

# Pattern of Agriculture in the District of Darjeeling and Kalimpong in West Bengal: An Overview

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**Abstract:** *Diversified economic activities are found among the people in the hilly region of West Bengal i.e Darjeeling and Kalimpong district. In spite of that a sizable section of people depend on agriculture for their livelihood in the rural areas in Darjeeling and Kalimpong district. Natural resources provide livelihood and productive engagement to the majority of the population. A new horizon of modernization in agriculture in Darjeeling district has been opened up after Independence. In spite of that, progress in agriculture remains unsatisfactory due to difficult topography and other natural barriers. Due to geographical constraints especially in the hill region of Darjeeling district along with many other natural problems, agrarian structure along with agricultural pattern there differs from rest of the state of West Bengal. Mounting pressure of immigration since the British period has decreased the land-man ratio, rough terrain in hill areas, land alienation, and restriction on re-distribution of land in the district which have accelerated the cumulative effects on vulnerabilities of agrarian sector. An unsatisfactory picture was also depicted regarding the land reform program in these districts. On one hand, people are losing their interest in the traditional agricultural activities due to rapid growth of population and limitation of agricultural production but on the other hand they are much more interested in doing diversified agricultural activities like floriculture, horticulture etc. Darjeeling hilly area especially Kalimpong region has favourable climatic condition and soil for floriculture and horticulture.*

**Key Words:** *Cropping Pattern, Horticulture, Floriculture, Land Reform, Terrace Cultivation, Migration, Modernisation, Cash Crops.*

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**Introduction:** West Bengal is predominantly an agrarian State. Comprising of only 2.7% of India's geographical area, West Bengal supports nearly 8% of its population. According to the State Agriculture Plan for West Bengal, which has been published by the NABARD Consultancy Services Pvt. Ltd., 72% people in West Bengal live in rural areas and agriculture is their predominant occupation.<sup>1</sup> In the district of Darjeeling and Kalimpong, we notice a diversified economic activities are found among the people in the. However, the main economic activities in these districts revolve round tourism and agriculture. The word Darjeeling is derived from 'Dorjiling' which is first used by J.D.Hooker in his book 'Himalayan Journals'. The term 'Dorje' means thunderbolt and 'ling' means place. So etymologically it can be explained as a 'land of thunderbolt'. Again it is also said that the name 'Darjeeling' comes from the Sanskrit word 'Durjaya-Linga' means 'Siva of invincible prowess, who rules the Himalayas.'<sup>2</sup> Tourism, transport and tea are the three pillars of the economy in the region. All kinds of business activities in Darjeeling revolve around these three T's. Today a sizable section of people depend on agriculture for their livelihood in the rural areas in these districts though the nature of economic activities are not homogenous for whole district. Towns of hilly region in the Darjeeling district have been flourished owing to the tea, tourism and timber industry, but a sizable section of population in rural areas are depend on agriculture for their livelihood. Terai region of Siliguri sub-division has grown up as a prime centre of business and potential industrial hub whereas people of Matigara, Phansidewa, Nakshalbari and Kharibari blocks survive on doing activities related to agriculture and tea gardens. This paper aims to study the *pattern of agriculture as a component of the socio- economic activities in the districts of Darjeeling and Kalimpong.*

**Topography and Agro— Climatic Condition of the Districts of Darjeeling and Kalimpong:** Darjeeling district consists of three sub-divisions namely Darjeeling Sadar, Kurseong, and Siliguri. Among these three sub-divisions, two sub-divisions i.e. Darjeeling Sadar and Kurseong lie in Eastern Himalayan ranges. Siliguri sub-division consists of plain topography. Darjeeling Sadar consists of Darjeeling city and three community developments blocks namely Darjeeling Phulbazar, RagliRangliot, Jorebunglow, Sukhiya Pokhari. Kurseong sub-division has Kurseong town, and two community development blocks namely Mirik and Kurseong. Siliguri sub-division has Siliguri Corporation and three community developments blocks; these are Matigara, Phansidewa, Nakshalbari and Kharibari. While Kalimpong also lie in Eastern Himalayan ranges and consists of Kalimpong town and three community development blocks i.e. Kalimpong I, Kalimpong II and Garubathan. The area is bounded by the

Sikkim Himalaya in the north, the Bhutan Himalaya in the east and Nepal Himalaya in the west. The southern foothill belt is demarcated by a highly dissipated platform of terrace deposits extending along the east west axis. The inner belt is defined by a ridgeline stretching from the Darjeeling Hill to the west and Kalimpong Hill to the east, overlooking the southerly flowing Tista valley in between. Prominent rivulets contributing to the Rammam— Rangit basin, dissipate the northern slope of Darjeeling Hills.<sup>3</sup>

Geographically Darjeeling district is situated within 26°27'10" and 27° 13' 5" north latitude and between 87° 59' 30" and 88° 53' 0" east longitude. Darjeeling district is an integral part of the eastern Himalayan with a geographical area of 3,149 sq. kms. It is surrounded by Sikkim on the north, Bhutan and Jalpaiguri district in the east and Jaldhaka River separates Darjeeling from the Bhutan. It is covered by Nepal by west, where Singalila range and Mechi River creates natural division between Darjeeling district and Nepal. North Dinajpur district lies by south. Darjeeling district consists of four sub-divisions namely Darjeeling Sadar, Kurseong, Kalimpong and Siliguri. Among these four sub-divisions, three sub-divisions i.e. Darjeeling Sadar, Kurseong and Kalimpong lie in Eastern Himalayan ranges. Siliguri sub-division consists of plain topography which is also known as Terai. This part of 'Terai' is lied only 91 meters high above the sea level. Again Tista River creates a division among three hill sub-divisions. Darjeeling Sadar and Kurseong situated western side of the Tista River and Kalimpong lies on the eastern side of the river.

**Pattern of Agriculture in Hills: A Historical Brief:** The history of Darjeeling starts from the arrival of Dr Campbell, the very man ought to be credited as the founding father of Darjeeling Tea. He resided over Darjeeling from 1840-1862. From the history of Darjeeling it is known to us that economic condition of Darjeeling district was efficaciously changed after the appointment of Dr. Champbell as its superintendent. It was a landmark in the history of Darjeeling for introducing tea and cinchona industry by Dr. Champbell and to meet the purpose he gave a great impetus for immigration of the Nepali people in the region. A remarkable change had come in the sphere of agriculture when jhum cultivation was replaced by settled agriculture by the immigrant Nepali people. Apart from this, a number of significant changes took place after 1866 which were largely related to agriculture. These are (i) deforestation - large portions of the hill areas were prepared for agriculture and for human settlement by cutting down deadly forest, (ii) introduction of settled cultivation, (iii) introduction of the new type of crops, (iv) systematic use and conservation of forests for the future, (v) development of the communication system.

After independence, with the abolishment of the Zamindari system, land tenure situation and land ceiling arrangement were also changed under the West Bengal Land Reforms Act 1955. First of all, Zamindari system was not introduced in the hill region of Darjeeling district in the British period. Secondly, the objective of this law was to ceiling on land holding which implies that there would be an absolute limit to the amount of landholding. But this law was not applied properly in the Darjeeling hilly region. A new horizon of modernization in agriculture in Darjeeling district has been opened up after setting up Small Farmers Development Agency (SFDA) in 1972-74. Two projects were initiated by the West Bengal Comprehensive Area Development Corporation (WBCADC) in 1974. One project was introduced in the then Kalimpong subdivision (Now Kalimpong District) whereas another one was initiated in Nakshalbari-Phasidewa area of Siliguri subdivision. In the meantime, the State of West Bengal came into the limelight throughout the world for its success story of land reform programme after 1978. But in the context of Darjeeling district, an unsatisfactory picture was depicted by Manas Dasgupta (2003) regarding the land reform program in the district. Subsistence agriculture, livestock, forestry, plantations and allied activities are the major activity of the rural folks. Cinchona and other medicinal plants have its base here. Sericulture is another section, which has been spreading with time. Darjeeling Himalaya has only over 13% cultivable land in proportion to its total geographical area.<sup>4</sup> Soil in general is shallow, medium to light textured, surface drainage is rapid, highly susceptible to erosion by water, internally well drained, reasonably high in organic matter, poor in bases and phosphate and distinctly acidic in reaction. Apart from the topographical issues, problems related to land holding, marketing, labour problems etc are common for both hills and plains regions of the said districts.

**Cropping Pattern in Hilly Region:** Physiography in the area has made agricultural conditions extremely diverse. Agriculture is greatly impacted by altitude and slope aspect. On account of cold no crops are grown above 9500 feet asl. Agriculture in this region is grossly rain dependent and distributed between pre-kharif and kharif seasons. Presently, the major crops grown in the hills are rice, wheat, maize, kalai, soybean and mustard. For rice and wheat, irrigation is must and available facility is utterly insufficient, therefore, their cultivation are more conducive at lower hills with increasing use of high yielding varieties. Broadly, agricultural crops in the Himalaya can be grouped into two categories— Food crops and cash crops. Food crops include rice, maize, potato, wheat, barley etc. while the cash crops are tea, cinchona, ginger etc. The methods of agriculture change with the crops. Fruits such as orange, papaya, peaches, guava, plumbs and even mangoes are

grown in the valleys and in areas with low altitudes. Livestock and animal husbandry engages a measurable proportion of rural folks in the area. Grazing of livestock is a regular practice in the valley area of the Darjeeling Himalaya.

The topographical pattern of the Darjeeling Himalaya has made cultivation extremely difficult and needs considerable input/ engagement of human labour. Bare rocky and steepness restrict agriculture operations to a great extent. Almost all upper ridges of the region are forest areas; tea plantations and native agriculture occupy mid-hill section.

Usually agriculture is practiced on irrigated terraces called “Khet” or rain fed terraces termed as “Bari”. Khets are mostly seen on the lower altitudes (below 1500 meters, approximately) and is meant mainly for paddy cultivation although winter or dry season crops are also grown in addition to paddy in many cases. Bari on the other hand are prevalent both at lower and higher altitudes (up to 3500 meters, approximately). With the increase in altitudes, the proportion of Bari to Khet increases, as a result of cooler dry season conditions, increasing slope gradient and inaccessibility of water. A large section of people are living in Khasmal areas, who practice traditional agriculture where a more than 35 % of land falling under such category. Livestock supply draught power and serve as the primary and perhaps the most important source of fertilizer. The villagers generally use the pairs of oxen to cultivate the terraced fields. Animal manure is indispensable for field fertilization as artificial fertilizers are hardly used.<sup>5</sup>

Cultivation of paddies extends down the mid-hill section up to the bottom valley in some cases. Cultivation in drier months is limited to small patches where residual moisture/ limited irrigation from nearby rivulets are available. Almost all arable lands have a slope of more than 8%. In some extreme cases poor farmers are seen cultivating very steep slopes that have gradients of 40% or even more. The annual rainfall is very unevenly distributed over the year. Four fifth of the precipitation is witnessed from June- September. So the hill farmers face surplus water during these months and there is acute scarcity of water from February to May. These conditions necessitate aggressive intervention in conserving the precious topsoil during monsoon as well as harvesting life saving irrigation water for the dry months. This could only be done successfully by covering the arable and non-arable lands with perennial plants, disrupting the slope of terraces with vegetable hedges planted along the contour and encouraging cultivation in levelled to inward terraces for checking erosion and by harvesting water in durable structures on stable marginal lands. The necessity and importance of soil conservation measured in agricultural and other lands is very important.<sup>6</sup>

Census figures reflect that both the number of cultivators and agricultural production have been declined in the district in post independent era. Mounting

pressure of immigration since the British period has decreased the land-man ratio, rough terrain in hill areas, land alienation, and restriction on re-distribution of land in the district which have accelerated the cumulative effects on vulnerabilities of agrarian sector. On one hand, people are losing their interest in the traditional agricultural activities due to rapid growth of population and limitation of agricultural production but on the other hand they are much more interested in doing diversified agricultural activities like floriculture, horticulture etc. Darjeeling hilly area especially Kalimpong region has favourable climatic condition and soil for floriculture and horticulture. These activities are becoming an income generating accompanied with agriculture among the rural people.

**Salient Features of Agriculture in Darjeeling District:** According to 2011 census, majority of the population that is 60.58 % of the total population of Darjeeling & Kalimpong (the then Darjeeling) district lives in rural areas.<sup>7</sup> Main source of income in the district is agriculture and per capita income is Rs. 87,695.<sup>8</sup> 76.88% of the rural population of Darjeeling Hills with highest in Kalimpong subdivision (now Kalimpong District) is dependent on natural resources for their livelihood. (Data Source: West Bengal Human Development Report 2004).<sup>9</sup> So, natural resources provide livelihood and productive engagement to the majority of the population. In spite of that, progress in agriculture remains unsatisfactory due to difficult topography and other natural barriers. Due to geographical constraints especially in the hill region of Darjeeling district along with many other natural problems, agrarian structure along with agricultural pattern there differs from rest of the state of West Bengal. Again agricultural pattern of hilly region in Darjeeling district is not similar to the alluvial plains of the southern part of this district. Agriculture in Darjeeling District is characterized with the following features:

- **Terrace Cultivation in the Hills while Settled Cultivation or Plough Cultivation in the Plains:** Terrace cultivation is a very common feature in hilly track of Darjeeling district. But unlike the hilly regions, plough cultivation is popular in the plains region due to gentle slope of land.
- **Traditional Cropping Pattern:** Agricultural pattern in Darjeeling hills is traditional in nature. Due to rugged landscape with full of ridges and spurs new technologies like tractor, power tiller etc are not accessible there. Farmers use simple tools like kodali, hoe, spade, folk etc for cultivation. Major agricultural activities are done by manually. So, cropping activities are labour intensive.

Unlike the hilly region, plains region of this district is convenient for using animal power/traction by animals (like bullocks). In some parts of the plains region new technologies like tractors, power drillers, winnowing fan, paddy thresher machines etc are introduced which reduce human labour. But it is also true that these equipments are afforded by comparatively rich farmers. Although low gradient of the 'Terai' region which is pertinent to proper irrigational facilities, agriculture in substantial portion of this region is depended on monsoon.

- **Non-commercial Mode of Production:** People in the hill region of Darjeeling district mostly are engaged in subsistence type of agriculture. Major food crops produced there are maize, millet (locally terms as Kodo), wheat, barley, pulse etc whereas paddy, maize, potato and other vegetables are the major products in the plains region. Production of crops is carried out on the basis of household requirement because of the reason that the fragmented local market has very negligible influence on agricultural sector. Except some cash crops like ginger, orange and cardamom, cropping yields in hill and rice and vegetables in plains are relatively less.
- **Diversification of Agriculture:** Due to overpopulation, increasing pressure on land, marginalisation of land holding pattern accompanied with environmental degradation people in the hill area are not satisfied with the traditional structure of agriculture. Nowadays agriculture is developing in the Himalayan region and Terai region through the diversification of agriculture with animal husbandry, horticulture, floriculture, cash crops-fruits, off-season vegetables and also medicinal plants etc. It has become an important mechanism in the alternative livelihood strategy due to its potentiality of agro-climatic condition with rich quality of flora and fauna.
- **Small and Marginal Land Holding:** Total area of Darjeeling district is 325469 hectares and total net area sown is 133582 hectares.<sup>10</sup> The three hill subdivisions of Darjeeling District namely Darjeeling Sadar, Kalimpong and Kurseong comprises an area of approximately 2417 sq. Km. According to the Economic Survey Report, 2011, out of total population approximately 76.88% people are living in rural areas in Darjeeling district and a sizable proportion of that rural population are directly and indirectly is engaged in agriculture. Most of the cultivators are small and marginal land holders. As per the Economic Survey Report of 2011, 53.99% population of rural area have small and marginal land holding.<sup>11</sup>

### **Impediments of Agriculture in Hill Region of Darjeeling and Kalimpong District:**

Cultivation in Darjeeling district however faces several problems which limit the scope of agriculture there to a great extent.

- **Topographical Barrier:** Most of the part of this District are hilly and situates at high altitudes, unfit for cultivation. Whatever land is left for cultivation is besieged by variable agro-climatic conditions, difficult terrain, steep slope, acidic soil and prolonged dry spell. This mountainous region faces a number of problems concerning soil and water management. No proper arrangement for channelizing the excess water i.e. lack of irrigation facilities, land slide, steepness of the land which are the major constrains for developing agriculture in Darjeeling hills.
- **No Feasibility of Increasing Agricultural Area:** Forest is well protected by the government in this region. The government does not allow deforestation for the sake of agriculture. So, people have very limited access on forest area. Land use pattern of Darjeeling district indicates that 38.2% area is under forest cover. 49.17% land is cultivable land.<sup>12</sup> Again a large amount of areas are covered by tea gardens.
- **Fragmentation of Land:** The implementation of Operation Barga in West Bengal initiated the distribution of agricultural land among the landless families. Highly fragmented land and practice of weak technology and information lead to low level of agricultural production.
- **Lack of Market Incentives:** In this region farmers face problems in accessing market information along with postharvest processing. Because of lack of regular markets and reliable marketing, farmers from hills are not capable to sell their products on satisfactory prices. Again farmers are rare beneficiary of cash crops because of middlemen/intermediaries.
- **Scarcity of Labour:** One of the main problems in agriculture in Darjeeling District particularly in hilly region is the shortage of labour in farming activities. Labour cost is also very high in the hilly region. It is Rs.700/- per day for male and Rs.300-350/- for female workers. It is a fact for the plain region also. For the villagers agriculture is now a non-profitable job, so out migration is very common among the rural people.
- **Lack of Interest in Agriculture:** For the young generation, especially educated young people are less interested in doing agriculture because of it is no longer sustainable and profitable also. Young people want to get into the non-agricultural works like construction, carpentry, engagement in 100 days work scheme etc which are more profitable than farming. Not only that out migration is increasing day by day



**Differences in Agriculture in Darjeeling District on the Basis of Topography:** There are some basic differences in agricultural sector in Darjeeling district particularly on the basis of topography are as follows:

<b>Sl. No.</b>	<b>Agriculture in Hills</b>	<b>Agriculture in Plains</b>
1	Farming is featured with terrace cultivation in hills.	Farming is termed as settled cultivation in plains region
2	The traditional framing pattern is found much more in hills in comparison to plains.	In plains, modern techniques and equipments of cultivation are used much more.
3	In hills, the land left for cultivation is besieged by variable agro-climatic conditions, difficult terrain, steep slope, acidic soil and prolonged dry spell. Further, a farmer faces a number of problems regarding soil and water management.	In plains, such problems are not experienced by the farmers.
4	In hills, the diversification of agriculture is more prominent with animal husbandry, horticulture, floriculture, cash crops like fruits, off-season vegetables and also medicinal plants etc.	In plains, evidence of such diversification is directed to skill based activities e.g. carpentry, electric mechanic, automobile mechanic etc.
5	In hills, people are mostly engaged in subsistence type of agriculture with major food crops as maize, millet (locally terms as Kodo), wheat, barley, pulse etc.	In plains, paddy, maize, potato and other vegetables are mainly grown.
6	In hills, lack of regular markets and reliable marketing, hills farmers are not capable to sell their products with satisfactory prices/rates. Further, they are also affected by the middlemen/agents.	In plains, regular market is there but the farming class is badly affected by the dominance of the middlemen/agents.

**Conclusion and Suggestions:** To sum up, agriculture in the Darjeeling and Kalimpong Himalayas and Terai play an important role in earning livelihood in the rural areas but due to uneven topography and other difficulties the income of the farmers is not improving. Under the circumstances, the government and other agencies need to come forward for encouragement and providing incentives to the farmers. In this regard the followings may be considered—

- Efforts should be taken to educate the people about eco-consciousness and integrate education on eco-conservation.
- Attention also needs to be devoted to improve the local human resources to effectively serve the new human resource demands in the locality.
- Public participation directly and through voluntary organizations and non-government organizations is essential for utilizing the natural resources for economic development. Along the line, the facility for quality control, packaging and transport facilities for marketing in the region is a paramount requirement of the region.
- Setting up agro-based industry around available natural resources and link support through agricultural and agro-based industrial loans, supply of improved tools, and other such incentives. In this context, initial financial support should come from institutional sources.
- Integrated development plan to be envisaged for promoting *flowers, spices, traditional crops* like off-season vegetables like broccoli, capsicum, red cabbage, lettuce etc., *fruits* like mandarin orange, strawberry, banana, passion fruit, avocado, plum, kiwi etc. Mushroom can be promoted since it has strong market demand and the initial cost of cultivation is low. The farmers income will escalate if they consider soybean and potato as alternative for rice and wheat.<sup>13</sup>
- A complete reorientation regarding production technique, pest control and marketing Ginger and Cardamom is a very important step to be initiated.
- Sericulture and promotion of commercial use of bamboo, dairy, poultry farming, piggery, meat processing, apiaries to be promoted in the region.

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