 14.02 respectively.

Table 14.01

Use and distribution of land (in hect.) in the hills of Darjeeling

Name of Block	Net area under cultivation	Area under pasture and orchard	Cultivable waste land	Home stead land	Forest land	Area in which more than one crop grown
Darjeeling-Pulbazar	5855	770	440	1425	623	4240
Sukhia Pokhri – Jore Bunglow	-	-	-	-	1072	-
Rangli Rangliot	295	152	32	3	15248	404
Kalimpong I	28135	11637	2295		9332	326
Kalimpong II	10547	-	324	150	-	-
Gorubathan	2504	3010	650	257	3289	3192
Kurseong	3845	111	821	160	466	5482
Mirik	4588	100	1121	7	7360	-

Source: District Statistical Handbook, 2002.

Table 14.02

Use and distribution of land (in hect.) in the plains of Darjeeling

Name of Block	Net area under cultivation	Area under pasture and orchard	Cultivable waste land	Home stead land	Forest land	Area in which more than one crop grown
Matigara	5538	32	310	370	33	33
Naxalbari	6605	-	90	-	4173	-
Kharibari	2085	11	13	13	2196	20819
Phansidewa	-	-	-	-	1397	-

Source: District Statistical Handbook, 2002.

Area available for cultivation in the hill region is 55769 hectares. Pastures and Orchard occupy 15780 hectares of land followed by 37390 hectares of forests. Cultivable waste occupies 5683 hectares of land. Net area under cultivation and area cropped more than once are 55769 and 20852 hectares respectively.

In plain areas 14228 hectares of land is under cultivation. Pastures and Orchard occupy 43 hectares; and cultivable wasteland covers an area of 413 hectares. Forest occupies 7799 hectares of land and in 20852 hectares of land crops are grown more than once.

Topography and altitudes of the hill and plain area of Darjeeling is different from each other. Altitudinal variation of the hill area ranges from 312 m. to 3600 m. altitude has immense influence on the nature of the cultivation in the hill areas of Darjeeling. In higher altitude, the higher the production of potatoes, and barley and in lower altitude maize, paddy, millet and vegetables are grown.

Most of the cultivated areas are located between 312 m. to 625 m. The local climate depends largely on the elevation. On account of the hilly nature of the terrain there are sharp variations of temperature and rainfall between nearby areas. However rainfall is generally heavier in the southern Terai, ridges and slope near the plains. Owing to adverse physical conditions in the hills such as – steep mountains, heavy rainfall, land slip and soil erosion etc; cultivation is carried out with the greatest difficulties. The relief of the plain area represents nearly level land. Climate of the plain is also different from hill region. On the plain areas hot to warm weather remains for nearly nine months and rainfall is generally heavy between May to September.

In hill areas of the district 37390 hectares of land is under forest cover whereas 7799 hectares of land in the plain areas is under forest cover.

The area available for cultivation in the hill areas of the district is very less and constitutes about 17 percent of the total area of the district. In plain area a little more than 4 percent area is under cultivation. In Pulbazar, Rangli-Rangliot, Kalimpong I,

Gorubathan and in Kurseong blocks more than one crop is grown in total area of 13644 hectares. In plain area of Kharibari 20819 hectares of land is utilized for growing more than one crops. This shows the intensity of cropping pattern in plain area. In Matigara Block more than one crop is cultivated in 33 hectares of land.

In table 14.03 a comparison of the area and yield rate of some selected crops between the hill and plain areas of Darjeeling district is given. The study period covers 1993-94 and 2001-2002. In order to assess agricultural development in hill and plain areas, some crops have been selected for the study.

Table 14.03

Area and yield rate of some selected crops, 1993-94.

Name of Crop	Hill		Plain	
	Area in '00 hect	Yield kg/hec.	Area in '00 hect	Yield kg/hec.
Rice				
a) Aus	1.3	2524	83	3222.12
b) Aman	62.7	12369.32	289.6	2781.01
c) Boro	-	-	3.8	3173.63
Wheat	2.3	6046.42	49.5	3971.42
Potato	37.7	94428.85	07.7	24995.68
Mashkalai	-	-	0.8	644.47
Mustard	1.1	631.92	6.7	1263.84
Jute	-	-	25.2	13.7
Linseed	1.9	-	-	-
Till				

Table 14.04

Area and yield rate of some selected crops, 2001-02.

Name of Crop	Hill		Plain	
	Area in '00 hect	Yield kg/hec.	Area in '00 hect	Yield kg/hec.
Rice				
a) Aus	0.1	2159	61.4	8936
b) Aman	37.3	14568	251.4	9999
c) Boro	-	-	10.3	12660
Wheat	0.8	3096	29.8	5619
Potato	29.3	124123	19.3	56103
Mashkalai	0.9	844	1.7	1696
Mustard	-	-	0.8	2641
Jute	-	-	28.7	43
Linseed	-	-	0.6	198
Till	-	-	2.1	1461

Source: District Statistical Handbook, Govt. of W.B., 2002.

Rice

Cropwise analysis of data shows that aman rice is grown in all the hill blocks except Sukhiapokhri and Mirik. In April and May seeds are sown in seed beds and in July or August transplantation takes place to terrace land. Crops are harvested in December. Aus rice cover an area of 0.1 hundred hectares and yield rate is 2159 kg./hec. Aman rice in the plain covers an area of 250.4 hundred hectares and yield rate is 9999 kg./hec. Aus is sown in 61.4 hundred hectare and yield rate is 8936 kg.hec. Boro rice is also grown in the plain area of the blocks namely Matigara, Naxalbari, Kharibari, Phansidewa. The ideal cropping pattern implies farming activity throughout the year. In the plain areas multiple cropping is possible because of fertile land and improved irrigational facilities and use of fertilizer.

Wheat

Available data for 2002 shows that wheat is grown in 0.8 hundred hectares of land in the hill area. Yield is 3096 kg./hec. and is grow only in Kalimpong and Kurseong blocks of the hill region. It can be seen that in all the block of plain area wheat is cultivated in 29.8 hectares of land and yield is 5619 kg./hec.

Potato

Potato is the most important cash crop of the hill region. This crop gives good return in all the hill blocks. There is a great demand for Darjeeling potatoes. Total area is available for potatoes are 29.3 hundred hectares and yield rate is quite high, as good as 124123 kg. per hectare. In plain areas potato is cultivated in all the four blocks of Siliguri sub-division. In 19.3 hundred hectares of land 56103 kg./hec. potato is cultivated.

Maize

Maize is the most important crop of the hill area. It gown in almost all the blocks of the district. Seeds are gown either by broad casting or sown in rows. The crops are harvested in August or September. Maize is also grows in plain areas of Darjeeling.

Millet

Another important crop of the hill area. It is sown in April and May and harvested in October.

Mashkalai

This crop grows in 0.9 hundred hectares and yield is 844 kg. per hec. In Kharibari and Phansidewa blocks, maskalai is cultivated successfully. The area devoted to this crop is 1.7 hundred hectares and yield is 848 kg./hec.

Mustard

Cold weather crops in the hill areas are buckwheat mustard, barley and sugarcane. Barley and mustard are cultivated in very small areas of the hill. Area under mustard seeds is 0.8 hundred hectares and yield rate is 2641 kg./hec. in plain areas. This crop is sown in Matigara, Naxalbari and Phansidewa blocks.

Linseeds and Til

These crops require warm temperature. Except Matigara block Til is cultivated in other three blocks of the plain area. Linseed is not very significant so far area is concerned and yield is 1461 kg./hec.

Fruits

A large variety of fruits such as orange, plums, peaches, guava, apples are grown in hills. Oranges of Darjeeling, especially Mirik block is famous for its sweetness and aroma. In plain areas oranges are grown but they are of not of very high quality.

Vegetables

Seasonal vegetables such as peas, beans, carrot, radish, turnip, leafy vegetables, squash, ginger and chilies are extensively grown in hill region. Different types of vegetables such as bitter gourd, carrot, sweet gourd, tomato, bringal, ladies finger and many more are cultivated in fertile soil of Siliguri division. Cardamom is grown some blocks of hill areas.

Tea

Tea plantation predominates in Kurseong and Darjeeling sub-division occupying 16.19 percent and 12.12 percent of total area respectively, the corresponding figure in Kalimpong sub-division being 1.6 percent. Tea is also grown in plain areas of the

district. The total amount of tea grown in the district is from the period 1998 to 2002 is shown in table-14.05.

The yield rates of tea and jute from 1998 to 2002 are given in table 4.05.

Table 4.05

Yield Rate of Tea and Jute

'000 hectare (kg./hec)

Product	Area	1998-99	Area	1999-00	Area	2000-01	Area	2001-02
Tea	26.3	2036	26.3	1838	18.2	2771	35.6	1736
Jute and Mesta	2.4	9.1	2.3	9.8	2.2	8.1	2.9	10.8

Source: District Statistical Handbook, Govt. of West Bengal, 2002.

The total area under tea activation is 35.6 thousand hectare of the total area of the district. The table 4.05 shows decreasing trend in tea production with occasional variation. In 2000-01 the yield rate of tea was much higher than previous two years. It may be mentioned that due to clouser of some tea gardens in recent years, the production is showing a decreasing trend. The total but area has increased and production has decreased due to labour unrest and clouser of tea gardens.

Jute

Jute is the most important crop of Siliguri Sub-Division. It grows in 2.9 thousand hectares of land but the area is increasing every year. For example it was 2.3 and 2.4 thousand hectares of land allotted for jute cultivation in 1997 and 98 respectively. Similarly yield rate of the crop is also showing an increasing trend. It may be mentioned here that good climatic condition and use of improved fertilizer is responsible for the high rate of yields.

Method of Agriculture in the Hills vary with the crops selected for the cultivation. Food crops are grown both in dry and wet cultivation. Dry cultivation or in local term 'sukkakhet' does not receive irrigation. Crops grown in dry cultivation are maize and

buckwheat which is an inferior kind of millet. For dry cultivation manuring is essential and cow dung and little quantity of fertilizer is also used. Agricultural tools and implements used are 'hoes and kodalies where ploughing is not possible. Weeding and harvesting are done by the farmers and their family members. Neighbour also help in a reciprocate basis. Wet cultivation is practiced in plain areas. Aman or winter rice is first sown in nurseries, in May or early June after the first rainfall. The fields in which the seedlings are to be transplanted in July or August have in the meantime been heavily ploughed and surrounded by 'alis'. 'Bhadoi' crops are grown on higher land and ploughing begins in February and the land is ploughed for five to six times. Weeding is done and fields as then leveled. Germinated seeds are grown in the field and the crop is harvested in August. Due to non-availability of agricultural inputs, traditional methods of cultivation are followed both in hill areas as well as in plain areas of the district. However, recently many big farms are using tractors and harvesting machines in plain areas.

Agriculture laboures and number of cultivators both for hill and plain areas of the Darjeeling are plotted in table no 14.06 and 14.07 respectively.

There are 60548 cultivators in the hill areas of which 22410 are in sadar sub-division followed by 32489 in Kalimpong and 5649 farmers in Kurseong division. Kalimpong II has the highest percentage (20.76 p.c.) of cultivators. The percentage of cultivator in other blocks are – Kalimpong-I 18.41 p.c., Darjeeling-Pulbazar 14.38 p.c. and Gorubathan 13.77 p.c. Other hill blocks have less than 6 p.c. cultivators. Kalimpong also has 12849 agricultural labours. Sadar sub-division and Kurseong has 11892 and 3618 laboures respectively. As the farmers are more in number, agricultural laboures are also highest in Kalimpong division. There are less than eight percent of agricultural laboures in all the blocks of the hill area. But Mirik block has the lowest number of farmers and agricultural labourers.

Table 14.06

Percentage distribution of population according to different categories of workers and non-workers in the district of Darjeeling, 2001(P)

(Population in number)

Sub-Division/ C.D.Block/ M/MC/NA	Total workers		Class of Total Workers			
	Population	P.C.	Cultivators		Agricultural laboures	
			Population	P.C.	Population	P.C.
Sadar Sub-Division	133235	34.31	22410	5.78	11892	3.06
Darjeeling/Pulbazar	45539	39.31	16658	14.38	5.59	4.45
Rangli Rangliot	20810	32.36	3342	5.29	4031	6.26
Jorebunglow/ Sukhiapokhri	33819	33.59	2381	2.36	2675	2.67
Darjeeling(M)	33067	30.75	21	0.02	27	0.02
Kalimpong Sub-Division	87319	38.78	32489	14.43	12849	5.71
Kalimpong-I	27163	40.14	12461	18.41	4441	6.56
Kalimpong-II	24054	39.95	12503	20.76	4657	7.73
Gorubathan	22708	41.84	7475	13.77	3650	6.72
Kalimpong(M)	13394	31.16	50	0.12	101	0.23
Kurseong Sub-Division	59327	33.60	5649	3.20	3618	2.05
Kurseong	30228	35.52	3374	3.97	2214	2.60
Mirik	15874	37.59	2273	5.38	1353	3.20
Kurseong(M)	10162	25.36	2	0.00	7	0.02
Mirik(N.A.)	3063	33.37	0	0.00	44	0.48

Table 14.07

Siliguri Sub-Division	286791	35.15	22129	2.71	29470	3.61
Matigara	45846	36.18	1379	1.09	1820	1.44
Naxalbari	48702	33.69	3681	2.54	3960	2.73
Khoribari	33972	38.51	7957	9.02	10445	11.84
Phansidewa	61930	36.14	9050	5.28	13182	7.69
Siliguri(M.C.)	96341	33.85	62	0.02	63	0.02

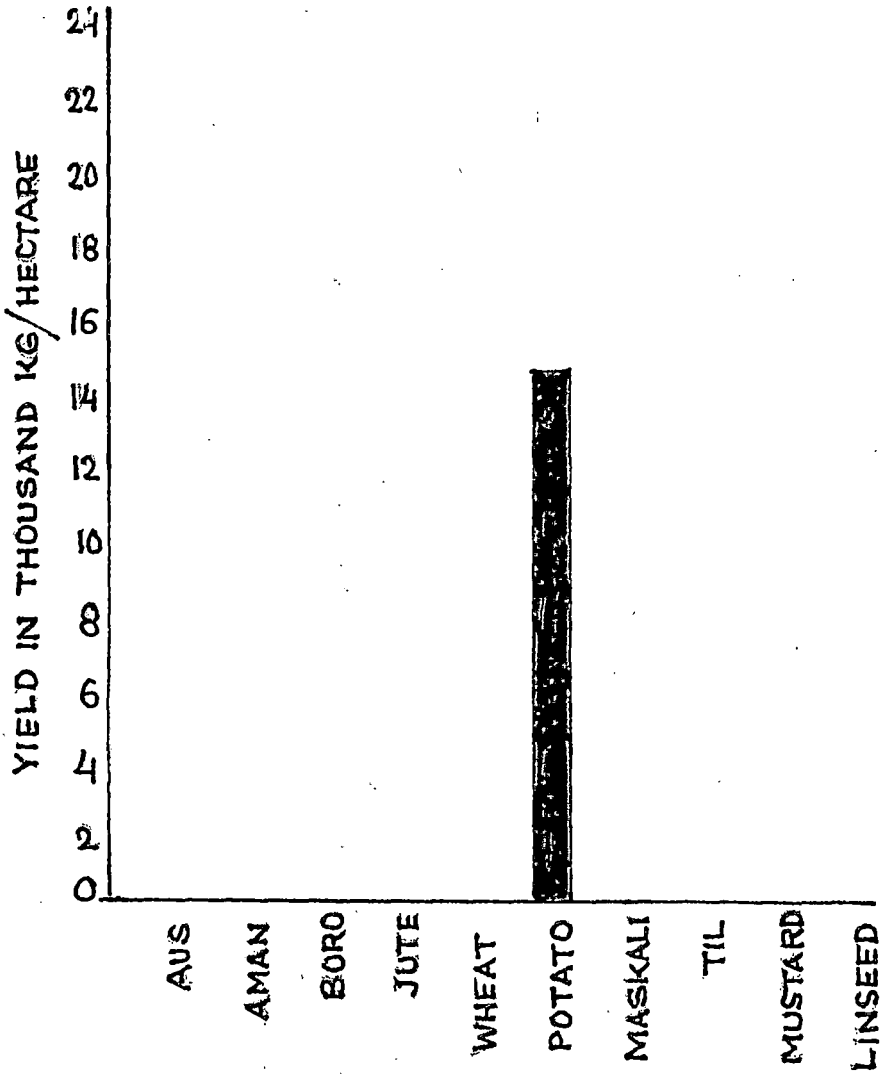
Source: District Statistical Handbook, 2002.

It can be attributed that less number of farms, farmers and labourers are due to the presence of many tea gardens in the hill areas. Majority of the people earn their livelihood from tea plantation and are associated directly or indirectly with the tea cultivation.

In plain areas of the district, total number of cultivators are 22129 according to 2001 census. Though Siliguri has less geographical area as compared to hill areas but more people are engaged in cultivation. Phansidewa blocks has 9050 farmers followed by Khoribari 7956, Naxalbari 3681 and Matigara 1379. Khoribari has 9 p.c. of farmers and Phansidewa 5 p.c. Matigara and Naxalbari together account for a little more than three percent of cultivators. Khoribari again has 12 p.c. and Phansidewa 8p.c. of agricultural laboures. Other two blocks have less than 3 p.c. of agricultural laboures.

As most of the agricultural farms are small in size and peasants are poor, subsistence farming is still prevailing in hill areas of Darjeeling. The average size of holding is less than 2 hectares in plain areas. Majority of the cultivators belong to the category of marginal farmers. Large farms are very few in the district. After independence the land area has a tendency to get smaller and smaller, per cultivating household. It may be mentioned that per capita income of the hill people is low and lower than the plain people of Darjeeling district.

Due to certain physical and economic constraints, the development of irrigation is not possible in hill areas of Darjeeling. Fields are irrigated by spring water. With the onset of monsoon the availability of spring water increases and decreases gradually. The water from spring collected into 'kholas'; the water of this 'kholas' are taken into channel and used for irrigation, only if they are flowing at higher level than the area to be irrigated. Well-defined irrigated channels exist only in paddy fields. Irrigation in vegetables and other crops are done carefully. Cardamom, an important spice of the hill is grown undershade. This spice requires moist climate. Water from khola is allowed to flow from top to the field and spread mostly by itself. Though recently,



SUKHIPOKHRI JOREBUNGLOW
2001 - 2002

Fig. 11.4.

the number of deeps tubewell is less and area irrigated is proportionately less. In 2002, 231 hectares of land was cultivated by deep tube well. 17 number of deep tubewells are operating in the hills area.

The plain areas of the district, river lift irrigation are the most popular means of irrigation. There are 61 'river lift irrigation projects', which are used by the farmers. In this area 3240 hectares of land is irrigated by this source.

Table 14.08

Roads in the Blocks of Darjeeling for the year 2001-02

(in km.)

Name of Block	P.W.D.		Zilla Parishad	
	Surfaced	Un-surfaced	Surfaced	Un-surfaced
Darjeeling/Pulbazar	68	-	307	641
Jorebunglow/ Sukhiapokhri	53	-	25	77
Rangli Rangliot	46	-	30	60
Kalimpong-I	65	-	18	131
Kalimpong-II		-	26	90
Gorubathan	41	-	13	100
Kurseong	59	-	66	4
Mirik	24	-	24	67
Matigara	31	-	35	176
Naxalbari	29	-	40	125
Khoribari	40	-	10	94
Phansidewa	30	-	8	113

Roads of Gram Panchayat and Panchayat Samity included in Zilla Parishad.

Sources: 1) Ex. Engg., P.W.D. (Roads).
2) Ex. Engg., Zilla Parishad.
3) Local Bodies (D.G.H.C.)
4) Dist. Panchayat Officxer, Darjeeling

Khoribari has 135 shallow tubewells and Phansidewa 47. Total area irrigated by these wells are 454 hectares.

Hill areas of Darjeeling has both surfaced and unsurfaced road maintained by the P.W.D. and Zilla Parishad. There are 356 kms. of surfaced roads and 1170 km. of unsurfaced roads.

In plain areas of the district 130 kms. are surfaced roads and 508 are unsurfaced roads.

There remains wide interblock variations in cropping pattern and cropping intensity in the district of Darjeeling. It is to be however, noticed that the possibility of increasing the cropping intensity is limited both in hills and plain areas owing to the scarcity of land rugged terrain and restricted scope of irrigation. Yield rate of principal crops vary from place to place within the hill areas. Potato and maize are dominant crops of the hill area and give highest yield rate because of introduction of high yielding varieties of seeds. The rise in production, thus is evident basically due to the rise in yield rates rather than the increase in areas. Though as compared to 1994 the area for potatoes has gone down by 8 hundred hectares. It is not possible to compare the yield of maize and its production due to non-availability of data. The total cropped area for rice in 1994 was 53 hundred hectares in 2002 the area under rice has gone down to 37 hundred hectares. But due to improved varieties of seeds and development in the irrigational facilities, use of fertilizer the production has substantially increased from 9845 kg. to 14568 kg./per hectare.

In the plain areas of Darjeeling production of aman and aus rice has increased but area has been decreasing. This may be due to pressure of population, demand for foodgrains, mechanization of agriculture. During the last eight years the area has been decreasing for potatoes but production is showing upward trend. During the 1993-94 7.7 hundred hectares of land produced 24995 kg. of potatoes per hectare. The study

period of 2002 shows the production of potatoes has gone up to 56103 kg. per hectare in 2002. simultaneously widespread availability and use of chemical fertilizers and improved irrigational facilities have gone a long way in enhancing the productivity of some food crops such as rice in the plain areas of Darjeeling. Jute is an important crops of the plain area. The data indicates a general decreasing trend in jute cultivated area but the production is showing an increasing trend. It is not possible to compare the production of tea and orange due to lack of data.

In the hilly areas of Darjeeling the primary concern of the peasants to produce their own food crops in their own household farm. Only a few peasants can afford to divert their land to cash crops because the cost of food items in the hill area is high, supply is uncertain and prices fluctuate. Accordingly, only relative big farmers after producing their annual requirements of food, put the remaining part of the land to the production of other crops. A remarkable change took place in case of orange and some temperate fruit crops. Increase in areas under fruits in the hill areas of Darjeeling district has far reaching effects, as it will generate some employment and more income for the people.