

CHAPTER – 8

IMPACT OF CHANGES IN AGRICULTURAL LAND USE

8.0 Introduction

The present chapter deals with the impact of changes in agricultural land use scenario of Uttar Dinajpur District. As the different socio-economic problems connected to agriculture are so closely inter-linked and characteristics of all parts of the country that possible to suggest any single plan for their solution. Even today when the district is being rapidly industrialized and increasing of population nevertheless, agriculture is the backbone of the district. For this reason, till now more than 65 per cent of the total population is engaged in the agricultural sector. The problems relating to land use change vary from one place to another place and also in command of their enormity. Not only that, there are many problems in agricultural farm families but overall upliftment increased of the farmers day to day. In the district, agricultural inputs development is staring. Because, improvement of irrigation supply, available supply of chemical fertilizers, HYV seeds, pesticides in the local market, rural transport facility and banking loaning system is being progressed. In the time of field observation, per capita income, change yield most of the crops, level of education are increased than the past day and agricultural unemployment increased for modernization in agriculture. In the district, per capita annual income of farmer's families is Rs. 16,914, about 81.58 per cent of the total farmers family members are literate, yield rate of different crops are increased within the 17 years (2000-2017) i.e. paddy increased per hectare 16.91 per cent, wheat 54.96 per cent, maize 47.43 per cent, potato 28.78 per cent and jute 19.43 per cent in one hand. On the other hand, agricultural unemployment increased to 89.99 per cent from the year 1991 to 2011 and fragmented the land for changes in agricultural land use. The main objective of this chapter is to study changes in agricultural land use impact observed in per capita income, level of education in the agricultural sector, change in yield rate, agricultural unemployment and change of land ownership. The impact of changes in agricultural land use in the district is discussed on the basis of primary household survey data (agricultural families).

8.1 Per capita income

Per Capita Income (PCI) measures the average income earned per person in a given area in a specified year. To study the economic position of the agricultural family, it is requisite to have some important elementary knowledge about its income. Per capita income is often used to

determine a district's as well as the country's standard of living of the people. It helps to determine a district's development status and it is one of the three methods for calculating the Human Development Index (HDI) of a country. Not only that, it is true that a privileged per capita income represents a higher purchasing power of farmers, as members of the agricultural family have extra money to expand. This is practical in investment. Even though per capita income is essential, it is only helpful when there are a comparatively low number of very high earners in the agricultural society. In the district, most of the farmers are marginal and small. So, their income from the agricultural sectors is limited. The status of agricultural family members depends on the per capita income of the farmers. So, they are engaged in different substitute fields for family income. To measure their economic condition as well as per capita income it is inevitable that one should know how much is their earning and how much they spend. A farm household earns its income from various sources. Different income sources are income from agriculture, income from livestock, income from wages and salary, income from nonfarm business etc. (Ranganathan, 2013). But the present study has analysed the income of the farmer's households from the cultivation sources. This is the income a household earns from the cultivation of various crops. These could be seasonal crops or annual crops. Also some of these will be food crops, a part of which could be used for own consumption of the household. In this reference, a few data about their per capita incomes have been collected here. All the income groups have been shown in the table 8.1 and it may be divided into five major income groups.

Table 8.1 Block-wise average per capita income of sample farmer families from agricultural sources of Uttar Dinajpur, 2017

| Name of the C.D. Blocks | Survey Households | Total Earning Members | Average Income of Earning Members | Family Income (Rs. in '000) from Agricultural Sectors (Per Annum) | | | | | Per Capita Income (Rs./ annum) |
|-------------------------|-------------------|-----------------------|-----------------------------------|---|-----------|-----------|-----------|-----------|--------------------------------|
| | | | | <40 | 40-60 | 60-80 | 80-100 | >100 | |
| Chopra | 40 | 57 | 64,950 | 6 | 14 | 12 | 5 | 3 | 16,983 |
| Islampur | 40 | 53 | 58,540 | 5 | 9 | 10 | 8 | 8 | 13,851 |
| Goalpokher-I | 40 | 49 | 78,580 | 2 | 4 | 14 | 11 | 9 | 16,656 |
| Goalpokher-II | 40 | 54 | 69,750 | 3 | 5 | 9 | 16 | 7 | 17,121 |
| Karandighi | 40 | 55 | 70,125 | 4 | 3 | 7 | 11 | 15 | 16,991 |
| Raiganj | 40 | 49 | 72,305 | 5 | 6 | 10 | 14 | 5 | 17,034 |
| Hemtabad | 40 | 50 | 77,560 | 3 | 7 | 8 | 12 | 10 | 17,628 |
| Kaliaganj | 40 | 47 | 73,965 | 2 | 6 | 13 | 10 | 9 | 16,714 |
| Itahar | 40 | 51 | 74,280 | 5 | 4 | 9 | 12 | 10 | 19,037 |
| Uttar Dinajpur | 360 | 465 | 71,111 | 35 | 58 | 92 | 99 | 76 | 16,914 |

Source: Based on a household survey of 360 respondents and compiled by the researcher.

An examination of the table 8.1 shows that, in 360 sample households 465 members are earning members and their average per capita income from agricultural source is Rs. 71,111 per annum. On the basis of the earning member, the highest-earning member is observed in Chopra Block. It constitutes about 12.25 per cent of the total (district's) earning members. And the lowest earning member is observed in Kaliaganj Block which is 10.10 per cent of the total earning members. But the average highest income of earning members is observed in Goalpokher-I Block and lowest average income of earning members is Rs. 78,580 per annum. On the other hand, lowest average income of earning members is observed in Islampur Block whose average income is Rs. 58,540. It is observed in the time of field survey that average size of agricultural land per family is comparatively bigger in Goalpokher-I Block than the other blocks of the district. Generally, per capita income of the earning members is high in this block. Not only that, production and productivity rate of crops per hectare is also high and valuable crops like turmeric, ginger and maize are highly produced in this block. But in Islampur Block per hectare production is comparatively low and total area of holdings per family is small. So, most of the farmers are marginal and small. It is also observed from the table, per capita income of the agricultural family is highest in Itahar block and lowest in Islampur Block. The average per capita income of the family is Rs. 19,037 per annum in Itahar Block and Rs. 13,851 per annum in Islampur Block. It is an interesting matter that many times per capita income is high and low depending on the size of family members. For example, we can say that the average income per annum is Rs. 78,580 in Goalpokher-I Block but the family members are high (231 members of 40 sample households). So, the per capita income (Rs. 16,656) per annum of the family is comparatively low than the other blocks of the district. Not only that, sometimes farmers do not get proper rates for selling their agricultural goods. The appropriate status of per capita income (per annum) of agricultural families are considered and divided into three major groups depending on sample farmer's low (Rs. 13, 851 in Islampur block) and high (Rs. 19, 037 in Itahar block) average per capita income which have been shown in the table 8.2.

Table 8.2 Per-capita income groups of sample households in Uttar Dinajpur District.

| Per capita Income (Rs.)/ year | No. of C.D. Blocks | Name of the C.D. Blocks | % of the total Blocks |
|--------------------------------------|---------------------------|--|------------------------------|
| < Rs. 17,000 | 5 | Chopra, Islampur, Goalpokher-I, Karandighi and Kaliaganj | 55.55 |
| Rs. 17,000- Rs. 19,000 | 3 | Goalpokher-II, Raiganj and Hemtabad | 33.33 |
| > Rs. 19,000 | 1 | Itahar | 11.11 |

Source: Compiled by the researcher from the table 8.1

From table 8.2 it is revealed that low per capita income per annum is observed in five blocks namely Chopra (Rs. 16,983), Islampur (Rs. 13,851), Goalpokher-I (Rs. 16,565), Karandighi (Rs. 16,991) and Kaliaganj (Rs. 16,714) with an income index value of below Rs. 17,000. Causes of low per capita income per annum of the farmer's family are- most of the farmer's family size is big, area of holding is a very small and low price of crops. This zone is mainly located in the Northern part of the district and covers about 55.55 per cent of the total block in the study area (figure 8.1). But medium per capita income per annum of agricultural family is limited to three blocks namely Goalpokher-II (Rs. 17,121), Raiganj (Rs. 17,034) and Hemtabad (Rs. 17,628) with an index value range between Rs. 17,000 to Rs. 19,000. This zone is located in middle part to Northern part of the district. The high per capita income zone lies in Northern part of the district with an index value above Rs. 19,000. In the study area, the block having the high per capita income per annum observed in Itahar Block (Rs. 19,037).

Only in three blocks namely Islampur, Goalpokher-I and Kaliaganj farmer's family per capita income per annum is far below the district average i.e. Rs. 16,914. The causes of high per capita income in this block are- family member size is small, production rate per hectare is high, area of holdings small to medium, availability of agricultural research and extension service have led to farmers growing two or three crops in a year. It is sure that the income from the agricultural sources increased day to day due to the modernization in agriculture, use of HYV seeds, improved irrigation system and many others. It is observed at the time of field survey that in those blocks where farmers are more educated, per capita income of those blocks' farmers are generally higher owing to increased awareness about farming practices. On the other hand, it is also true that those farmers whose per capita income is high whose families have per hectare crop production higher.

8.2 Level of education in the agricultural sector

Farmer's education has an important role to play in receiving and using the information on modern technologies as well as specific problems of crops. The study investigated the education scenario of agricultural families and level of education in each sample of households. They were selected based on their locations as well as an area of cultivation. Data were obtained from 360 farmer's families. The major findings in the study were that the families with higher education levels have an output which provides the highest returns on agricultural production and productivity. Not only that, the productive value of education has two major effects on agriculture: "worker effect" and "allocative effect" (Welch, 1970). Worker effects are described as the condition whereby an educated farmer, given higher input can create a superior

output that is improved use of resources. It is seen that improved outputs per unit change are in educated families if all other factors are fixed. With a locative effect, a worker is capable to attain information about the cost and quality of inputs and understand the information to make decisions that will develop output.

It is stated that education raises in the agricultural sector- improvement in farmer’s skills, enhancement of farmer’s ability to obtain, understand utilize, new input and improvement of the overall condition. Kaliranjan and Shand (1985) in their study of cultivators in the Tamil Nadu region alluded that formal schooling does not necessarily increase farmer productivity but rather than non-formal schooling. It was explained that an illiterate farmer can learn new ideas and modern technology from a neighbouring educated farmer from different sources.

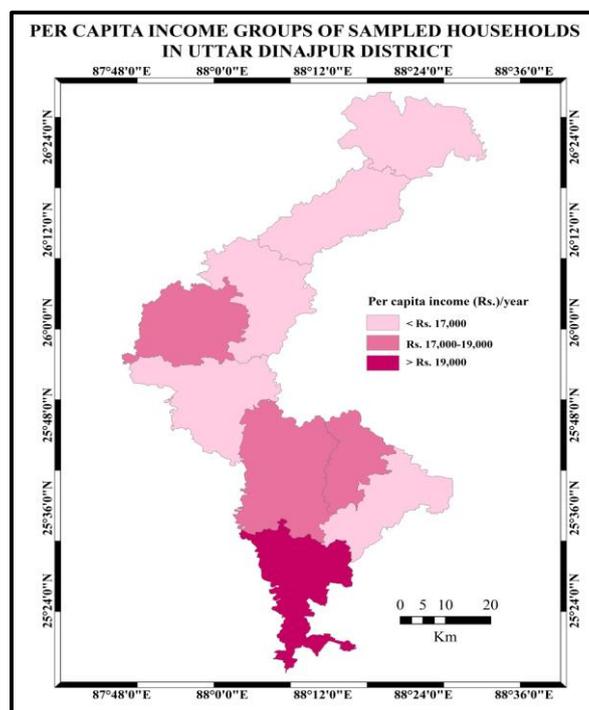


Figure 8.1 Per capita incomes of sampled households in Uttar Dinajpur District.

Therefore, ensuring access to quality education for all farmers, particularly poor and rural farmers is central to economic and social development of Uttar Dinajpur District as well as India (Gille, 2010). The study concluded that education is important to the improvement of agricultural production, mechanization, development of irrigation systems and farmer’s knowledge into cultivation etc. The educated farm family members, particularly those with high school education and in the age group of 20-59, can donate more towards the processes of mechanization and bio-chemicalization at farms. Ojha, et al, (1991) have observed that the share of high school literates and above was low in the lower size classes (around 10 per cent)

and high in the upper size classes (around 25 per cent) in the 15-59 age group. But the low literacy rate in the former size-class can describe the problems faced by the Extension Service Centres in the propagation of green revolution technology among them. It also noted that the education level was high near the town area. The high literacy rate in the former has brought about a great scale diffusion of modern farm machinery vis-a-vis the latter where the traditional methods of farming are in vogue. Based on the educational level, farmers were categorized as illiterate, 5th standard, 8th standard, 10th standard, 10+2 standard and graduates and professionally qualified. In the district, most of the farmer's families are illiterate. So, they are dependent on educated farmers. An educational scenario of the farmers is shown in the table 8.3.

Table 8.3 Educational level of farmers in Uttar Dinajpur District of sample households.

| District | No. of sample village | No. of sample surveyed households | Level of education | Total members | % of the total members |
|----------------|-----------------------|-----------------------------------|---------------------------|---------------|------------------------|
| Uttar Dinajpur | 50 | 360 | Illiterate | 143 | 39.72 |
| | | | 5 th standard | 87 | 24.16 |
| | | | 8 th standard | 48 | 13.34 |
| | | | 10 th standard | 39 | 10.84 |
| | | | 10+2 standard | 27 | 7.50 |
| | | | Graduate and Professional | 16 | 4.44 |
| Total | | | | | 100.00 |

Source: Based on the households survey of 360 farmers, agricultural families, 2017

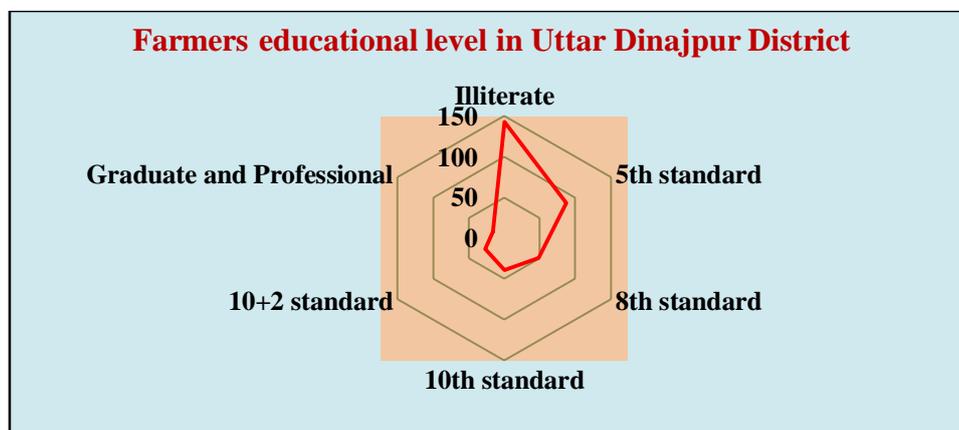


Figure 8.2 Educational statuses of 360 surveyed households, Uttar Dinajpur District.

From the table 8.3 and figure 8.2, it is observed that total of 143 sampled farmers are illiterate out of the 360 sampled members. It consists of about 40 per cent (to be exact 39.72 per cent). In the district, 24.16 per cent of the total sample farmers have studied till 5th standard and 13.34 per cent have studied up to 8th standard. But 10.84 per cent of the total farmers have studied till 10th standard. A total of 7.50 per cent of the total respondents are studied up to have

studied till 10+2 standard. Very small percentages i.e. 4.44 per cent of the total respondents have studied till graduation and professional level in the district.

The education system of an agricultural class teaches the students the basic concepts of a particular course through hands-on experience. Students will be taught information in the program in order for them to recognize and undertake problem solving issues that would happen in an agricultural situation. The supervised agricultural experience (SAE) program gives students the opportunity to take the information learned in the agricultural topic that interests them. This section of agricultural education will give students a suggestion of how it is working out in the actual world and solving trouble that will better idea in the work field (Phipps, et al, 2008). In the district, about one-third of the total respondents have studied till 8th standard. And only 6.74 per cent of respondents have studied the higher level of education i.e. graduate and above. In the generalizing situation in education, most of the farmer's families are poor in the district. So, farmers of the district are not easily taking advantage of the mechanization as well as the introduction of chemical fertilizers in their agricultural fields. As discussed earlier, the higher the family is educated, they are quick in using mechanization processes as well as chemical fertilizers and HYV seeds in production and productivity. It is because they understand the advantages of mechanization and modern agricultural inputs in agricultural production and productivity. At the time of field survey author observed that some illiterate families are attempting to try the benefits of mechanization and modern inputs to increase production and productivity. In this work, they are taking the help of the nearest farmers as well as literate farmer's families and different agriculture officers. Not only that, but it is also fact that this block is much more dominated by illiterate farmers and the same block is the loser in agricultural production and productivity. From the block-wise situation, it is observed that the highest percentages of illiterate farmer members are found in Chopra Block (40.92 per cent). So, the production and productivity rate is comparatively lower than the other blocks in the district. But lowest rates are found in Itahar Block (10.05 per cent) among the district in one hand and on the other hand highest educated (Graduates and above) farmers members are observed in Karandighi Block (9.69 per cent). For this reason, in this block comparatively crop productivity (Chapter 7) and modern technology uses rate are high than the other blocks of the district. To conclude, prescribed educational opportunities and the potential of gainful employment influence the agro-economic uplift of the rural area.

8.3 Change in yield rates

Crop yields are an essential aspect of every farmer's life, impacting how profitable their farmland can be, learning how to improve crop yields is a key to successful farming; access to new technologies and planting method has given farmers an opportunity to increase crop production. It is a fact that increasing the use of HYVs and fertilizers and even a fast increase in the use of engine tools have a direct impact on the increase of crop yield and agricultural productivity (Gupta 1986, Chatterjee, 1986 and Goswami, 1987). In the district, the yield rate of the principal crops has been increased by the practice of seasonal crop rotation, proper water drainage as well as increased water supply facility, mechanization in agricultural sectors, electrification in rural area, use of high yielding variety of seeds, chemical fertilizers, weed the crop early and often etc. Not only that, huge amount of new inputs use in a particular crop activity and it can increases crops yield rate over the years (Dasgupta, 1980). In this section, the author mainly shows the block-wise changes in yield rates of major crops like paddy, wheat, maize, potato and jute of selected sample households. It is clear that, after the fragmentation of landholdings and mechanization in agricultural sector, yield rate of the major crops has increased. According to the sample farmers, after fragmentation of agricultural land, land area has been shortening. In small land areas production amount keeps tantamount; a huge amount of fertilizer, HYV seeds and time to time irrigation have been compulsory. Therefore, yield of crops increases from the previous years. Data related to the yield per hectare has been collected from the head of the households.

Table 8.4 Change of yield rate of sample households in Uttar Dinajpur District.
(Average yield in kg/ha)

| Name of principal crops | Years | | Change in percentage (2000-2017) |
|-------------------------|--------|--------|----------------------------------|
| | 2000 | 2017 | |
| Paddy | 2,200 | 3,232 | 46.91 |
| Wheat | 1,683 | 2,608 | 54.96 |
| Maize | 1,752 | 2,583 | 47.43 |
| Potato | 14,176 | 18,256 | 28.78 |
| Jute | 1,482 | 1,770 | 19.43 |

Source: Based on households survey of 360 respondents agricultural families.

Table 8.4 shows that the overall production per hectare and change over the study period of Uttar Dinajpur District. It is clear from the table potato is high growing crop. About 4,000 kg per hectare potato has increased in between 2000 to 2017 in the sample households. In 2000, potato production was 14,176 kg per hectare and it has increased to 18,256 kg per hectare in 2017 in the district. The 2nd highest change crop in the district is wheat. Total production per hectare of wheat was 1,683 kg in 2000 and it has increased to 2,608 kg per hectare in 2017. About 1,000 kg per hectare wheat has increased in between 2000 to 2017 of the sample

households. In the district 3rd highest change crop is paddy. The growth of paddy has increased from 2,200 kg per hectare in 2000 to 3,232 kg per hectare in 2017. The total increase in per hectare of paddy is about 1,000 kg over the study period i.e. in 17 years. As per the ranking situation maize is the 4th change crop. In 2000, total maize production per hectare was 1,752 kg and it has increased to 2,583 kg in 2017 in the district. The total change per hectare of maize over the study period is about 800 kg. Lastly, 5th as well as lowest change crop is jute. In the district, jute is an abolished type crop. Because the price and demand of jute day to day decreases and most important fact that the labour crises in the time of jute cutting and removing the jute bark. Block-wise highest change of paddy is observed in Karandighi Block (41.51 per cent) and lowest change is observed in Goalpokher-I Block (24.11 per cent) over the study period. But block-wise highest change crop is wheat (51.54 per cent) observed in Raiganj Block. The causes of highest change of productivity in wheat is most of the sampled families are used a tremendous rate of chemical fertilizers, pesticides, HYV of seeds and soil fertility in this block is suitable for wheat cultivation.

8.4 Agricultural unemployment and population growth.

In Uttar Dinajpur District, according to the census report (2011), 21,00,595 people are engaged in the agricultural sector and over half of them are now agricultural labourers, a trend observed for the first time in the past 30 years. Agricultural unemployment, as well as agricultural labour, is increasing day by day. The speedy growth of population in the district has resulted not only in high density of population and also failed to absorb its huge and growing labour force. The galloping rise in the population of the study area during the last few decades has further infuriated the unemployment problem in the district. As sufficient employment opportunities are not accessible in the non-agricultural sector, the pressure of population on the land is high. The land is thus overloaded and a big part of labour force is unemployed ensuing in most distinguished and seasonal unemployment. In 1991, total number of agricultural labour was 2,32,809 and it has increased to 3,71,034 labour in 2001 and then it increased to 4,42,328 labour in 2011 (Census of India different years). It is observed from the 2011 Census, there has been increase of 19.21 per cent agricultural labourers from the previous year of 2001, this rise in agricultural labours is due to the falling size of land holdings and a large number of cultivators over time. Interestingly, over the past 40-50 years, the decline in population of cultivators was not significant enough for absolute numbers when compared to population increase. However, due to slow rate of population expansion in the past decade, the number stands out. But in recent times agricultural labour is increasing in the district and number of cultivators is

decreasing; it can be because of two main reasons. Firstly; farmers are losing their land and are being forced to work as labourers in the fields of others. Secondly; most of the peoples are trying to work under MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act). So, they live in their villages and work as agricultural labour. Not only that, fragmentation of land by the law of inheritance and changing pattern of agricultural land use give originating the agricultural unemployment (labour) in the district.

8.4.1 Types of unemployment in agriculture

The agriculture sector, even today attracts the maximum employment although its share in the Gross Domestic Product (GDP) is a meagre 17 per cent. In terms of share in GDP, Uttar Dinajpur District is a service-economy while in terms of employment generation, Uttar Dinajpur District is still stuck with the agrarian-economy status since its independence. The agricultural sector experienced massive unemployment in two major groups-

i. Seasonal unemployment

Seasonal unemployment occurs primarily in the agriculture sector and there are less instances of experiencing such forms of unemployment in the urban sector or in the other sectors of the economy. It is a kind of unemployment when people are employed only for a few months or a particular season of the year and the individual remains unemployed during the remaining months of the year. Farmers often employ additional workers during the sowing season or the harvesting season and in the remaining time period that person is unemployed.

ii. Disguised unemployment

This is a very interesting type of unemployment because as the name suggests, this unemployment is hidden or not seen easily. It is that form of unemployment wherein more people are employed as compared to the required level. For example, a farmer employs 6 people in his field whereas only 4 people were sufficient for that land. Hence, the additional 2 workers are not adding to the production process. These 2 additional workers would be considered disguisedly unemployed. Increasing agricultural unemployment is a major problem. In the district, agricultural unemployment (agricultural labour) growth and its causes are represented in the table 8.5 and below.

Table 8.5 Block-wise agricultural unemployment and their growth in Uttar Dinajpur District (1991 to 2011)

| Name of the C. D. Blocks | Census Years | | | Growth in (%) |
|--------------------------|--------------|--------|--------|---------------|
| | 1991 | 2001 | 2011 | |
| Chopra | 18.798 | 20.376 | 22.955 | 22.11 |
| Islampur | 21.136 | 32.933 | 39.468 | 86.73 |

| | | | | |
|-----------------------|----------------|----------------|----------------|--------------|
| Goalpokher-I | 24.601 | 42.403 | 48.783 | 98.29 |
| Goalpokher-II | 27.568 | 38.341 | 53.558 | 94.27 |
| Karandighi | 33.306 | 52.664 | 64.933 | 94.95 |
| Raiganj | 42.270 | 67.338 | 75.185 | 77.86 |
| Hemtabad | 13.477 | 24.192 | 33.994 | 152.23 |
| Kaliaganj | 22.075 | 37.758 | 42.940 | 94.51 |
| Itahar | 30.578 | 55.029 | 60.512 | 97.89 |
| Uttar Dinajpur | 232.809 | 371.034 | 442.328 | 89.99 |

Source: Data compiled by the researcher from the Census of India (1991-2011).

From table 8.5, it is observed that within the study period (1991-2011) actual growth rate of the agricultural unemployment in the district is 89.99 per cent i.e. 2,32,809 agricultural labour was in 1991 and it increased to 4,42,328 labour in 2011. The main causes of high rate agricultural labour increases are mechanization of agriculture work on one hand and on the other hand, increasing population. Block-wise highest growth is observed in Hemtabad Block (152.23 per cent) i.e. 13,477 agricultural labour was in 1991 and it has increased to 33,994 in 2011. This is because of many reasons- about 88 per cent of the total agricultural family members in this block have only studied up to 10th standard, high increase of population (table 3.1) and it is observed at the time of field survey most of the farmers are poor, they work within the district at the season time. But lowest agricultural growth is observed in Chopra Block (22.11 per cent). In this block, most of agricultural lands are used for tea gardens which are dominated by the big owners. The average size of the tea garden is 10-50 hectares. It is interesting that those families who are involved in tea gardens as agricultural labour from the previous time, at present nearly the same families are involved in tea gardens as agricultural labour. Some new families are involved as agricultural labour in tea garden. So, numbers of cultivators have not excessively changed as a result agricultural labour is also near about same in this block. The causes behind low and high change of agricultural labourer in the district depend on the illiteracy and low per capita income of the households. Not only that, modernization in agricultural sector resulted in increased agricultural unemployment day to day in the district. As a result, the unemployment population increased in this sector which is further responsible for poor or low per capita income.

8.4.2 Causes of increase in agricultural unemployment in the district

As discussed earlier, Uttar Dinajpur District is an economically and educationally backward district. Most of the farmers in the district are marginal and small type. So, they are involved in monsoonal season as agricultural labour because agricultural crops sowing are depends on

the monsoonal climate. In the district, there are many reasons behind the increasing agricultural labour as well as agricultural unemployment:

a. Cultivation is over-dependence on technology

In recent times agriculture in the district is over dependent on technology for agricultural mechanization and has led to technological unemployment. This is because of less requirement of manual agricultural labour in agricultural fields to accomplish tasks with greater dependence on machines and technology.

b. Population growth

Another reason particular to the district is its population growth rate. The figure of people looking for jobs has multiplied manifold over the years as the population growth rate has soared high. The increasing population proves to be a weigh down on the number of jobs that can really be created in an economy with its inadequate resources. The current population outburst is a contributing reason to increased agricultural unemployment in the district. The major cause for congealing in agricultural employment is the percentage of landless households among the total rural households. Not only that, many uneducated peoples and marginal farmers are reflected as agricultural labour.

c. Not enough new jobs

As per the experience and analysis at the time of field survey, numbers of a new government as well as non-government jobs, are decreasing every year. The government is not able to create enough jobs keeping in mind the district population. Literate persons are trying to the government job but after a certain period they cannot achieve the job. Lastly, they are obligated to livelihood work as agricultural labour which can be easily achieved in their life.

Lastly, on the whole, the acute agricultural unemployment problem needs a two pronged attack: on one side the population growth is checked so that fewer people enter the labour-force cradle in the coming years; and on the other hand, the rate of agro-economic growth is accelerated providing large scale employment opportunities, particularly in agricultural sector in the district.

8.5 Land ownership

Land ownership is the reality of restricted rights and control over the property, which may be an object, real estate or rational property. Ownership involves multiple rights, collectively referred to as title, which may be unconnected and held by altered parties. Land ownership is an important aspect of land use study. With the changes of size and holding the land use pattern also changes and the land use pattern becomes frowzy as soon as the land ownership reaches a

particular level. The land is described as a form of wealth and no man buys land as a commodity but buys land cum property rights and this is ‘proprietary land unit’, (Government of India, Ministry of Agricultural and Irrigation, New Delhi, 1976). The principal need and utensils with land are progress upon the nature, scope and period of property right. Such a land unit may be possessed by a person, by the trustees, by an organization or by the Government. It is true that expanding town area and increase of members of families may lead to the fragmentation and sale of part of the farmland and that is expensive and therefore few farmers can inverse their holding. The small size farms may also provide on alternative explanation of the intensity of cropping near the town and the main thoroughfare; occupiers of small farms must choose enterprises with high net returns per unit area in order to make a living and such farming is usually intensive.

Individual ownership replaces community ownership when agricultural land becomes scarce under the increasing burden of farm households on arable land. Since agriculture is the mainstay of farmers, it is but natural that they should believe that one who owns land owns wealth. The systems of land ownership vary depending on different factors, such a basic distinction between the old alluvium settlements and rain-fed farming areas on the one hand and the renovation and colonization of cultivable wasteland in new canal colonies on the other hand. In Uttar Dinajpur District, however, the peasant proprietorship predominates. Their systems of ownership have built-in superior and inferior proprietorship.

The landlords and absentee owners, by tradition and habit, are not disposed to make any contribution to agricultural development as they lack the qualities or the mental make-up of a farm entrepreneur. The land is the best used by peasant-proprietors. In the district, according to the household’s survey report most of the sample households are marginal and small landholding. Their reports show that we have an acute problem posed by uneconomic, sub-marginal peasants. On the basis of the field data, the farmers were divided into 5 broad categories namely marginal (<0.25 hectare), small (0.25-0.50 hectare), medium (0.50-0.75 hectare), large (0.75-1.00 hectare) and very large (>1.00 hectare). For the proper idea of land ownership status of the district, total 360 farmers’ household records are considered in the table 8.6.

Table 8.6 Block-wise land ownership record of sample households in Uttar Dinajpur District.

| Name of the C.D. Blocks | Size of farmers | | | | |
|-------------------------|-----------------|------------|------------|-----------|------------|
| | Marginal | Small | Medium | Large | Very large |
| Chopra | 16 (13.11) | 9 (10.11) | 10 (10.87) | 3 (10.71) | 2 (6.90) |
| Islampur | 12 (9.84) | 8 (8.99) | 13 (14.13) | 4 (14.28) | 3 (10.34) |
| Goalpokher-I | 11 (9.01) | 17 (19.10) | 5 (5.43) | 6 (21.43) | 1 (3.45) |

| | | | | | |
|-----------------|--------------------|-------------------|-------------------|------------------|------------------|
| Goalpokher-II | 13 (10.65) | 10 (11.23) | 11 (11.96) | 2 (7.14) | 4 (13.79) |
| Karandighi | 14 (11.47) | 9 (10.11) | 12 (13.04) | 2 (7.14) | 3 (10.34) |
| Raiganj | 12 (9.84) | 10 (11.23) | 9 (9.78) | 4 (14.28) | 5 (17.24) |
| Hemtabad | 15 (12.29) | 8 (8.99) | 11 (11.96) | 3 (10.71) | 3 (10.34) |
| Kaliaganj | 14 (11.47) | 11 (12.36) | 9 (9.78) | 2 (7.14) | 4 (13.79) |
| Itahar | 15 (12.29) | 7 (7.86) | 12 (13.04) | 2 (7.14) | 4 (13.79) |
| District | 122 (33.89) | 89 (24.72) | 92 (25.55) | 28 (7.78) | 29 (8.05) |

Source: Based on households survey of 360 respondents farmer families.

Note: The figures in the parentheses are the percentage value.

From the table 8.6 it is observed that, out of 360 farmer's households, there are 122 families (33.89 per cent) in the category of marginal farmers (<0.25 ha). 89 families are small farmers (0.25 to 0.50 ha) which share 24.72 per cent of the total households. But 92 households (25.60 per cent) of the total are in the category of medium (0.50 to 0.75 ha) farmers. Total 7.70 per cent is large and 8.02 per cent are very large farmers of the total sample households (0.75 to 1.00 ha) and (>1.00 ha) of land respectively. So, it is clear from the table that more than 58 per cent of the total farmers belong to marginal and small farmers in the district. Not only that, the highest number of marginal farmers are found in Chopra Block and lowest number in Goalpokher-I Block i.e. 13.11 per cent and 9.01 per cent respectively. But highest number of small farmers (19.10 per cent) are found in Goalpokher-I and lowest small land ownership is found in Itahar Block (7.86 per cent). In the district, highest medium land ownership found in Islampur Block i.e. 14.13 per cent of the total district medium land ownership. Lowest number of medium land ownership found in Goalpokher-I Blocks i.e. 5.43 per cent of the district. Highest number of large and very large land ownership is found in Goalpokher and Raiganj Block i.e. 21.43 per cent and 17.24 per cent respectively on one hand and on the other hand lowest number of large and very large land ownership are found in Kaliaganj Block (7.14 per cent) and Goalpokher-I Block (3.44 per cent) in the district. In the district marginal, small and medium categories of land ownership of all blocks are far below the district average. But in large categories of land ownership, only four blocks namely Goalpokher-II, Karandighi, Kaliaganj and Itahar belong below the district average. Rest five blocks namely Chopra, Islampur, Goalpokher-I, Raiganj and Hemtabad have belonged far above the district average i.e. 7.78 per cent. In the very large category, only two blocks namely Chopra and Goalpokher-I belong to far below of the district average i.e. 8.05 per cent.

It is an amazing matter that about one-third of sample households have marginal land ownership in the district. It is observed in time of field study among the total land ownership,

most of the marginal and small landholders have taken land lease from the other landowners. Not only that, most of the marginal and small farmers are sowing three crops in a year with the help of high yield varieties, available irrigation, use of chemical fertilizers. Since all the sampled family members are dependent upon only cultivation. Therefore, they are bound to take the land lease and sowing three or more crops in a year for easily leading their lives.

8.5.1 Lease land taken by the farmers from the owners

In the district, most of the farmer's households belong in the marginal and small category. For this reason, they are not able to proper maintain their family. So, they are obligated to take the lease out of the land from the large landowners. Not only that, most of the farmers in the district do not have alternative livelihood except agriculture. On the basis of field observation, in the district, owners give mainly their land lease out to the small and marginal farmers in different circumstances such as- they (large and very large farmers) have insufficient time to do cultivation, agricultural land is far away from the house, they need more money for substitute works and many others. Out of the total 360 sample farmer households, 131 households have taken lease land from the owners and 39 farmer households have given their land as lease out to the other farmers in the district. Depending on the lease land area, classification into three board categories like; <0.40 hectare, 0.40-0.80 hectare and > 0.80 hectare area have been made and block-wise their percentages are represented in the table 8.7.

Table 8.7 Area of cultivated land lease from the owner of sample households.
(Land ownership in %)

| Name of the C.D. Blocks | Area of land (ha) | | |
|----------------------------|-------------------|--------------|--------------|
| | <0.40 | 0.40-0.80 | >0.80 |
| Chopra | 7.89 | 11.11 | 10.53 |
| Islampur | 13.17 | 8.33 | - |
| Goalpokher-I | 23.68 | 5.55 | 15.79 |
| Goalpokher-II | 11.84 | 13.89 | - |
| Karandighi | 7.89 | 11.11 | 10.53 |
| Raiganj | 18.42 | 19.44 | 15.79 |
| Hemtabad | 7.89 | 11.11 | 15.79 |
| Kaliaganj | 5.27 | 8.33 | 10.53 |
| Itahar | 3.95 | 11.11 | 21.05 |
| Uttar Dinajpur | 58.01 | 27.48 | 14.50 |

Source: Based on the household survey of 131 respondents.

From the table 8.7 it is observed that 58.01 per cent of total of those who have leased out the land from owner have taken <0.4 hectares of land, 27.48 per cent have taken 0.4-0.8 hectare of land and rest 14.50 per cent have taken >0.8 hectare land. It is fact that whereas most of the farmers are small and marginal so they are poor and per capita income is very low. In this regard they cannot take the big area of land lease out from the owners. Not only that, sometimes

the rate of lease out of land is very high on one hand and on the other hand high price of fertilizer, irrigation water and land is not suitable for growth of two or three crops grown in a year. For the proper concept, each lease land area taken by the farmers in the district is divided into three board categories i.e. (<0.4 hectares), (0.4-0.8 hectares) and (>0.8 hectares) and represented in the table 8.8, 8.9 and 8.10.

Table 8.8 Percentage of families lease land taken from the owners (<0.40 ha).

| Category | % of land holdings | No. of C.D. Blocks | Name of the C.D. Blocks | % share each category |
|----------|--------------------|--------------------|--|-----------------------|
| Small | <10 | 5 | Chopra, Karandighi, Hemtabad, Kaliaganj and Itahar | 32.89 |
| Medium | 10-20 | 3 | Islampur, Goalpokher-II and Raiganj | 43.43 |
| High | >20 | 1 | Goalpokher-I | 23.68 |

Source: Researcher's calculation compiled from table 8.7

It is clearly seen from the table 8.8 that out of the total nine blocks in five of them namely Chopra, Karandighi, Hemtabad, Kaliaganj and Itahar block less than 10 per cent (small category) families have taken <0.40 hectare lease land. It consists of about 32.89 per cent of the total lease (<0.40 hectares) land. 10-20 per cent families have taken <0.40 hectare lease land in only three blocks in the district namely Islampur, Goalpokher-II and Raiganj. It consists 43.43 per cent of the total lease land in the district. This zone is located in Northern and middle parts of the district (figure 8.13). But high land lease holding families (>20 per cent families) are observed in only one block namely Goalpokher-I which constitutes 23.68 per cent of the total (<0.40 hectare) lease land families i.e. taken from the owner. It is wonderful matter that only in Goalpokher-I Block about 24 per cent of the total lease land holdings are present (<0.40 hectare) and it is observed at the time of field survey in this Block's most of the agricultural labourer is taken land as a lease from the owners. But the picture in 0.40-0.80 hectare area is changed. An actual picture of the leased land taken by the farmers from owners is presented and discussed in the table 8.9.

Table 8.9 Percentages of families lease land taken from the owners (0.40-0.80 ha).

| Category | % of land holdings | No. of C.D. Blocks | Name of the C.D. Blocks | % share each category |
|----------|--------------------|--------------------|--|-----------------------|
| Small | <10 | 3 | Islampur, Goalpokher-I & Kaliaganj | 22.21 |
| Medium | 10-15 | 5 | Chopra, Goalpokher-II, Karandighi, Hemtabad & Itahar | 58.35 |
| High | >15 | 1 | Raiganj | 19.44 |

Source: Researcher's calculation compiled from table 8.7

From table 8.9, it is observed that about 22.21 per cent (<10 per cent lease land holdings) of the total lease land farmers are covered in three blocks namely Islampur, Goalpokher-I & Kaliaganj (figure 8.4) who have taken lease land between 0.40-0.80 hectare. But 10-15 per cent

of landholdings are observed in five blocks namely Chopra, Goalpokher-II, Karandighi, Hemtabad and Itahar. It consists 58.35 per cent of the total lease land in the district.

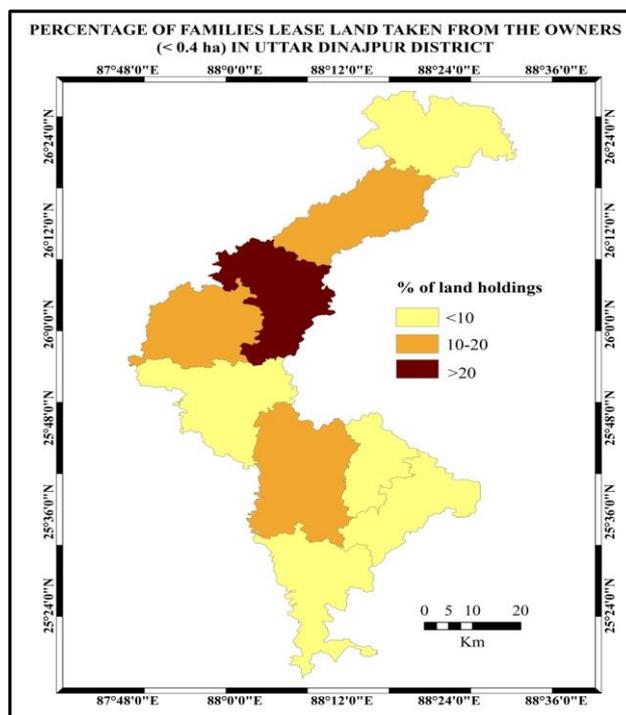


Figure 8.3 Lease land taken from the owner (<0.40 ha) in Uttar Dinajpur District.

This zone is located in Northern and Southern parts of the district (figure 8.4). On the other side, high category (>15 per cent lease land holdings) lease land farmers are observed in only one block namely Raiganj which constitutes 19.44 per cent of the total lease land farmers in the district. It is noticeable thing that most of the land lease has been taken by the farmers from the owners for at least 2 years. It is because chemical fertilizers used by the farmers in land are not taken by the crops and not vanish in their life cycle. So, in the first time need of chemical fertilizers is more per hectare and when the second crop sowing in their field chemical fertilizers are required in low amount. According to the senior farmer, a lot of owners give their lease agricultural land for 5-10 years who are not present in the block as well as the district. The situation of lease land taken by the farmers (>0.80 hectares) is represented in the table 8.10.

Table 8.10 Percentages of families lease land taken from the owners (>0.80 ha).

| Category | % of land holdings | No. of C.D. Blocks | Name of the C.D. Blocks | % share each category |
|----------|--------------------|--------------------|--|-----------------------|
| Small | - | 2 | Islampur & Goalpokher-II | - |
| Medium | <15 | 3 | Chopra, Karandighi & Kaliaganj | 31.58 |
| High | >15 | 4 | Goalpokher-I, Raiganj, Hemtabad & Itahar | 68.42 |

Source: Researcher's calculation compiled from table 8.7

It is examined from the table 8.10, there are two blocks namely Islampur & Goalpokher-II in the district where no farmer takes the leased land from the owners. The districts having medium category of lease land holdings with an index value <15 per cent are 3 Blocks namely Chopra, Karandighi and Kaliaganj whose lease land taken amount is >0.80 hectare. It consists about 31.58 per cent of lease landholdings of the total.

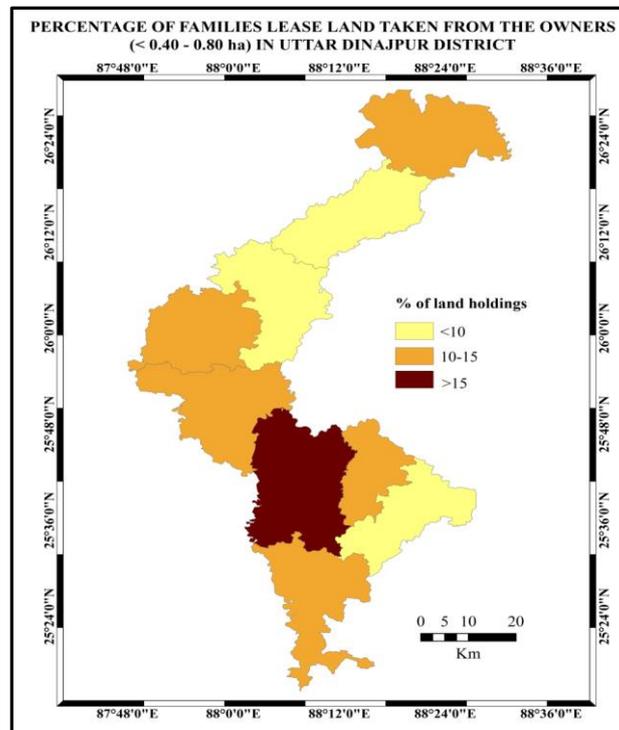


Figure 8.4 Lease land taken from the owner (0.40 - 0.80 ha) in Uttar Dinajpur District.

On the basis of the table it has been observed that >15 per cent lease land holdings are covered in 4 Blocks namely Goalpokher-I, Raiganj, Hemtabad and Itahar (figure 8.5). It consists of about 68.42 per cent of lease landholdings of the total. It is noticed at the time of the field survey economically strong farmers take (>0.80 hectares) leased land from owners.

8.5.2 Lease out land given by the owner to the other farmers

As discussed earlier, most of the farmers are poor and economically back-ward. For the high price of chemical fertilizer, pesticides and HYV seeds farmers are not properly maintaining their families on one hand. And on the other hand, children's education, family health and other maintenance are very expensive. For this reason they are giving their one and only valuable property (land) as lease out. Not only that, many farmers are not interested to cultivate their land because it is not profitable and they are getting better work in the other states of India. The rapid growth of minor industrial employment with its comparatively high wages combined

with the difficulty of obtaining an adequate living on a small farm had led many small farmers to work in a factory.

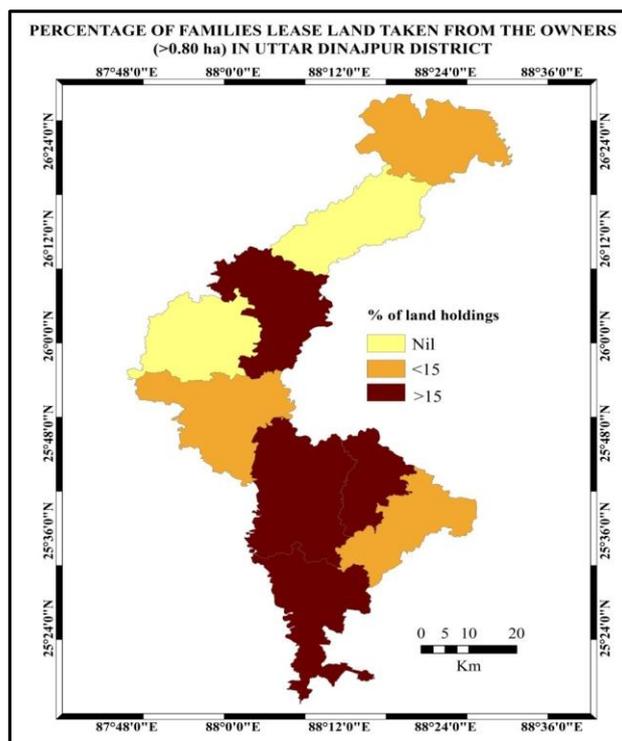


Figure 8.5 Lease land taken from the owner (>0.80 ha) in Uttar Dinajpur District.

It has often been noted that at the time of field observation farms near the towns are smaller than the regional or national averages, some farmers are involved in town as shop servants, toto drivers, hawkers, different offices as a temporary basis and others. So, they are not cultivating their land. On the other hand, marginal and small areas of land are not suitable for cultivation by the tractor and power tiller. Therefore, they are bound to lease out their agricultural land to the nearest farmers. The actual situation of lease out land area which is given by the farmers and their percentages are represented in the table 8.11.

Table 8.11 Area of cultivated lease out land given by the owner to the other farmers of sample households. (Land ownership %)

| Name of the C.D. Blocks | Area of land (ha) | | |
|----------------------------|-------------------|--------------|--------------|
| | <0.20 | 0.20-0.40 | >0.40 |
| Chopra | 11.11 | 20.00 | - |
| Islampur | 16.67 | 6.67 | 16.67 |
| Goalpokher-I | - | 13.33 | 33.33 |
| Goalpokher-II | 22.22 | 6.67 | - |
| Karandighi | 11.11 | - | 16.67 |
| Raiganj | 11.11 | 13.33 | - |
| Hemtabad | 16.67 | 6.67 | 16.67 |
| Kaliaganj | 11.11 | 13.33 | - |
| Itahar | - | 20.00 | 16.67 |
| Uttar Dinajpur | 46.15 | 38.46 | 15.39 |

Source: Based on the household survey of 39 respondents.

An examination of table 8.11 reveals that about 46.15 per cent of the total farmers are giving their cultivated land as lease out in small category (<0.20 hectare) in the district. But 38.46 per cent of the total farmers are giving their cultivated land as lease out in medium category (0.20-0.40 hectare). Only 15.39 per cent are given >0.40 hectares of land as lease out. It is noticeable matter that, about 50 per cent of the total farmers are giving their cultivated land as lease out in small category because most the marginal and part-time farmers are involved in additional or substitute work. Not only that, farmers who wish to increase the size of their farm cannot afford to buy high price land and have to rent instead as well as lease land from owners. Block-wise the proper perception of each lease land area given by the farmers in the district is divided into three board categories i.e. small (<0.20 hectare), medium (0.20-0.40 hectare) and high (>0.40 hectare) and represented in the table 8.12, 8.13 and 8.14.

Table 8.12 Percentage of families lease out land given by the owner to the other sampled farmers (<0.20 ha).

| Category | % of land holdings | No. of C.D. Blocks | Name of C.D. Blocks | % share each category |
|----------|--------------------|--------------------|---|-----------------------|
| Small | <15 | 6 | Chopra, Goalpokher-I, Karandighi, Raiganj, Kaliaganj and Itahar | 44.44 |
| Medium | 15-20 | 2 | Islampur & Hemtabad | 33.34 |
| High | >20 | 1 | Goalpokher-II | 22.22 |

Source: Researcher's calculation compiled from table 8.11

From the table 8.12, it is observed that in the district a small category of lease land holdings with an index value <15 per cent are observed in 4 Blocks namely Chopra, Karandighi, Raiganj and Kaliaganj who are given the lease land amount is <0.20 hectare. This zone is located in Northern (Chopra), middle (Karandighi and Raiganj) and South-eastern part (Kaliaganj) of the district (figure 8.6). It consists about 44.44 per cent of lease landholdings of the total district. It is a remarkable matter that no farmer gives their agricultural land for lease out in 2 Blocks namely Goalpokher-I and Itahar.

An index value ranging between 15-20 per cent of the lease out farmers is observed in 2 Blocks namely Islampur and Hemtabad which consists about 33.34 per cent in the district. High (>20 per cent) category of lease out farmers are located in one block namely Goalpokher-II. This zone is located in Northern part of the district (figure 8.6). The actual percentages of high category lease out farmers are 22.22 per cent of the total lease out farmers in the district. The high, as well as maximum numbers of lease out farmers are observed in this Block. This is because most of the small and marginal farmers are going to the different states of India especially Kerala, Delhi and Maharashtra for profitable works (field observation record). So, they are not cultivating in their agricultural land.

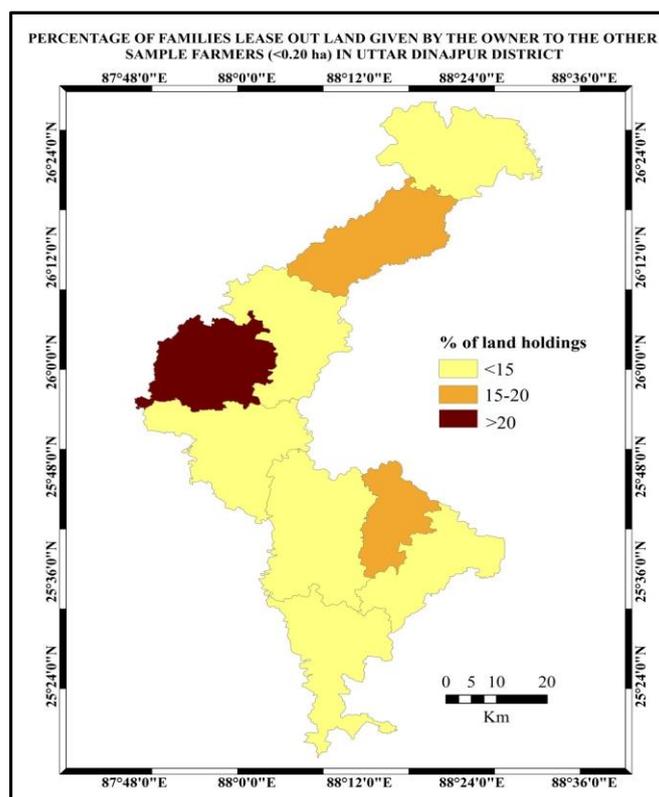


Figure 8.6 Lease out land given by the owner (<0.20 ha) in Uttar Dinajpur District.

Table 8.13 Percentage of families lease out land given by the owner to the other sampled farmers (0.20-0.40 ha).

| Category | % of land holdings | No. of C.D. Blocks | Name of C.D. Blocks | % share each category |
|----------|--------------------|--------------------|--|-----------------------|
| Small | <10 | 4 | Islampur, Goalpokher-II, Karandighi and Hemtabad | 20.01 |
| Medium | 10-15 | 3 | Goalpokher-I, Raiganj, and Kaliaganj | 39.99 |
| High | >15 | 2 | Chopra and Itahar | 40.00 |

Source: Researcher's calculation compiled from table 8.11

From the table 8.13, it is revealed that a small category of landholdings (<10 per cent) are observed in 3 Blocks namely Islampur, Goalpokher-II and Hemtabad which share about 20.01 per cent of the total lease out farmers; under the category of lease out the land of 0.20-0.40 ha. Only one Block namely Karandighi, there is no lease out farmer family who give the land as a lease. But medium category with an index range between 10-15 per cent lease land holdings is observed in 3 blocks namely Goalpokher-I, Raiganj, and Kaliaganj. It consists about 39.99 per cent of the total lease out land families. High category of landholdings (>15 per cent) are located in 2 Blocks namely Chopra and Itahar (20 per cent of each). This zone is located in Northern and Southern parts of the district (figure 8.7). There are no farmers who give lease out land in 4 Blocks namely Chopra, Goalpokher-II, Raiganj and Kaliaganj (table 8.14). This zone is located in Northern and South-eastern parts of the district (figure 8.8). Therefore, most of the farmers cultivate themselves in their agricultural land. They are normally self-dependent

and when need of unexpected money for a different situation arises they take a loan from the banks as well as relatives.

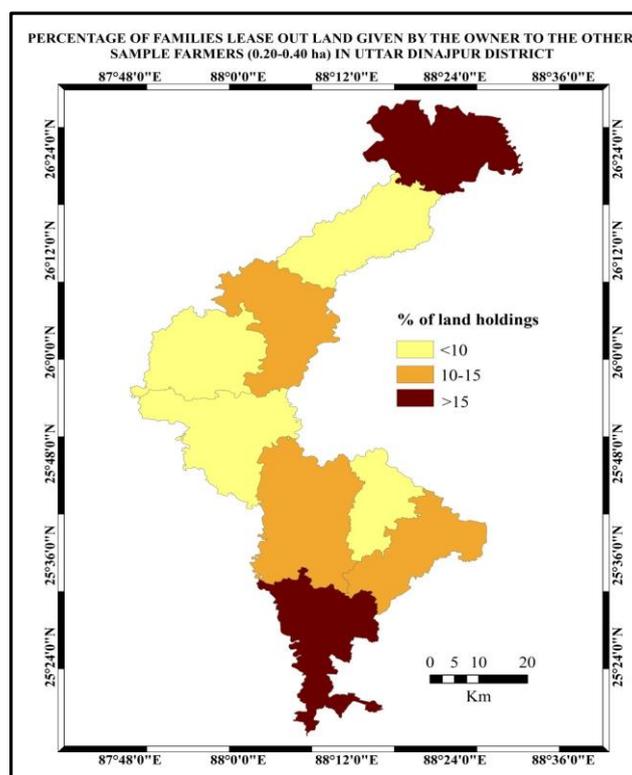


Figure 8.7 Lease out land given by the owner (0.20-0.40 ha) in Uttar Dinajpur District.

Table 8.14 Percentage of families lease out land given by the owner to the other sampled farmers (> 0.40 ha).

| Category | % of land holdings | No. of C.D. Blocks | Name of C.D. Blocks | % share each category |
|----------|--------------------|--------------------|--|-----------------------|
| Small | - | 4 | Chopra, Goalpokher-II, Raiganj and Kaliaganj | - |
| Medium | <20 | 4 | Islampur, Karandighi, Hemtabad and Itahar | 66.67 |
| High | >20 | 1 | Goalpokher-I | 33.33 |

Source: Researcher's calculation compiled from table 8.11

Medium category with index < 20 per cent is observed in 4 Blocks namely Islampur, Karandighi, Hemtabad and Itahar. This category share is about 66.67 per cent of the total lease out land farmers. But > 20 per cent lease out the land family are observed in only one block namely Goalpokher-I. It consists about 33.33 per cent of the total lease out land in the district. This zone is located in Northern part of the district. It is extraordinary that, about one-third of the total lease out family is located in this block (>0.40 ha). So, it is easily understandable that, most of the farmer families are poor and they involve the additional non-agricultural sector.

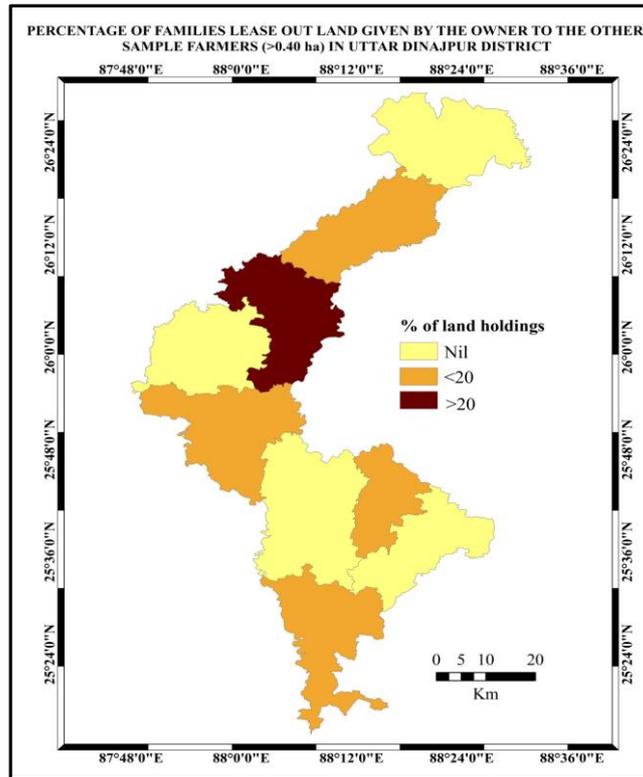


Figure 8.8 Lease out land given by the owner (>0.40 ha) in Uttar Dinajpur District.

8.6 Conclusion

The study estimates the impact of land use change on farm households in Uttar Dinajpur District. For this purpose, the study uses the most recent survey that assesses the present situation of the farmers. The survey includes various aspects of farming and pertains to the period from February 2017 to December 2017.

The current analysis primarily focuses on per capita income, education attainments, changing crops yield rate, agricultural unemployment and land ownership etc. of the farmers and particularly overall changing situation are discussed. It also calculates the income, education, yield rate of crops inequality among the farmer households as well as among the blocks. Not only that, a block-wise degree of the change in each item has mostly positive increased. It is observed through the field investigation that educated families are more aware of the use of modernizing inputs elements (chemical fertilizers, pesticides, tractors, harvesters, time to time irrigation supply in cropping fields) in agricultural fields. On the other hand, low per capita income is a major barrier to use of agricultural inputs in agricultural fields and generally rate production is low. So, they are bound to the land as lease.

It is observed that temporary land ownership has changed over the district. The situation of land ownership may help both of the farmers who take land as lease and give the land as lease

out. Because, land is the property of some groups; each member of the agricultural family, as well as tribal family, has the right to some land, and the land cannot be sold. So, one and only path is open to the farmers i.e. lease the land for a period. Ownership change (land lease and lease out) is the best process for the increase of family income in agricultural field. The principal consequences of land ownership differences are the control of decision-making and the farmers' willingness to innovate. But where the occupier-owner relationship predominates, the decision is made by the farmer himself; and in most areas of tenancy the occupier is in control of the majority of decision upon the farm. However, where share cropping is practised, a system where the landlord provides land and sometimes part of the seed, fertilizer and equipment, in return for a share of the harvest-the landlord may decide what is grown, there isn't any lease and lease out system in the family.

Moreover, the scientific change witnessed in the district agricultural scenario during last few decades is ensuing in negative impact on labour assimilation. Mechanical innovations of labour saving nature will definitely transfer the labour from work.

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