A GEOGRAPHICAL STUDY OF OCCUPATIONAL STRUCTURE IN SRI MUKTSAR SAHIB DISTRICT, PUNJAB

A project report submitted to the Central University of Punjab

For the award of

Master of Arts

In

Geography

By

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Supervisor

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May, 2018

DECLARATION

I declare that the project report "**A GEOGRAPHICAL STUDY OF OCCUPATIONAL STRUCTURE IN SRI MUKTSAR SAHIB DISTRICT, PUNJAB MUKTSAR SAHIB"** has been prepared by me under the guidance of Dr. L.T. Sasang Guite, Assistant Professor, Department of Geography and Geology, School of Environment and Earth Sciences, Central University of Punjab. No part of this dissertation has formed the basis for the award of any degree or fellowship previously.

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CERTIFICATE

I certify that Harminder Singh has prepared his project report "**A GEOGRAPHICAL STUDY OF OCCUPATIONAL STRUCTURE IN SRI MUKTSAR SAHIB DISTRICT, PUNJAB MUKTSAR SAHIB",** for the award of, Master of Arts, degree of the Central University of Punjab, under my guidance. He has carried out this work at the Department of Geography and Geology, School of Environment and Earth Sciences, Central University of Punjab.

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Abstract

"A GEOGRAPHICAL STUDY OF OCCUPATIONAL STRUCTURE IN SRI MUKTSAR SAHIB DISTRICT, PUNJAB MUKTSAR SAHIB"

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Keywords : Waterlogging, Occupation, Workers, Village, Canals

Abstract: The district of Sri Muktsar Sahib facing waterlogging problem since the period of 1980 after the introduction of two major canals namely Sirhind Feeder and Indra Gandhi canal during 1960. The condition of waterlogging exists in small patches in all areas of district. Mostly the waterlogged areas prevail along Indra Gandhi Canal. The district has both permanent and seasonal types of water-logging and presently shifting toward south-west of district. Present study is an initiative to study the impact of waterlogging on occupational structure of people. Both primary and secondary source of data are being used for study, In primary source, Mapping is completed with GIS (Geographic Information System) by using Bhuvan Geo-portal data and secondly field study was conducted with the help of questionnaire, apart from these GPS (Global Positioning System) were used for collecting GCP (Ground Control Points). Secondary source includes Census reports, Journals Articles, books and other web sources. The main finding of study indicates that waterlogging condition has no impact upon occupation structure of people because people are earning their livelihood from other sources. Mostly people are aware about government policies and waterlogging condition is not forcing them to engage in other occupation.

Signature of Candidate

Dr. L.T. Sasang Guite
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Date: Harminder Singh

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LIST OF ABBREVIATIONS

Sr. No.	Full Form	Abbreviation
1	Backward Classes	BC
2	Census of India	COI
3	Ground Control Points	GCP
4	Gross Domestic Product	GDP
5	Geographic Information System	GIS
6	Government of India	GOI
7	Global Positioning System	GPS
8	Hectare	Ha
9	Irrigation Project	IG
10	Indira Gandhi Irrigation Project	IGIP
11	Indira Gandhi Nahar Project	IGNP
12	Kilometer(s)	Km
13	Not Available	NA
14	Other Workers	OW
15	Other Backward Classes	OBC
16	Punjab Remote Sensing Centre	PRSC
17	Scheduled Castes	SC
18	Scheduled Tribes	ST
19	Square	Sq

CHAPTER-1

Introduction

1.1 **Introduction:** The study of occupational structure occupies an important position in the field of population geography. Occupation implies trade or profession. It reveals the nature of economic progress of a country and also social and economic development of any region depends on the number of persons who are economically active and it also depends on the quality and regularity of their work. The quantity of economically active population in various occupations indicates that economic profile of various groups of society. The occupational structure of a society is the product of a number of intimately related factors. The nature and variety of physical resources base of course, lays down the basic foundation in the form of good land for agriculture, indented coast for fishing, thick vegetation cover for forestry, rich geological strata for mining etc. (Chandna, 1986)

The occupation depends upon the degree of economic development and sophistication of a country. (Gosal, 1958) The study of economic composition of population remains incomplete without its reference to the occupational composition of a population. The occupation of an individual refers to his trade, profession; type of work etc. reveals the nature of economic progress of a country. It is related to agriculture, industry and service. The occupational structure of a society is the product of a number of intimately related factors.

Occupational structure is a key component of population composition. It gives a proper illustration of ratio of the working and non-working population in an area or a country. Occupational structure also influences the socio-economic development of an area. The spatial distribution of working and non-working population has been studied on the basis of data provided by the Census of India. This relevant data have its own utility and role in policy-decisions. The proportion of workers engaged in various occupations highlights economic and cultural surfaces of the society. In India, especially the cultural moorings have strong bearing on man's livelihood. Further, economic power of a country depends, largely, on the proportion in which the productive workers are prudently engaged in various economic activities. This

relevant data have its own utility and role in policy decisions. The proportion of workers engaged in various occupations highlights economic and cultural surfaces of the society. In India, especially the cultural moorings have a strong bearing on man's livelihood. Further, the economic power of a country depends, largely, on the proportion in which the productive workers are prudently engaged in various economic activities (Chandna, 1986).

The significance of occupational distribution of population of a region lies in the fact that, it clearly reveals the socio-economic characteristics of the people living that particular region. It is, hence, one of the important measures of socio-economic development of the country (Census of India, 2011).

In this chapter, the further study will be dealing with the dimensions of occupational structure relating to the socio-economic condition of the people in the study region, eventual regional disparities and spatial analysis.

1.2 THE CONCEPT OF OCCUPATION

The study of occupational structure provides background knowledge for formulating future development plans. The occupation means doing a certain type of work.

The term 'occupation' itself is indefinite as to both meaning and scope. It has a varying intellectual content and emotional association. In all modern languages, it has a number of synonyms and the range of their meanings indicates as to how much the specific content of this term has shifted through historical epochs Thus, the meaning of 'occupation' has undergone continuous changes from the times immemorial. So, its contents can be fixed definitely only for a short period of time. Generally, an 'occupation' of an individual refers to his trade, profession, type of work. (Census of India, 2011)

The term 'work' is used in special sense in the census. Work may be defined as a participation in economically productive activity. The participation is physical or mental in nature. The concept of 'worker' was introduced for the first time in India in 1961. (Census of India, 2011)

The definition of worker in India has been changing from census to census. In 1961, any person who had worked at least one hour a day on an average during the reference period was classified as worker. In 1971, if a person worked on any one of the days during the reference period of one week prior to the date of enumeration, he was considered as a worker. In 1981 Census, there has been mainly a three-fold classification of population namely main workers, marginal workers and non-workers, which was adopted for 1991 also. (Census of India, 2011)

1.3 Classification of Workers

According to Meta data of Census of India 2011 the working population grouped into three major groups.

1. Main workers
2. Marginal workers
3. Non workers.

1.3.1 Main Workers

Workers who worked for more than 6 months (180 days) in the reference period are termed as Main Workers. (Census of India, 2011)

1.3.2 Marginal Workers

Workers who worked for less than six months (180 days) in the reference period are termed as Marginal Workers. Marginal workers are further bifurcated into two categories i.e. those who worked for 3 months or more but less than 6 months and those who worked for less than 3 months. (Census of India, 2011)

1.3.3 Non Workers

A person who did not work at all in any economically productive activity during the last one year preceding the date of enumeration was treated as non worker. This category includes students, persons engaged in household duties, dependents, pensioners, beggars, etc. provided they were not engaged in any economically productive activity during the last one year preceding the date of enumeration. (Census of India, 2011)

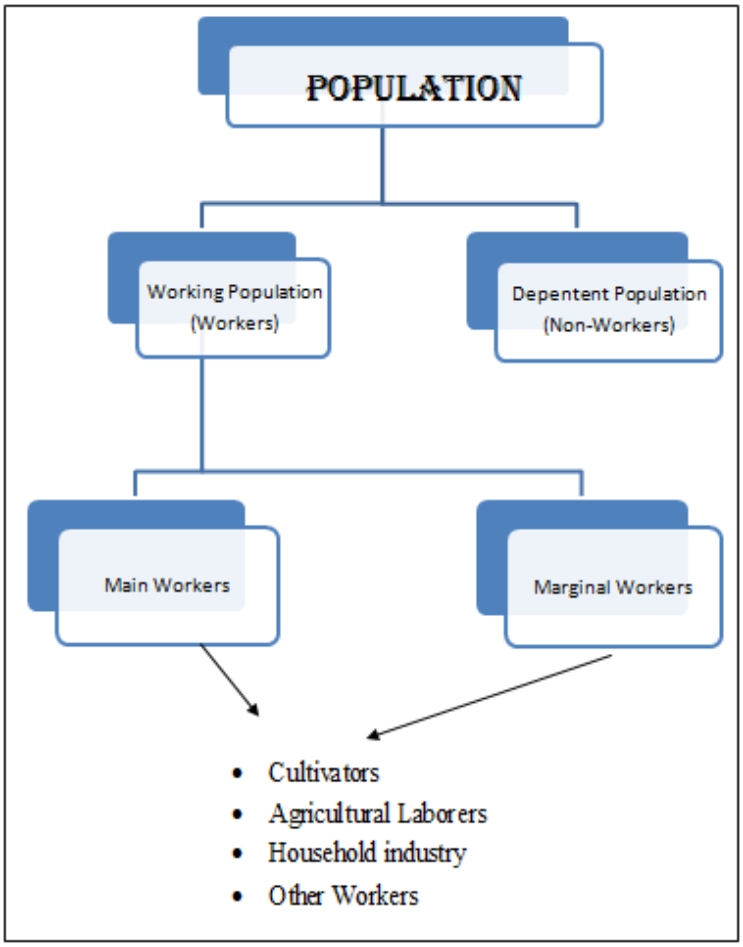


FIGURE NO.1.1

The Main and Marginal workers are classified into four categories.

1. Cultivators
2. Agricultural Labourers
3. Household industries
4. .Other services.

1.3.4 Cultivators

For purpose of the Census, a person is classified as cultivator if he or she is engaged in cultivation of land owned or held from Government or held from private persons or institutions for payment in money, kind or share. Cultivation includes effective supervision or direction in cultivation.

A person who has given out her/his land to another person or persons or institution(s) for cultivation for money, kind or share of crop and who does

not even supervise or direct cultivate on land, is not treated as cultivator. (Census of India, 2011)

1.3.5 Agricultural Labourers

A person who works on another person's land for wages in money or kind or share is regarded as an agricultural labourer. She or he has no risk in the cultivation, but merely works on another person's land for wages. An agricultural labourer has no right of lease or contract on land on which she/he works. (Census of India, 2011)

1.3.6 Household Industry Workers

Household Industry is defined as an industry conducted by one or more members of the household at home or within the village in rural areas and only within the precincts of the house where the household lives in urban areas. The larger proportion of workers in the household industry consists of members of the household.

The industry is not run on the scale of a registered factory where more than 10 persons with power or 20 persons without power is in use as it would qualify or has to be registered under the Indian Factories Act. (Census of India, 2011)

The main criterion of a Household industry even in urban areas is the participation of one or more members of a household. Even if the industry is not actually located at home in rural areas there is a greater possibility of the members of the household participating even if it is located anywhere within the village limits.

In the urban areas, where organized industry takes greater prominence, the Household Industry should be confined to the precincts of the house where the participants live. (Census of India, 2011)

1.3.7 Other Workers

Workers other than cultivators, agricultural labourers or workers in Household Industry, as defined above are termed as 'Other Workers' (OW). Examples of such type of workers are government servants, municipal employees, teachers, factory workers, plantation workers, those engaged in

trade, commerce, business, transport, banking, mining, construction, political or social work, priests, entertainment artists, etc. (Census of India, 2011)

According to Census, classification of workers, the study of the occupational structure and its analysis has been dealt only as per three fold classification i.e. main, marginal and non-workers. It may be helpful to understand the economic base of the Block in the study area. (Census of India, 2011)

1.4 Statement of the Problem

The Muktsar district is characterized with waterlogging that is temporary and permanent in nature. In the district more than 70 percent of the population directly depends upon agriculture and remaining population on other activities, because most of the populations earning their livelihood from agriculture are highly influenced by waterlogging. Waterlogging problem started since 1980 that are becoming more severe in present creating negative impacts on agriculture as well as on occupation structure of people. The present study is an attempt to find out possible impact or relationship of waterlogging on occupation structure in the district.

1.5 Research Questions

- How Main and Marginal workers vary across the Sri Muktsar district?
- Does water logging have Impact on Occupational variation and change in Sri Muktsar Sahib District?

1.6 Objectives

- To Map the Waterlogged areas in Sri Muktsar Sahib District.
- To Study the distribution and change of Occupation in Sri Muktsar District.

1.7 Methodology

The present Section encompasses the methodology adopted in selection of study area in terms of district, blocks, and villages. It also describes the method of data collection and analytical tools used to fulfill different objectives set forth for the study.

The present study is relating to Sri Muktsar Sahib District of Punjab. To fulfill the first objective is to prepare map of waterlogging areas of the Sri Muktsar Sahib District. The maps of waterlogging prepare using the Bhuvan Geospatial Portal and after a digitizing the areas open on the Shapefile of Sri Muktsar Sahib. After the digitizing the areas, verified with the help of GPS. To study the impacts of waterlogging on Occupation, two areas as Permanent waterlogged and Seasonal waterlogged were selected keeping in view the importance of the effects of these areas on Occupational Structure in Sri Muktsar Sahib District of Punjab. The Data of Occupation was obtained from Primary Census Abstract 2001 and 2011, Published by the Government of India. The data of all the blocks falling under district were collected from the Primary Census Abstract.

1.8 Selection of Villages

List of all the villages in the District was prepared villages from District was selected randomly, thus making total sample of four villages. The detail of sample village is provided in the table:

Table 1. 2: List of Selected Villages along with Block and Sample Size.

Block	Type of Waterlogging	Village	No. of Sample
Malout	Permanent	Their	10
Muktsar	Permanent	Manianwala	10
Kot Bhai	Seasonal	Husner	10
Muktsar	Seasonal	Jhabelwali	10

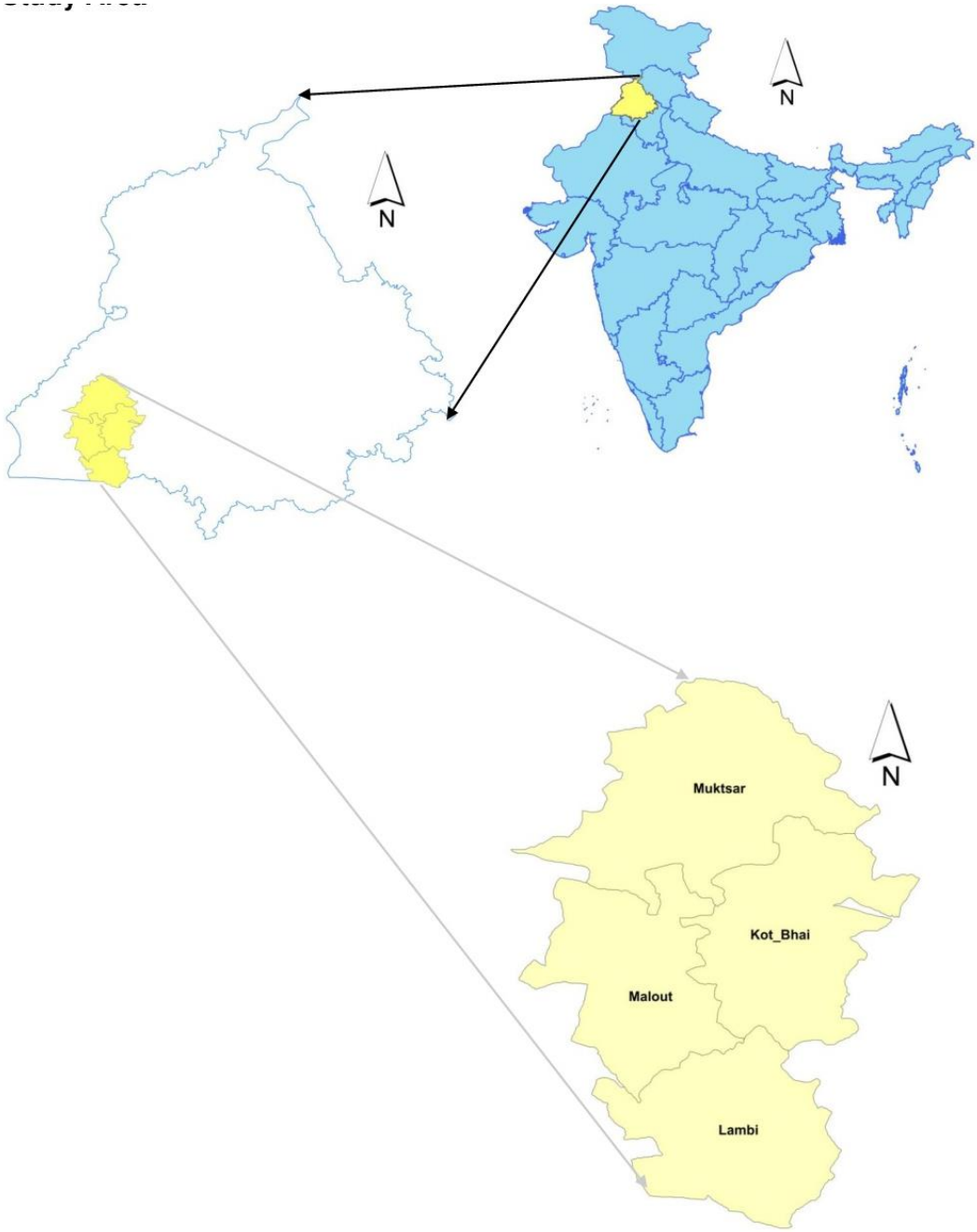
This Study is based on Primary as well as Secondary sources of data. Secondary sources are used to look into the area under water logging and Occupational Structure in Punjab and Muktsar district and for the selection of villages which are most affected by water logging in the district of Muktsar. Four villages are to be selected from the district. The Selection of Villages on based on two types of

waterlogging, permanent and Seasonal Waterlogged in the district. Two Villages are to be selected from Permanent Waterlogging area and Two Villages are to be selected from Seasonal Waterlogging area. This includes Husner (Gidderbaha Block), Manianwala (Muktsar Block) from Seasonal Waterlogging area and Their (Malout Block) and Jhabelwali (Muktsar Block) from Permanent Waterlogging area. The selection of respondent is based on simple random sampling method; I have carry out the list of farmers those mostly affected by the waterlogging problem. This list will be provided by the head of Village (Sarpanch of village), on the basis of this list I have select respondent using simple random sampling method. The secondary data source use for mapping, to digitizing the village level map of Sri Muktsar Sahib District using Village map prepared by the Punjab Remote Sensing Centre. Using Bhuvan Geo-portal and Google earth to verifying the location information and base map. 1.1 The information in this regard has been collected from the Primary Census Abstract, Published by the Government of India. Primary data is collected through a primary field survey.

1.9 Study Area

Sri Muktsar Sahib District is located in South Western Zone of Punjab. It lies between 30º 69 and 29º 87 latitude and 74º 21 and 74º 86 longitude. It is bounded by States of Rajasthan and Haryana in the South, district Faridkot in North, Ferozepur in West and Bathinda in the East. The District of Sri Muktsar Sahib while occupying only 12.73 % geographical area of Punjab, the Central parts of District are facing problems of severe water logging and Salinization. District of the Sri Muktsar Sahib, facing a severe problem of Permanent water logging and resultant soil salinity. These include the Blocks of Muktsar, Malout, Bhai Kot and Lambi, irrigated by the Sirhind canal (with the Sirhind and Rajasthan feeders running through this district). Water logging problem in study area, Waterlogging is the identity of the Sri Muktsar Sahib.

Map No. 1.1 Location Map of Study Area



Source: Create with GIS Software

CHAPTER-2

Review of Literature

A comprehensive review of literature has been carried out in accordance with the objectives of the study. However, some of the most pertinent studies carried out both in India and abroad related to the objective.

1. Study carried out by Singh and Nandal 1993 show that land degradation in the form of soil salinity and waterlogging was assuming alarming proportions in the irrigated tracts of Haryana State. The investigation was based on the primary data collected from a sample of 248 farmers pertaining to agricultural year 1989-90. The study examined the adverse effects of degraded lands on crop productivity. The productivity and returns over variable cost from all crops declined in both types of degraded soils as compared to normal soil partly due to degradation effect and partly due to the reduced input levels. The total estimated loss in the study area due to land degradation was about Rs. 257 Crores on account of land unfit for cultivation and lower yields in the study area. (Singh & Nandal, 1993)
2. Study carried out by Gajja1994 productivity variations in Kakrapar Canal Command area of Gujarat State. Based on primary data obtained from 220 farmers distributed over 22 villages during the agricultural year 1989-90. The farmers in the command area allocated more area to water intensive crops like sugarcane and paddy ignoring the suggested cropping pattern. This consequently led to the problem of soil degradation in the form of salinity and waterlogging. The results further showed that highest crop yield observed on normal soils, and the lowest on strongly degraded soils. The yield reduction was 85 per cent lower in case of cotton and paddy in comparison to normal soil. A significant difference in net income per hectare was observed on normal soils as compared to degraded lands. (Gajja, Sharma, & Joshi, 1994)
3. Study carried out by Joshi examined crop loss at the farm level due to reduction in resource allocation. The productivity of major crops declined substantially due to salinity and waterlogging. The trends of this type at the farm level were clear indications that important commercial crops would

gradually disappear on degraded soils since they are not economically viable to be cultivated on these soils. The negative effects at the farm level included threat to sustainability of land resource, decreased farm production, land abandoning, decline in resource use and productivity. At the regional level displacement of labour, widening of income disparities was apparent. The consequences at the national level may be witnessed in the form of decline in agricultural production, reduced GDP and exports. (Joshi, Gajja, & Singh, 1994)

4. Study carried out by Singh and Singh injudicious use of irrigation water due to increased irrigation facilities in some rice-wheat growing regions of North-West, India. The study was conducted in the Western Jamuna canal and Bhakra canal region of Haryana. The sample of 248 respondents was taken from the study area. It was found that the excessive and injudicious use of irrigation water had induced the problem of waterlogging and salinity. It was observed that these soil hazards deteriorate the soil health and fertility. It resulted in lowering agricultural production, farm income and consequent reduction in farm labour employment. The yield differences were calculated for wheat, rice and cotton crops. The study also showed that there was a huge cut in non-land resource use on the problem soils. (Singh & Singh, 1995)
5. Study carried out by Sharma examined various adverse consequences of land degradation in Haryana due to salinity and waterlogging. They found that there was a large-scale shift in the cropping pattern towards rice and wheat crops, decline in farm production and income, unemployment and migration in search of livelihood, income disparity and social imbalance. (Sharma, Gajja, & Shah, 1995).
6. Study carried out by Joshi assessed land degradation in terms of farmer's participation in Haryana and reported that owners of degraded land tend to use more of seeds of local varieties while their counterparts with good land used small quantity of expensive hybrid. Seeds. It was observed that hybrid seeds on good land produced vigorous seedlings with a low seed rate as against the risk of crop failure on poor soil. The cropping pattern followed by farmers on

poor and good soils reflected the differences in optimum use of these two types of soils. The general cropping pattern on normal soil included hybrids of cotton and sorghum, while farmers under poor soils planted local varieties of cotton and sorghum with low input levels. (Joshi, Chonde, & Foster, 1996)

7. In a study, Datta and Jong, relating to agricultural land drainage with reference to management of waterlogged and saline lands reported three adverse effects at the farm level such as (A) decline in productivity of resources (B) reduction in resource use and (C) abandonment of land. At the regional level, the problems of waterlogging and soil salinity would displace labor in agricultural sector (D) adversely affect the secondary sector and (E) widen the income disparity. (Datta, 1997).
8. Study carried out by Gowrishankar and Dhinakaran 1997 reported that the factors responsible for land degradation broadly included climatic, soil, management and socio-economic factors. It was felt that the visible economic impact of land degradation was on agricultural productivity. The immediate effects of land degradation included reduced crop yields, decreasing profits, reduction in the value of land and loss of water resource. Standard of living which depended on farm income declined more with decrease in the per capita availability of land. The study suggested certain remedies for degradation such as chemical amelioration, agro-forestry and watershed management (Gowrishankar & Dhinakaran, 1997).
9. Agnihotri 1992 reported that waterlogging and soil salinity problems are endangering more-than 33 per cent of the cropped area in arid and semi-arid regions of Haryana state. (Umali, 1993)Reviewed irrigation induced salinity in various countries and analyzed the economic, technical, social and institutional factors contributing to the development of irrigation induced salinity. The poor water management practices related to over application of irrigation water by farmers, excessive seepage throughout the irrigation system, absence of or inadequacy of drainage infrastructure as the primary causes of irrigation induced salinity. Further, rapid deterioration of infrastructures, poor project

planning and implementation also contributed to the spread of the problem. (Agnihotri et, 1992)

10. Studied the adverse effects on cropping pattern for different land irritability classes of the command area in Gujarat. They observed that the present cropping pattern adopted differed substantially from that of the recommended one and was towards high water requirement crops. The crops like sugarcane, banana, paddy occupied more than 80 per cent of the potential created and has led to soil silanization and waterlogging. Yields of different crops under different land irritability classes and soil degradation levels showed significantly negative trends and present crop yield levels were far lower. The unit cost of production increased with increase in land irritability class and soil degradation level, and adversely affected farmer's incomes. Labor requirement particularly hired labor decreased with increase in land irritability class and level of soil degradation. The authors stressed that the results are to be viewed with serious concern by planners and policy makers so as to combat soil degradation and enhance returns on investment. (Gujja, Purohit, Parshad, Dhalaliwal, Randhawa, & Dhawan, 1997).

CHAPTER-3

3.1 WATERLOGGING IN SRI MUKTSAR SAHIB DISTRICT

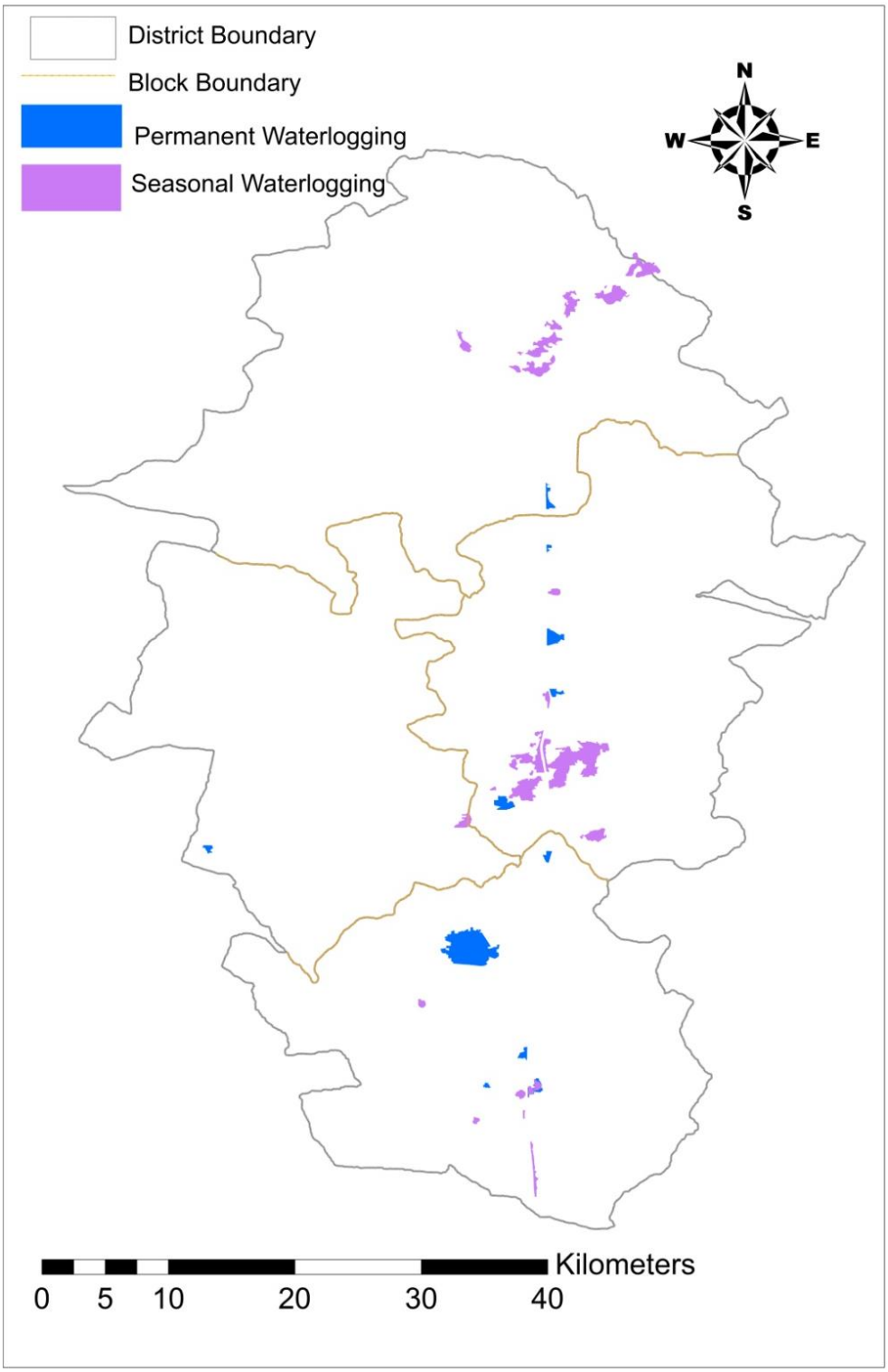
The District of Sri Muktsar Sahib while occupying only 12.73 % geographical area of Punjab, the Central parts of District are facing problems of severe water logging and Salinization. The blue areas in Map 1 below indicate the low lying pockets in Central and Sothern parts of district of the Sri Muktsar sahib, facing a severe problem of Permanent water logging and resultant soil salinity.

These include the Blocks of Muktsar, Malout, Bhai Kot and Lambi, irrigated by the Sirhind canal (with the Sirhind and Rajasthan feeders running through this district). The purple area in Map Shows the Seasonal waterlogging areas. These pockets of waterlogging in central part the district Sri Muktsar Sahib are facing a severe problem of Seasonal waterlogging and resultant soil salinity.

However, much of this report will restrict itself to discussions the occupational change of district with the effect of water-logging. Map highlights that the Location of Permanent and Seasonal waterlogged area in Sri Muktsar Sahib. The maximum water logging to the tune of 76% out the total in south-west Punjab is found in Muktsar district. Canal water seepage has a major problem due to waterlogging soil characteristics changed. Changing soil character and waterlogging effect to the crops and as will as Occupational Structure of the peoples of this Region.

Sometimes crop fails for long time period effect of this farmers' economic condition is affected and also Due to water logging, people's Occupation is also affected, Because of that, he takes up the work of farming and laborer goes to other work. By studying, I will try to understand that the occupation Structure of the peoples by Secondary and primary Data Sources.

MAP NO. 3.1 Map of Water logging in Sri Muktsar Sahib District



3.2 Area under-Water logging

Table No 3.1. Area underwater- logging in Punjab and Muktsar (in Hectares)

Year	Waterlogged Area in Punjab	% age	Waterlogged Area in Muktsar	% age
1998	104250	2.07	65200	25.14
1999	64350	1.28	35150	13.56
2000	30300	0.60	11100	4.28
2001	39000	0.77	9200	3.55
2002	18050	0.36	11950	4.61
2003	7100	0.14	1950	0.75
2004	10400	0.21	5800	2.24
2005	5800	0.12	2200	0.85
2006	12000	0.24	10700	4.13
2011	Not Available	NA	136600	52.68
Total Geographical Area	5036200	NA	259300	

Source: Directorate, Water Resources, Punjab, 2008.

The problem is wide spread all over in Sri Muktsar Sahib District. The water table has been rising steadily over the last three decades reaching within 1 meter or less from the surface over large areas (Punjab, 2008). Table 3.1 highlights that the share of waterlogged area. According to the Data of Water Resources, Directorate, Punjab, Chandigarh Showing in the (Table No 3.1).The total Geographic Area of Punjab is 5036200 hectares out of this in 1998, 104250 hectares affected by the Waterlogging problem. In 1999, 64350 hectares affected by the Waterlogging problem, in 2000, 30300 hectares affected by the Waterlogging problem in 2001, 39000 hectares affected by the Waterlogging problem and in 2002, 18050 hectares affected by the Waterlogging problem. The period of 1998 to 2002 the problem of Waterlogging is Normally Decrees, in 2002 Waterlogging problem is only 0.14 percent Area of Punjab. But after 2002, the problem is again increase, in 2004, 10400 hectares Land affected by the Waterlogging problem and in 2006, 12000 hectares affected by the Waterlogging problem its 0.24 percent of total area of Punjab. The Scenario of Waterlogging in Sri Muktsar Sahib, in 1998, 65200 hectares land is affected by the Waterlogging problem out of 259300 hectares. The scenario of Muktsar is totally different from the Punjab the problem of waterlogging is decrease with time. In 2005, only 2200 hectares are affected by the Waterlogging it is only 0.85

percent of total area of District. After 2005, the areas under waterlogging again increase in 10700 hectares area, its 4.13 percent of total area of District.

. Table No.3.2. Area under Permanent and Seasonal Water logging:-

Year	Permanent Waterlogged	Seasonal Waterlogged	Total (Out of 2593Sq.Km)
2001	92Sq Km	183Sq Km	275 Sq Km
2006	107Sq Km	257Sq Km	364 Sq Km
2011	314Sq Km	1052Sq Km	1366 Sq Km

Source: Directorate of Water Resources and Environment, Punjab, 2012.

According to the Data of, Directorate of Water Resources and Environment, Punjab Showing in the (Table No 3.2), in 2001 the 92 Sq Km area of Sri Muktsar Sahib was affected by the Permanent Waterlogging and 183 Sq Km area was affected by Seasonal Waterlogging problem out of 2593 Sq Km Area of District. In 2006 the area under Permanent Waterlogging was increased by 107 Sq Km and Seasonal waterlogged area was increased by 257 Sq Km, in 2011, the Waterlogging problem spread to 314 Sq Km under Permanent Waterlogging and 1052 Sq Km land Under Seasonal waterlogged Area. Table 3 highlights that the share of Permanent and Seasonal waterlogged area has been increased from 275 Sq Km, of total area of water logging of Sri Muktsar Sahib in 2001 to 1366 Sq Km, in 2011 in Muktsar district. The problem is widespread over all blocks (Malout, Lambi, Kot Bhai and Muktsar) of Sri Muktsar Sahib District.

Area under Permanent and Seasonal Water logging:-

Figure No. 3.1 Area Under Waterlogging 2001

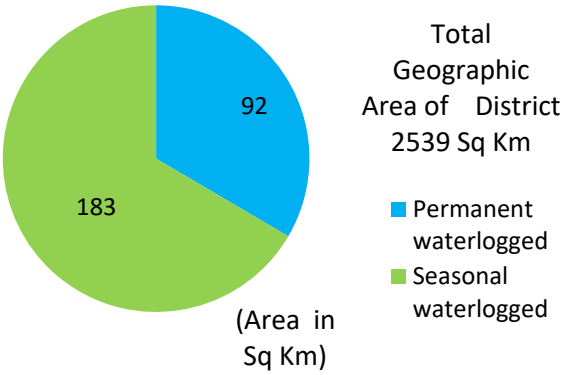


Figure No. 3.2 Area Under Waterlogging 2006

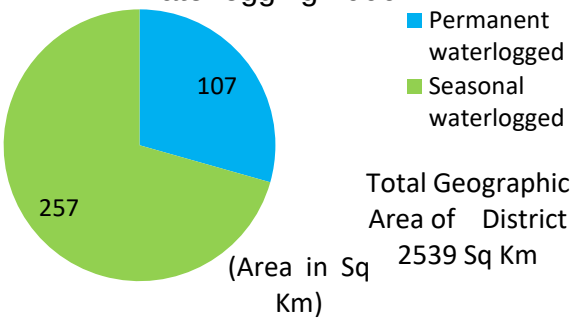
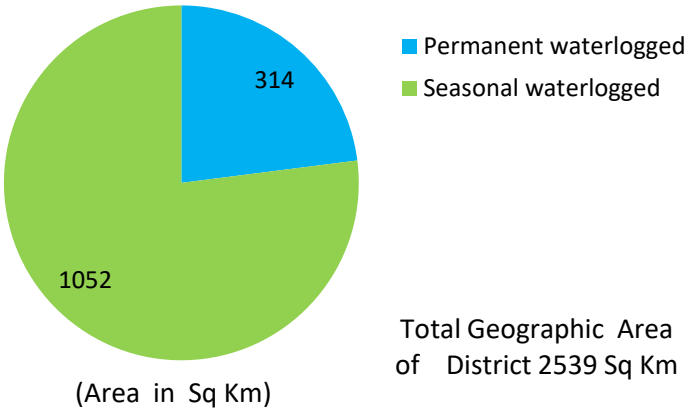


Figure No. 3.3 Area Under Waterlogging 2011.



Source: Directorate of Water Resources and Environment, Punjab

3.3 Historical Background

Waterlogging problem in study area also carryout longtime Background. The introduction of canals made the state of Punjab surplus in food grains but at the same time, this also led to the development of water logging, rendering large chunks of land unproductive. This has resulted in decline in crop production, farm income and indirect economic losses. The study attempts to assess the impact of waterlogging on farming in the Punjab state. This problem not introduce before 1980. It starts to the

history of the Indira Gandhi canal, for water requirement of Rajasthan is fulfilled by an introduction of Indira Gandhi canal.

In 1981 central government launched Indira Gandhi Irrigation Project (IGIP) to fulfill the water requirement of the Rajasthan. Indira Gandhi Canal, one of the longest artificial canals in the world was brought to public use in 1974 (Stage I). (R & A, 2014)The introduction of IGNP has led to a transformation in both physical and socio-economic environment of the region. The canal irrigates approximately 1.5 million hectares of arid land of Thar Desert. Along with the increase in cultivated agriculture land, various new small-scale industries have also been established in the region. The canal irrigation has not only led to increasing in the human population but has also made possible the development of education and health amenities in the region. (Sharma K. , 2001)

But, the project has some negative implications also. This project fulfills the Rajasthan water requirements but negative effect on the Punjab. Muktsar lay in the west side of the Indira canal. The effect of canal water seepage the larger area of the Muktsar under the water table rising has effected large area under the waterlogging. The canal water seepage has led to increases in land degradation due to waterlogging, silanization, and alkalization.

The maximum water logging to the tune of 76% out the total in south-west Punjab is found in Muktsar district. Canal water seepage has a major problem due to waterlogging soil characteristics changed. Changing soil character and waterlogging effect to the crops and as will as Occupational Structure of the peoples of this Region. Sometimes crop fails for long time period effect of this farmers' economic condition is affected and also Due to water logging, people's Occupation is also affected, Because of that, he takes up the work of farming and laborer goes to other work. By studying, I will try to understand that the occupation Structure of the peoples by Secondary and primary Data Sources.

3.4 Problem of Water Logging in Sri Muktsar Sahib District

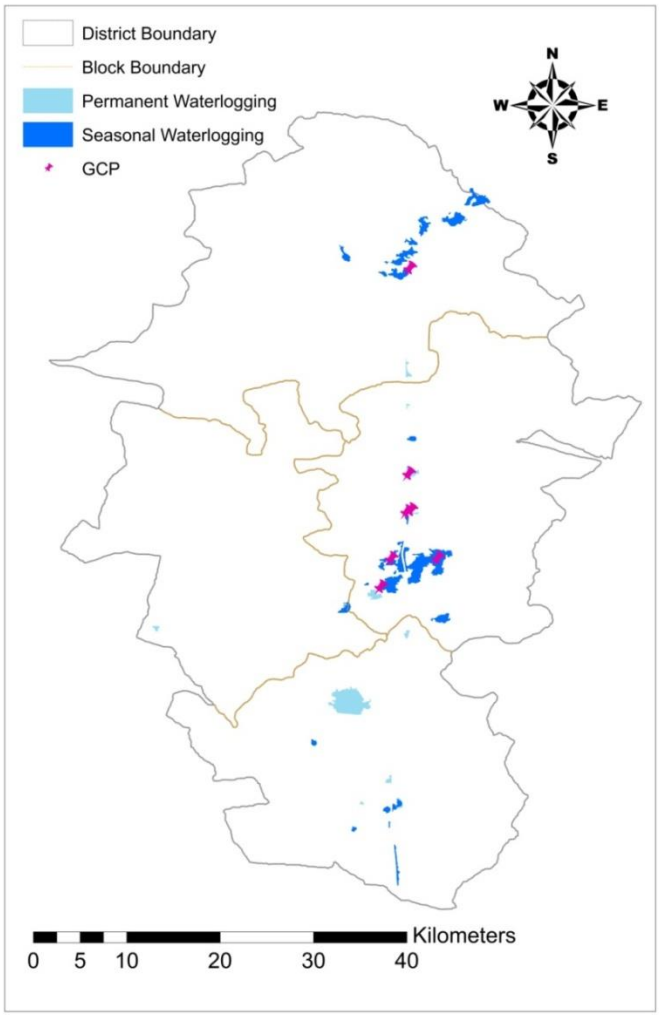
The problem is wide spread all over in Muktsar District. The water table has been rising steadily over the last three decades reaching within 1 meter or less from the surface over large areas (Punjab, 2008). Table 2 highlights that the share of

Permanent and Seasonal waterlogged area has been increased from 275 Sq Km, of total area of water logging of Sri Muktsar Sahib in 2001 to 1366 Sq Km, in 2011 in Muktsar district. The problem is widespread over all blocks (Malout, Lambi, Kot Bhai and Muktsar) of Sri Muktsar Sahib District. The problem is widespread over all blocks (Malout, Lambi, Kot Bhai and Muktsar) of Sri Muktsar Sahib District. The water table rises virtually to surface in number of villages during the rainy season causing serious damage to standing crops. Water logging and soil salinity are thus an unavoidable off shoot of irrigation and adversely affect the production and productivity in irrigation command areas of Sri Muktsar Sahib resulting in huge economic loss. (Punjab, 2008)Due to loss of Crops, Cultivator and Agriculture Labors also affected. By studying, I will try to understand that the occupation Structure of the peoples by Secondary and primary Data Sources.

3.5 Causes of Water Logging in Sri Muktsar Sahib District

Initiation of problem of water logging, its extent and degrees are controlled by several factors. The various causes for the development of water logging in Punjab is as under. The huge network of unlined distribution and their field channels recharge ground water body on account of seepage from as well as by returns slow of irrigation into the fields. Two major lined canals i.e. Rajasthan feeder and Sirhind feeder running parallel to East of Muktsar district. Although lined but on account of cracks in lining of their bed and sides are causing damage to the area and major source of excess inflow into the area. Very less withdrawal of underground water for irrigation due to poor groundwater quality. Lateral groundwater flow from North-East to South-West duration the depth of water table contours from North-West Punjab towards Bathinda and Malout towns with average rate of travel of about 0.29 kms/year and cause the water table rise in this tract. (Singh S. , 2013)Poor working of existing surface drainage system is also responsible for water logging. The drains have not been built along with the canal network. Even where drains have been constructed, the maintenance of the drains is of very poor quality. (Mangat, 1981).

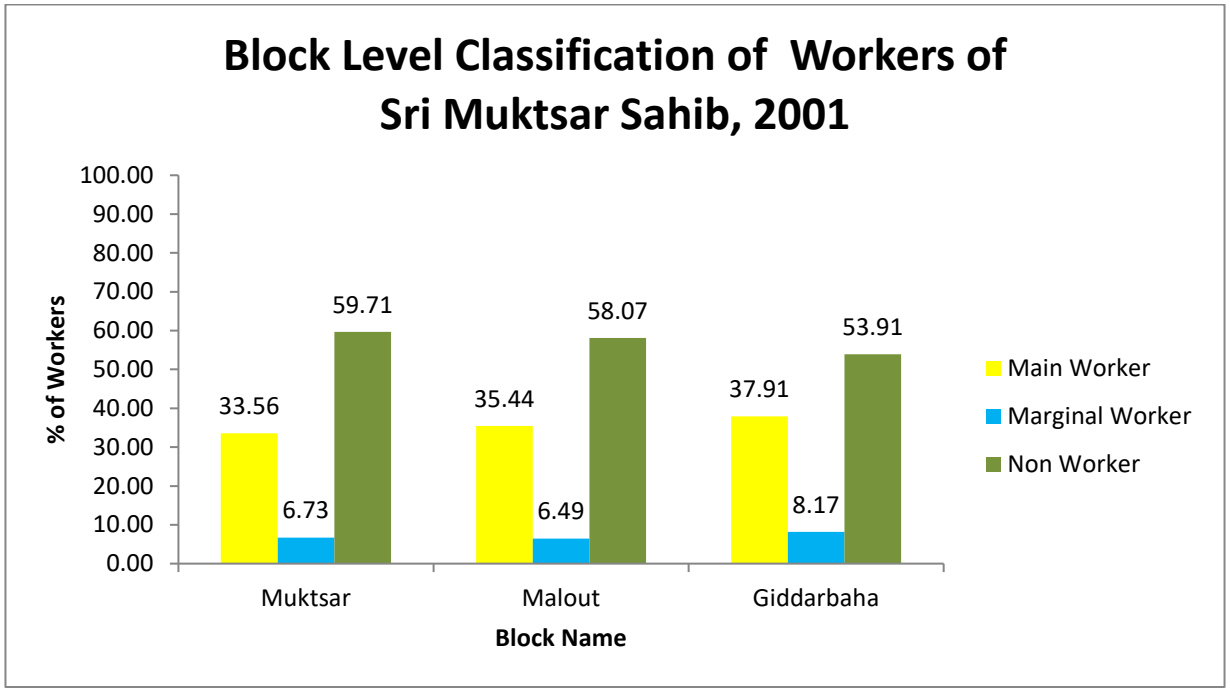
Map No.3.2 Waterlogging Map with GCPs (Ground Control Points)



Note: During Collection of Ground Control Points in the field.

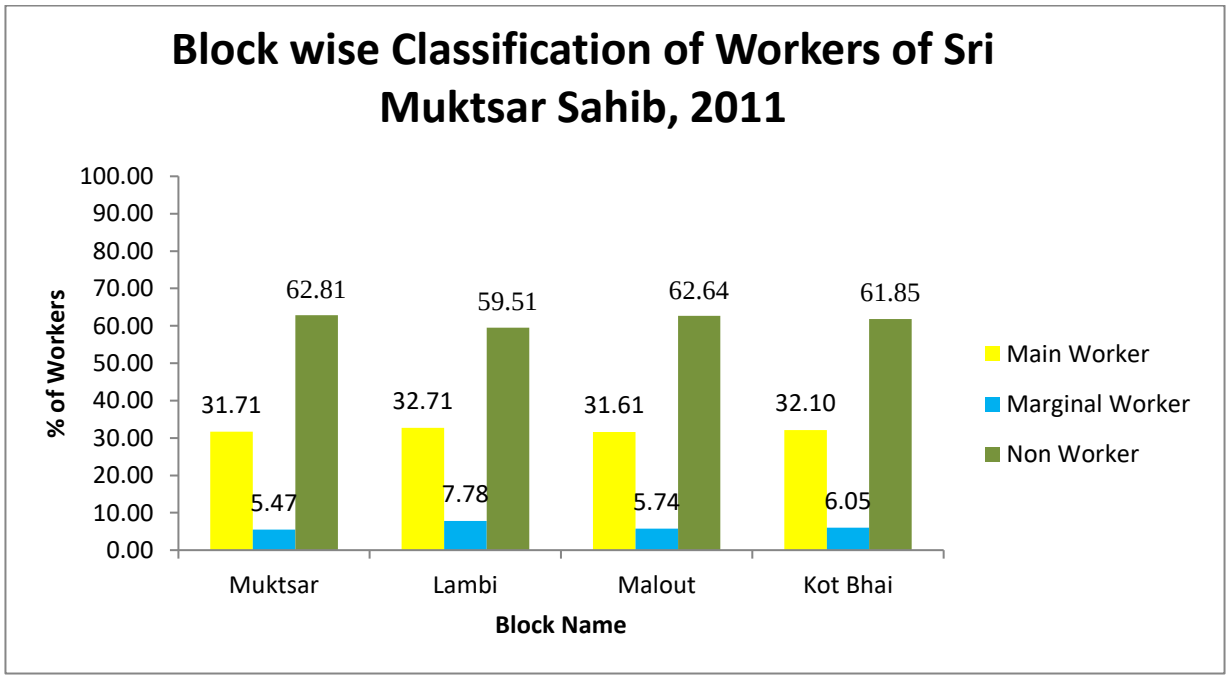
3.6 Block Level Occupational Structure of Sri Muktsar Sahib

FIGURE NO.3.4



Source: Census of India, 2001

FIGURE NO.3.5



Source: Census of India, 2011

3.6.1 MAIN WORKERS

Main workers are those who work in some of the economic activities and other allied services for a definite period of time in any sector Cultivators, Agricultural labourers, Household industries, other services. This group of working population works for the major part of the year preceding the enumeration. Block wise analysis (Fig.No.3.4 & 3.5) of main workers of Sri Muktsar Sahib district in the year 2001 shows that the Gidderbaha Block has the maximum of (37.91%) people engaged in this sector and Muktsar Block has minimum of (33.56%) followed by Malout Block (35.44%). During 2011 Lambi block had (32.71%) of people engaged in this sector followed by Kot Bhai (32.10%), Muktsar (31.71%) and Malout (31.61%).

3.6.2 MARGINAL WORKERS

Marginal workers are those who worked for less than six months during the reference period were defined as marginal worker, work included even part time help or unpaid work on farm, family enterprise or in any other economic activity. Block wise analysis (Fig.No.3.4 & 3.5) of marginal workers in 2001 shows that the highest percentage recorded in Gidderbaha Block (8.17%) followed by Muktsar (6.73%), Malout (6.49%). Whereas in 2011 the highest marginal workers are found in Lambi Block (7.78%) followed by Kot Bhai (6.05%), Malout (5.74%) and Muktsar (5.47%).

3.6.3 NON-WORKERS

Non-workers are those who did not work at all during the reference period were treated as non-workers. Those who are not participating in any gainful activity This group consists of the full time students, did not participate in any economically activity paid or unpaid, the housewives attending mainly to house-keeping and allied work of an unproductive nature depends including who are too young or too old to work, the disabled person etc. In 2001, Muktsar Block(Fig.No.3.4 & 3.5) has the highest number of people who are non-workers (59.71%) followed by Malout (58.07%), Gidderbaha (53.91%).During 2011 Muktsar and Malout Block has the maximum number of people who are non-workers (62.81% & 62.64%) followed by Kot Bhai (61.85%), Lambi (59.51%).It can be seen from (Figure 3.4 & 3.5) that, in Muktsar and Malout Block, the number of Non-Workers has increased substantially from 2001 to 2011. It can also be

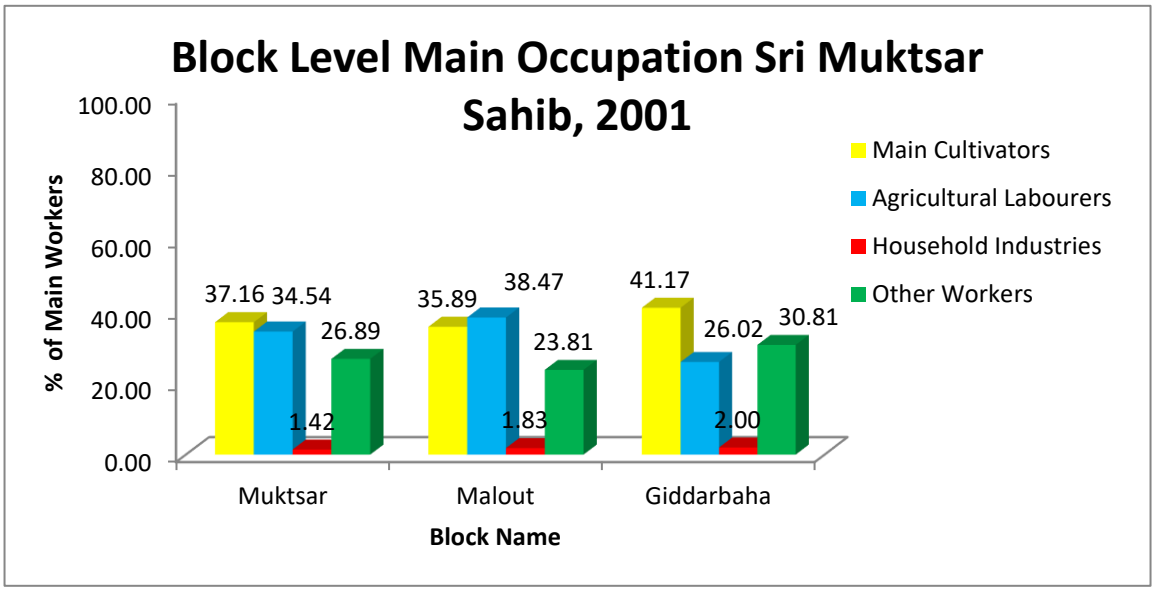
observed from the above Figure that the occupational Classification of all the Blocks changed drastically between 2001 to 2011 where the concentration of workforce shifted from Main and Marginal Workers towards Non- workers. It can be inferred that the percentage of Non- workers in all blocks of Sri Muktsar Sahib is much higher when compared with Main and Marginal Workers.

3.7 **ANALYSIS OF OCCUPATIONAL STRUCTURE**:

The Block wise occupational structure of Sri Muktsar Sahib District is presented in the following four categories of Main and Marginal Occupational Structures

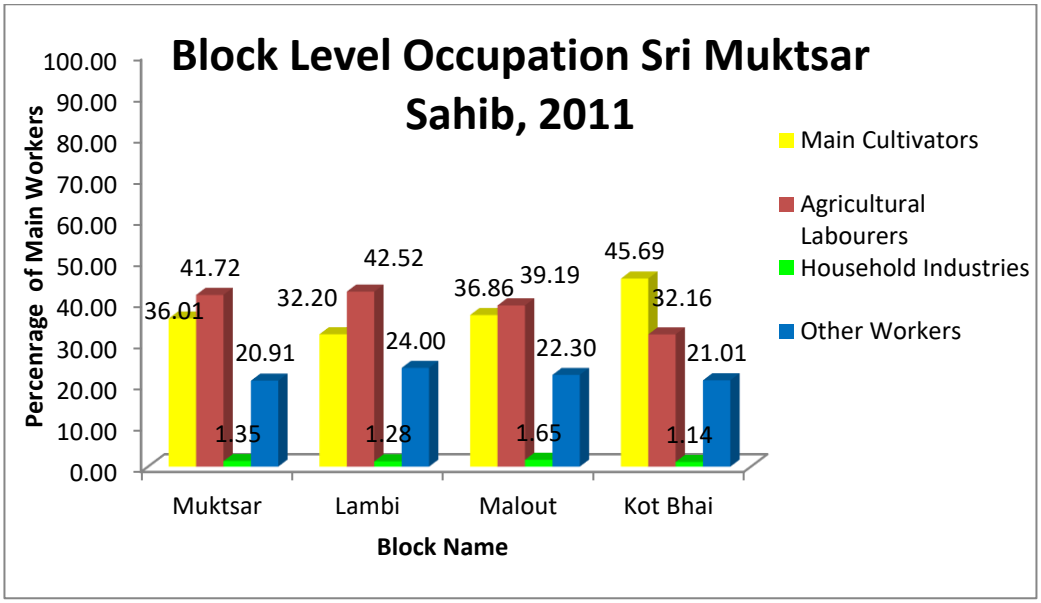
1. Cultivators
2. Agricultural Labourers
3. Household industries
4. .Other services

FIGURE NO.3.6



Source: Census of India, 2001

FIGURE NO.3.7



Source: Census of India, 2011

3.7.1 Main Cultivators

For the purpose of the census, a person is working as a Main cultivator if he or she is engaged in agriculture pursuits. In 2001, Block wise analysis (Fig.No.3.6) shows that, Gidderbaha Block has (41.17%) of cultivators followed by Muktsar (37.16%), Malout (35.89%). In 2011, Kot Bhai (Fig.No.3.7) Block has (45.69%) of Main cultivators followed by Malout (36.86%), Muktsar (36.01%) and Lambi (32.20%).

3.7.2 Main Agricultural Labourers

Block level analysis (Fig.No.3.6) of 2001 census shows that ,the highest number of Main agricultural labourers are more in Malout Block (38.47%), because this Block is suitable for agriculture and it is followed by Muktsar (34.54%), Gidderbaha (26.02%). In 2011, (Fig.No.3.7) Main Agricultural labourers are more in the Lambi Block (42.52%) followed by Muktsar (41.72%), Malout (39.19%) and Kot Bhai is lowest (32.16%).

3.7.3 Main Household Industries

Household industry category is an important economic activity. In a household industry goods are manufactured, processed, serviced or repaired mainly by the members of the same household generally within their own premises. It can be seen from Figure No. 3.6 and 3.7 that Block level analysis (Fig.No.3.6) of 2001 shows that

Gidderbaha has (2.00%) of Main household industry followed by Malout (1.83%), Muktsar (1.42%). In 2011, Malout Block (Fig.No.3.7) recorded the highest household (1.65%) followed by Muktsar Block (1.35%), Lambi (1.28%) and Kot Bhai (1.14%).

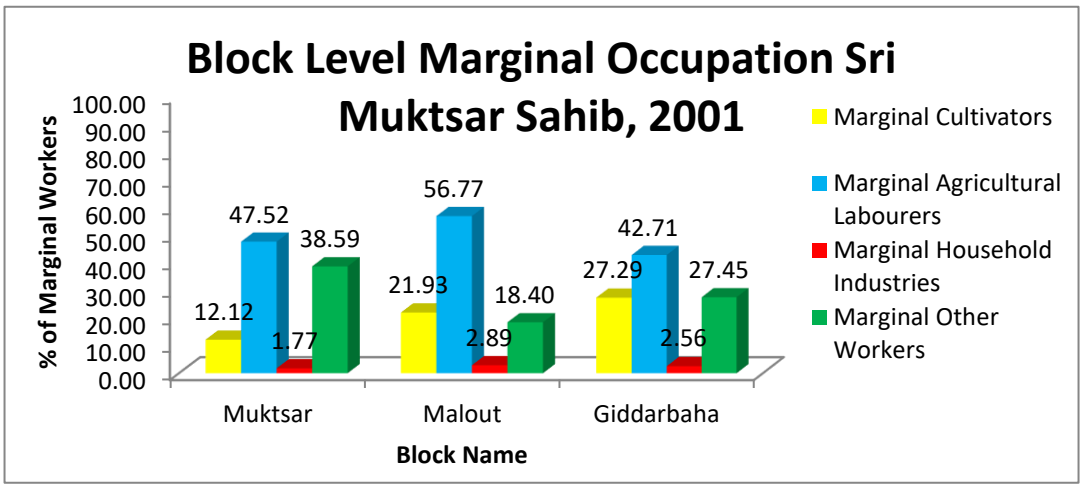
3.7.4 Main Other Workers

Other workers constitute the last category. Other workers are those who have been engaged in some economic activity during the last one year but are not cultivators or agricultural labourers or in household industry.

The categories of other workers include all government servants, municipal employees, teachers, factory workers, plantation workers, those engaged in trade, commerce, business, transport, banking, mining, construction, political or social work, priests, entertainment artists etc. During 2001, the highest proportion of other workers are found in Gidderbaha (30.81%) followed by (Fig No. 3.6) Muktsar (26.89%), Malout (23.81%). Whereas, in 2011, (Fig.No.3.7) highest proportion was in Lambi Block (24.00%) followed by Malout (22.30%), Kot Bhai (21.01%), and Muktsar (20.91%).

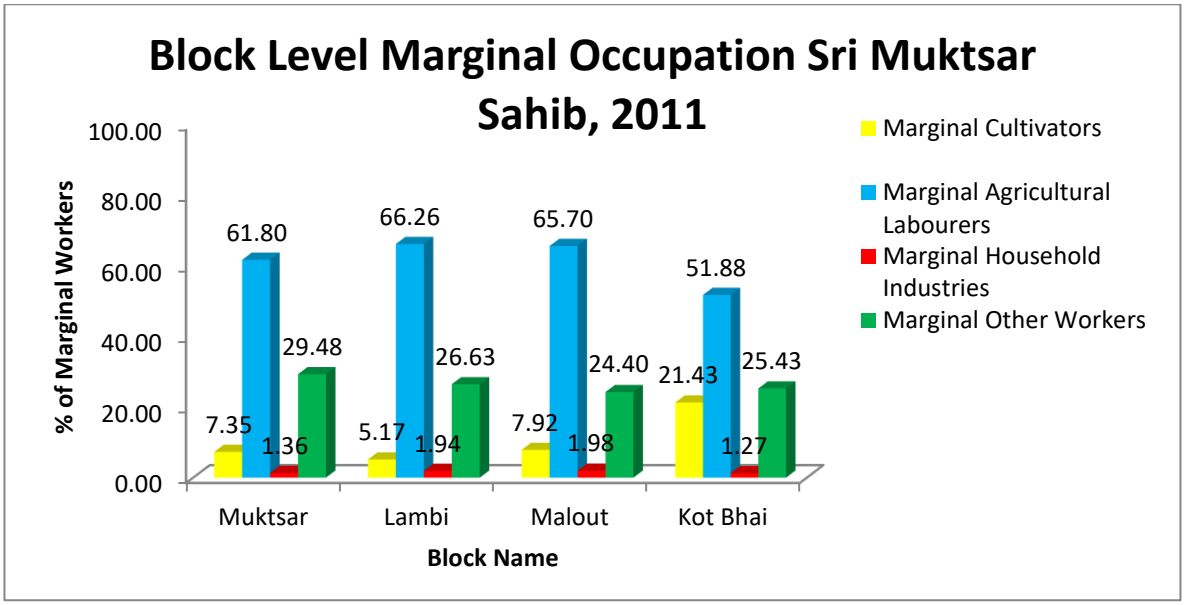
It can be seen from (Figure No. 3.6 and 3.7) in Malout, Lambi, the Share of other workers and Household Industry has increased substantially from 2001 to 2011. It can also be observed from the above Figure that the occupational structure of Muktsar district changed drastically between 2001 to 2011 where the concentration of workforce shifted from cultivators and agricultural labourers towards house hold industry and other workers.

FIGURE NO.3.8



Source: Census of India, 2001

FIGURE NO.3.9



Source: Census of India, 2011

3.7.5 Marginal Cultivators

For the purpose of the census, a person is working as a marginal cultivator if he or she is engaged in agriculture pursuits. In 2001, Block wise analysis (Fig.No.3.8) shows that, Gidderbaha Block has (27.29%) of Marginal cultivators followed by Malout (21.93%), Muktsar (12.12%). In 2011, (Fig No.3.9) Kot Bhai Block has (21.43%) of Marginal cultivators followed by Malout (7.92%), Muktsar (7.35%) and Lambi (5.17%).

3.7.6 Marginal Agricultural Labourers

Block level analysis (Fig.No.3.8) of 2001 census shows that ,the highest number of Marginal agricultural labourers are more in Malout Block (56.77%), because this Block is suitable for agriculture and it is followed by Muktsar (47.52%), Gidderbaha (42.71%). In 2011, (Fig.No.3.9) Marginal Agricultural labourers are more in the Lambi Block (66.26%) followed by Malout (65.70%) Muktsar (61.80%) and Kot Bhai is lowest (51.88%).

3.7.7 Marginal Household Industries

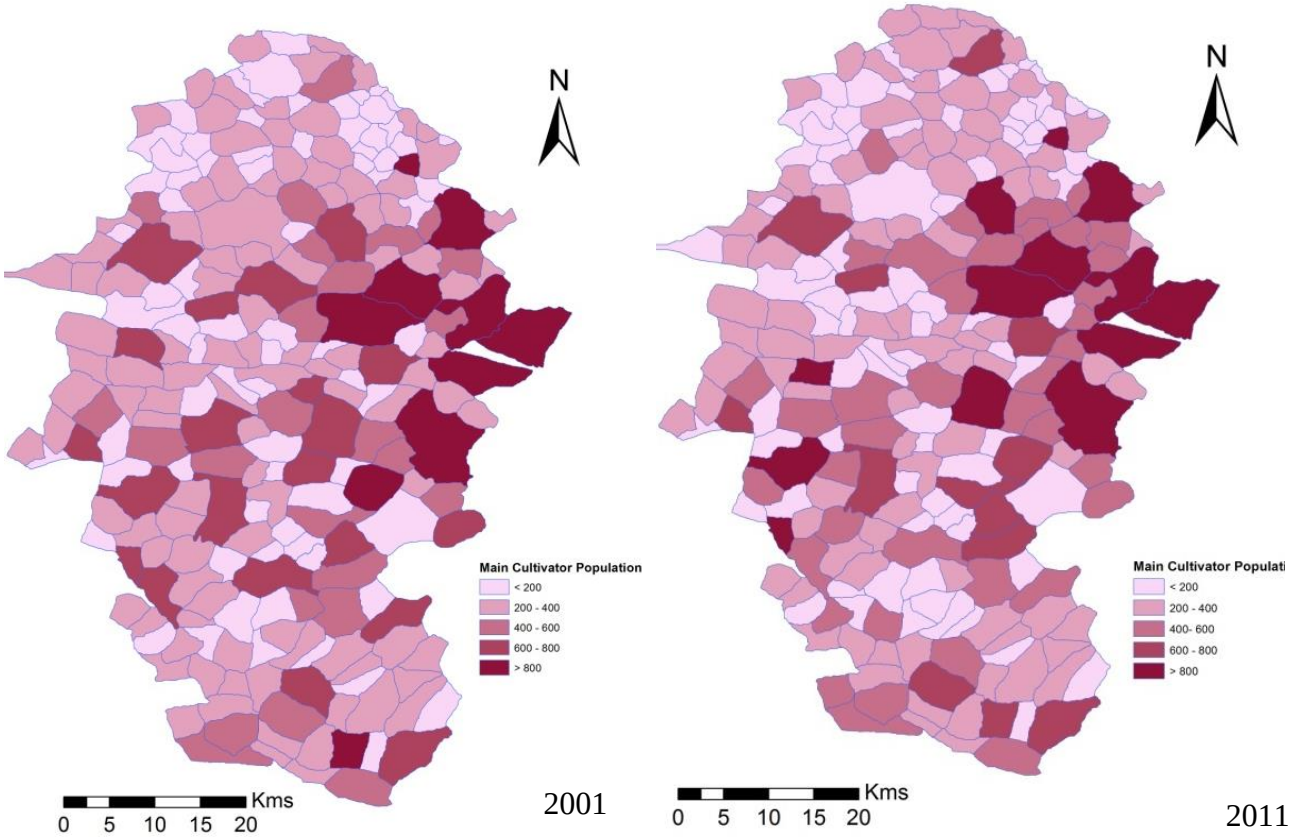
Household industry category is an important economic activity. In a household industry goods are manufactured, processed, serviced or repaired mainly by the members of the same household generally within their own premises. It can be seen

from Figure No. 3.8 and 3.9 that Block level analysis (Fig.No.3.8) of 2001 shows that Malout has (2.89%) of Marginal household industry followed by Gidderbaha (2.56%), Muktsar (1.77%). In 2011, Malout Block recorded the highest household (1.98%) followed by Lambi Block (1.94%), Muktsar (1.36%) and Kot Bhai (1.27%).

3.7.8 Marginal Other Workers

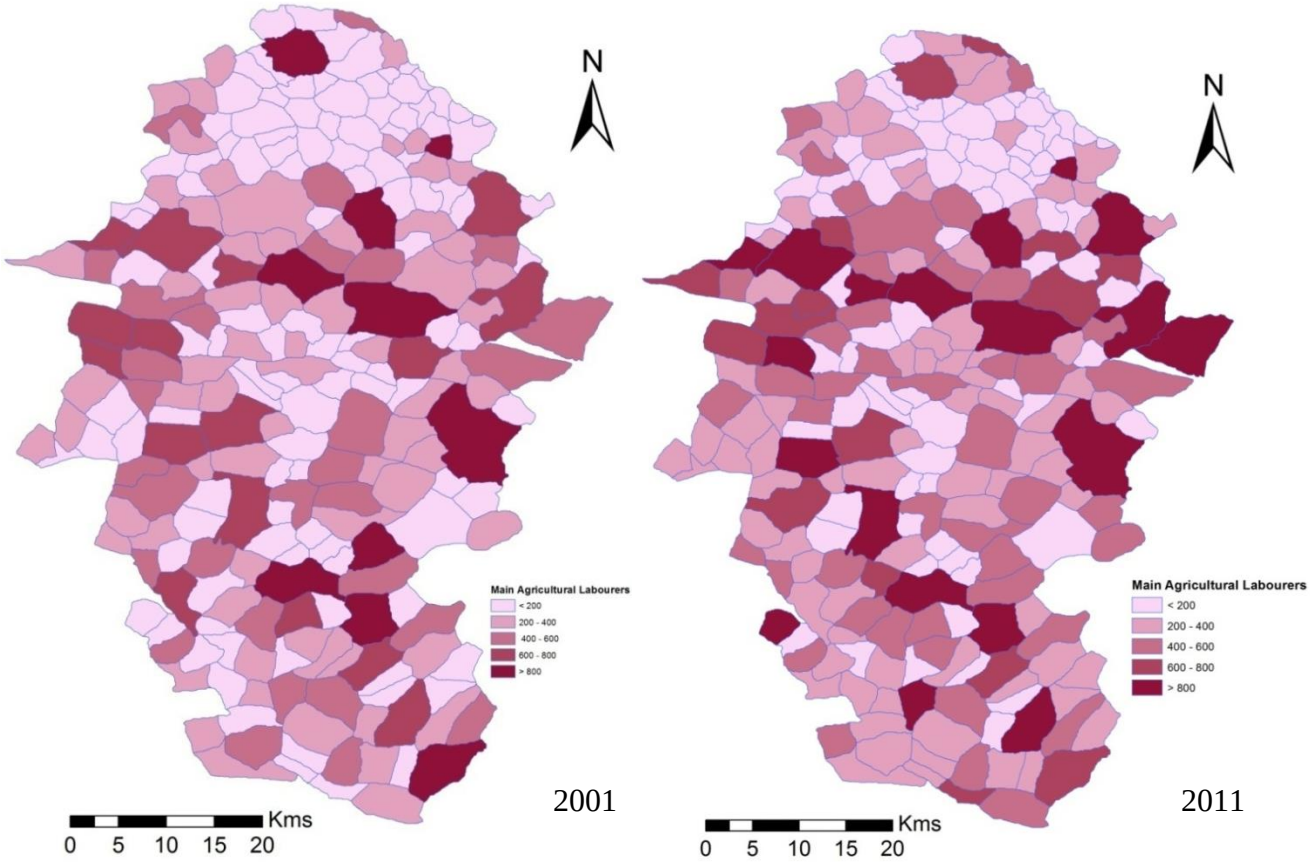
Marginal other workers are those who have been engaged in some economic activity during the last one year but are not cultivators or agricultural labourers or in household industry. The categories of other workers include all government servants, municipal employees, teachers, factory workers, plantation workers, those engaged in trade, commerce, business, transport, banking, mining, construction, political or social work, priests, entertainment artists etc. During 2001, (Fig.No.3.8) the highest proportion of other workers are found in Muktsar (38.59%) followed by Giddarbaha (27.45%), Malout (18.40%). Whereas, in 2011, (Fig.No.3.9) highest proportion was in Lambi Block (29.48%) followed by Muktsar (29.48%), Kot Bhai (25.43%), and Muktsar (24.40%).

Map No. 3.3 Main Cultivators



According to census 2011 the district Sri Muktsar Sahib has total working population is 33, 5326 comprising of 28, 7205 Main workers and 48,121 Marginal workers. The working population of the district in census 2011 is 35 percent is her than the working population 24, 6826 in 2001 census. As per census data 2011 Muktsar district has total Cultivator population is 83,014 comprising of 78,786 main cultivators and 4,228 marginal cultivators. The cultivator population of the district in census 2001 is 86, 578.

Map No. 3.4 Main Agricultural Laborers



Among Villages of district, Doda Village (1688) is the most, Main cultivator population and is the Dodanwali village (133) is least number of main cultivators according to 2011 census. Other villages in high order of their Cultivator population are Kotbhai (1624) Kotliablu (963) and Kauni (943). In the lowest number of cultivators also found in the north-eastern part of the district like a Madahar Kalan (276) , Baja Madahar (190) and Dodanwali (133). A comprising to census 2001 the number of Main Cultivator are decrees in the south-west direction of the district, villages like a Chibranwali (132), Chak-Mahan (15) and some village as high rank with

increasing number of main Cultivator like Doda (1551), Kot Bahi (1513) and Kotli Ablu (1269). In both maps a large number of villages in average category (400-600) of Main Cultivators. Out of 236 villages showing in the map, 11 Villages in the Category of more than 800 Main Cultivators in 2001 map and 14 villages in 2011 map.

As per census data 2011 Muktsar district has total Agricultural Laborers population is 10,5546 comprising of 80,798 main Agricultural Laborers and 24,748 marginal Agricultural Laborers. The Agricultural Laborers population of the district in census 2001 is 89,064.

Among Villages of district, Doda Village (1558) is the most, Main Agricultural Laborers population and the Baja Madahar village (66) is least number of main cultivators according to 2011 census. Other villages in high order of their Agricultural Laborers population are Kotbhai (1222), Harike Kalan (1012) and Kotliablu (963). In the lowest number of Agricultural Laborers in theCharewan (162),Jhabelwali (106), Baja Madahar (66) Villages.

A comprising to census 2001 the numbers of Agricultural Laborers, the large number of villages under the category of less than (< 200) person work as main Agriculture Labors. The large number of main agriculture Laborers mostly found in the big villages of the district like a AbalKhurana (2129), Doda (1238), KotBahi (1158), Rupana (1072) and Channu (858). Mostly low number of Main Agricultural Laborers found in North part of the Muktsar Block villages like a Sadarwala (54), Lambhanwali (163) and Kotli Sanghar (174).

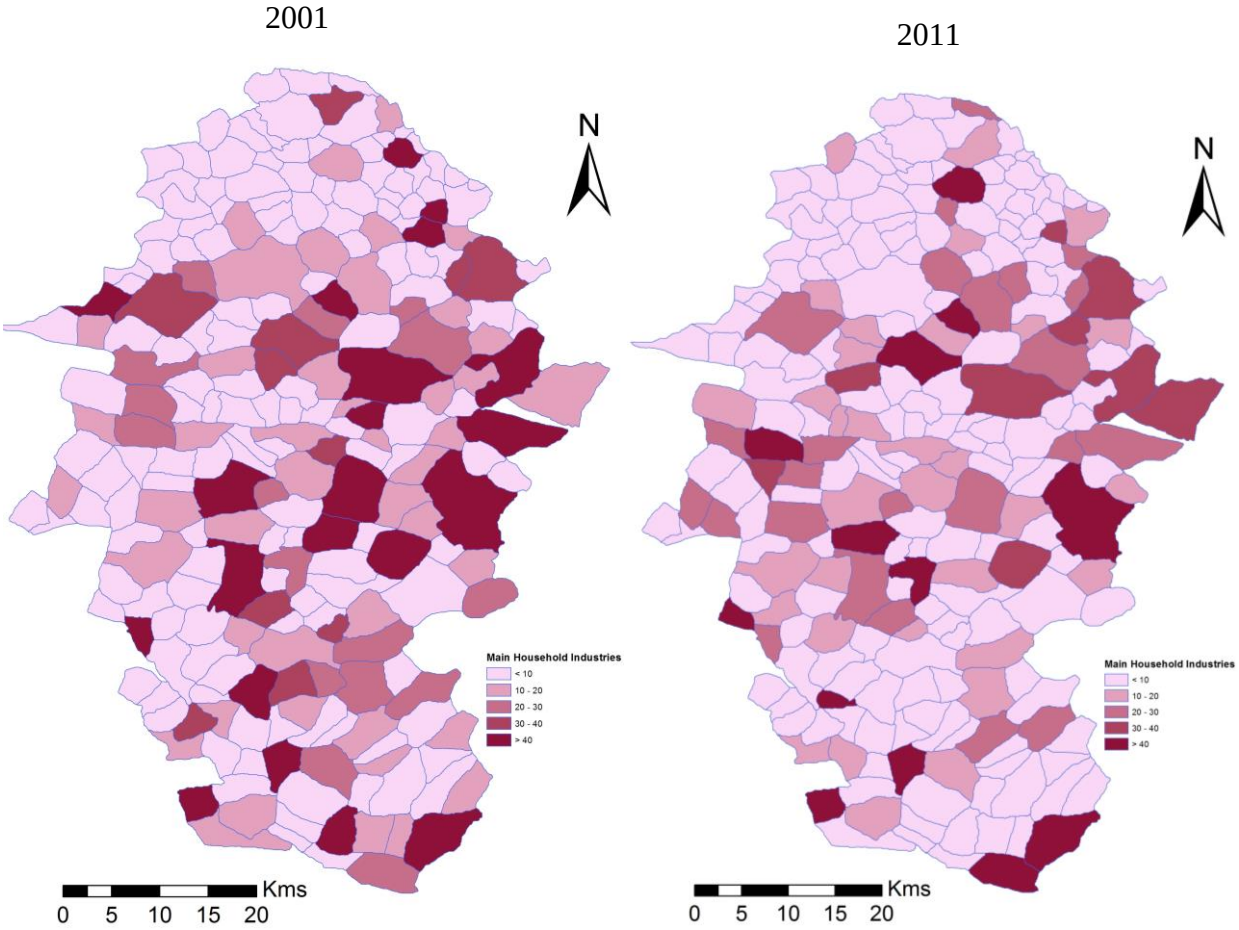
Main Household Industries Population:

As per census data 2011 Muktsar district has total Household Industries population is 2779 comprising of 2122 Main Household Industries and 657 Marginal Household Industries. The Household Industries population of the district in census 2001 is 4632.

Among Villages of district, Giddarbaha Village (250) is the most, Main Household Industries population and the village (66) is least number of main Household Industries according to 2011 census. Other villages in high order of their Household Industries population are Kotbhai (1222), Harike Kalan (1012) and

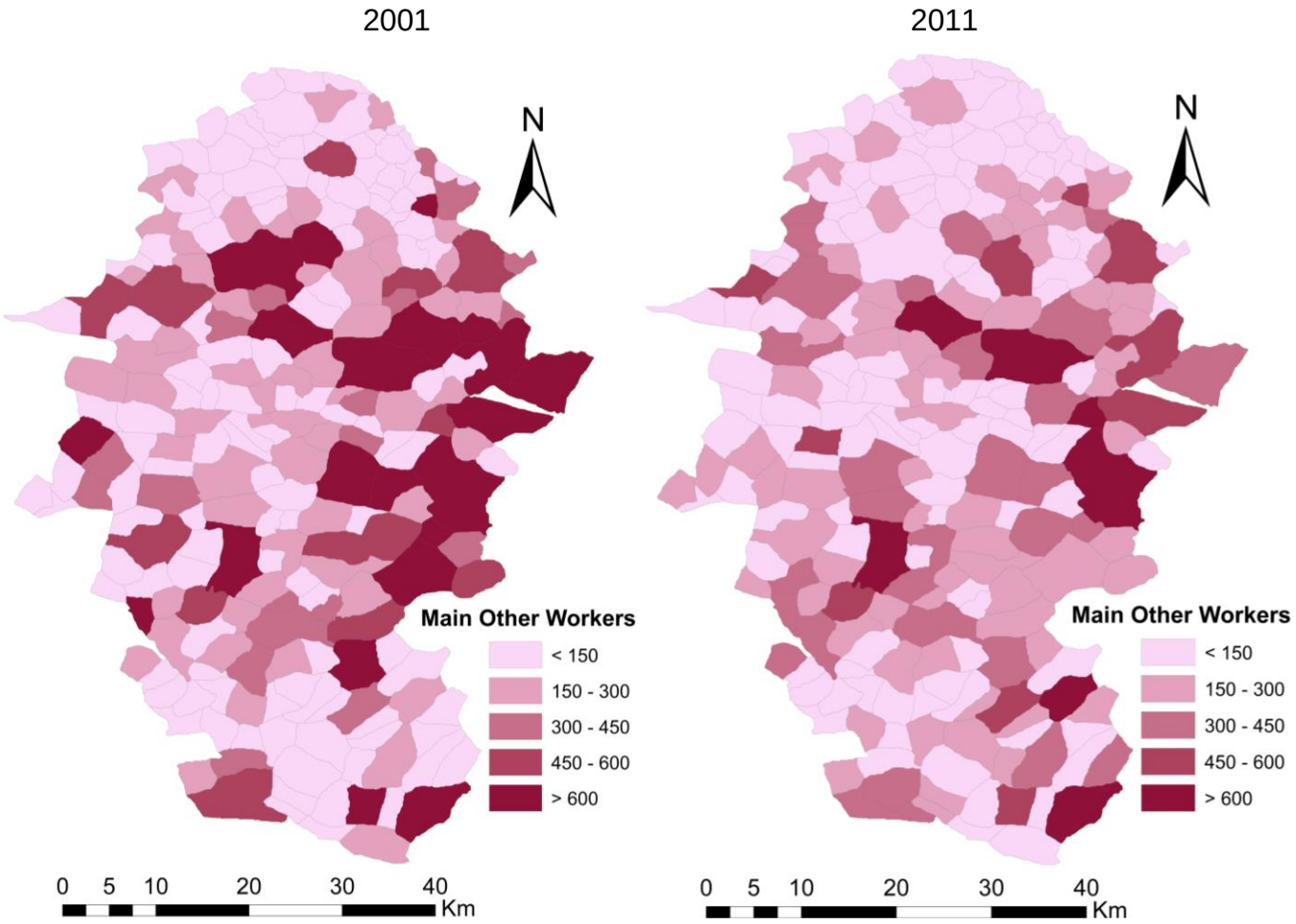
Kotliablu (963). In the lowest number of Household Industries in the Charewan (162), Jhabelwali (106), Baja Madahar (66) Villages.

Map No. 3.5 Main Household Industries



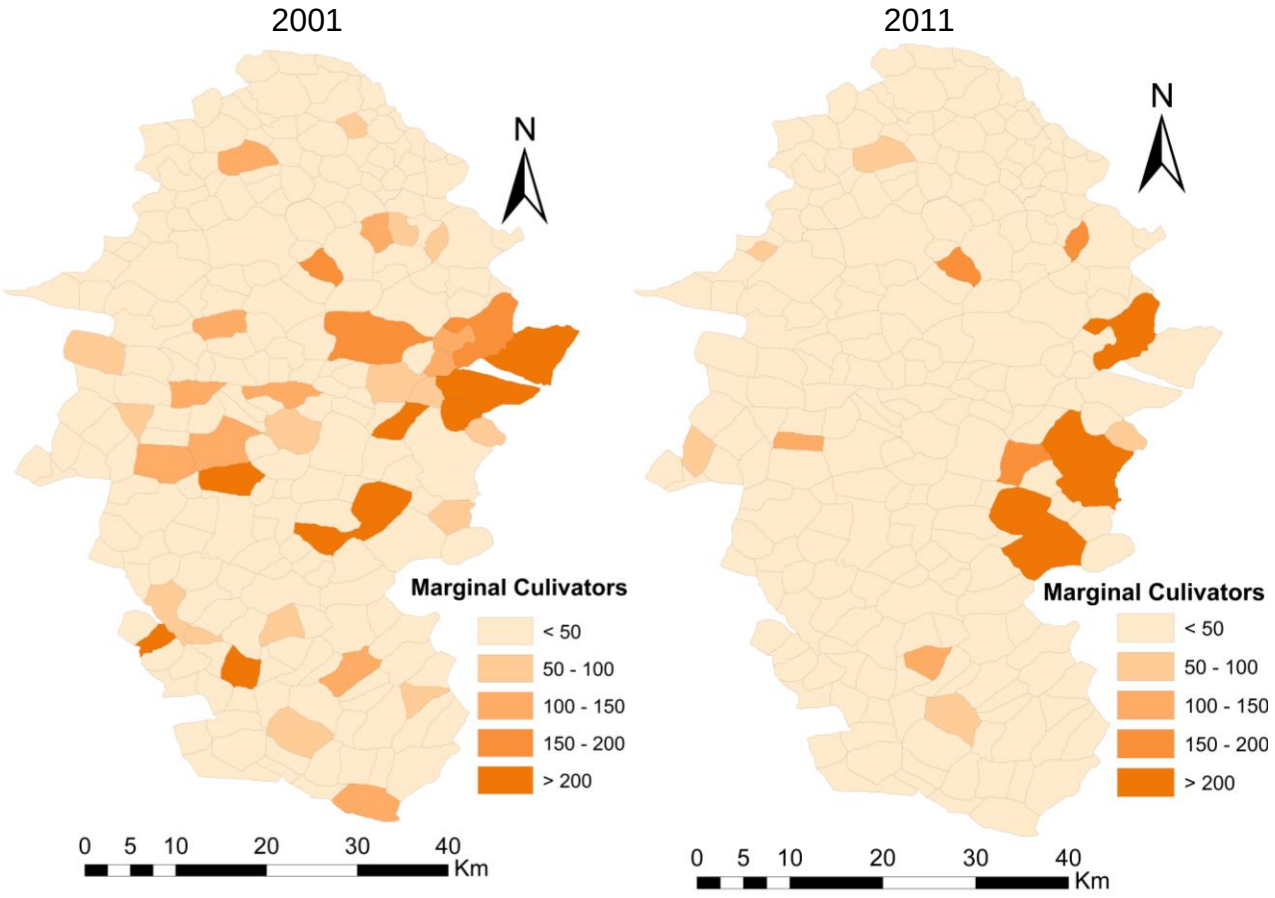
A comprising to census 2001 the numbers of Household Industries, the large number of villages under the category of less than (< 200) person work as main Household Industries. The large number of main Household Industries mostly found in the big villages of the district like a Abal Khurana (2129), Doda (1238), Kot Bahi (1158), Rupana (1072) and Channu (858). Mostly low number of Main Household Industries found in North part of the Muktsar Block villages like a Sadarwala (54), Lambhanwali (163) and Kotli Sanghar (174).

Map No.3.6 Main Other Workers



Among Villages of district, Killianwali Village (2488) is the most Main others Workers population and the village Khaneki (38) is least number of Main others Workers. According to 2011 Census. Other villages in high order of their Main others Workers population in Rupana (1098), Kot bhai (1399) and Doda and Molout Pind (967 and 853). In the lowest number of Main others Workers in the Lohara (51), Baddian (91), Lambhamwali (94) Villages. A comprising to census 2001 the numbers of Main others Workers, the large number of villages under the category of less than (<150) person work as Main others Workers. The large number of Main others Workers mostly found in the big villages of the district like a Giddarbaha (9181), Doda (1303), Kot Bahi (1516). Mostly low number of Main others Workers found in North part of the Muktsar Block villages like a Dhol Sangu (12), Gulabe Wali (12), Sakanwali (68), Adhnian (78) and Dhoolkot (97).

Map No.3.7 Marginal Cultivators



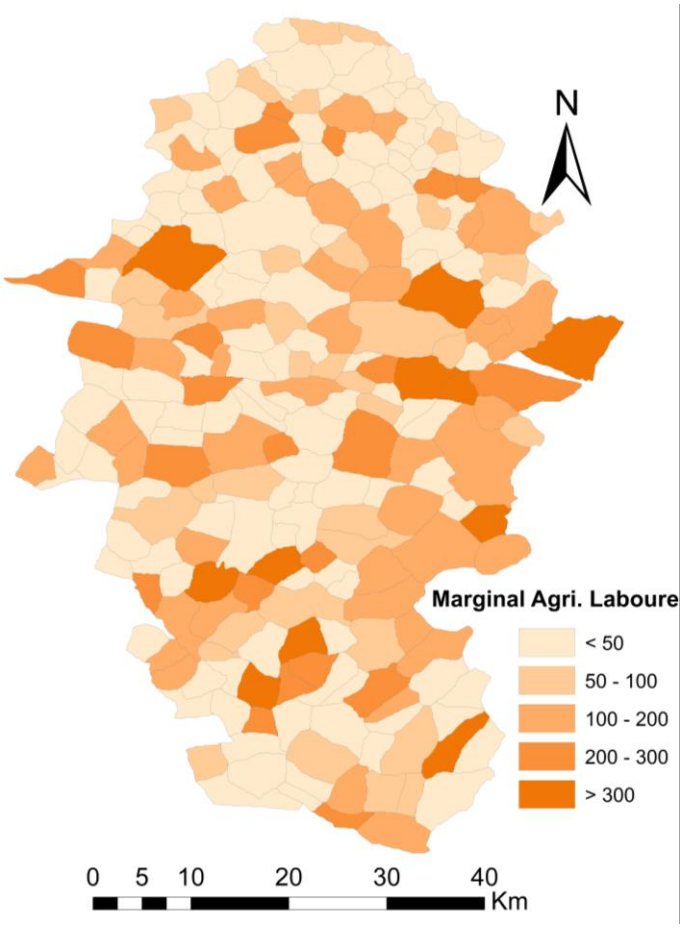
According to census 2011 the district Sri Muktsar Sahib has total working population is 33, 5326 comprising of 28, 7205 Main workers and 48,121 Marginal workers. The working population of the district in census 2011 is 35 percent is her than the working population 24, 6826 in 2001 census.

As per census data 2011 Muktsar district has total Cultivator population is 83,014 comprising of 78,786 main cultivators and 4,228 marginal cultivators. The cultivator population of the district in census 2001 is 86, 578.Among Villages of district, Giddarbaha Village (1300) is the most, Marginal cultivator population and is the Jhurar village (10) is least number of Marginal cultivators according to 2011 census. Other villages in high order of their Cultivator population are Kotbhai (402) Mallan (508) and Husnar (637). In the lowest number of Marginal cultivators also found in the north-eastern part of the district like a Rupana (49), Doda (27) and

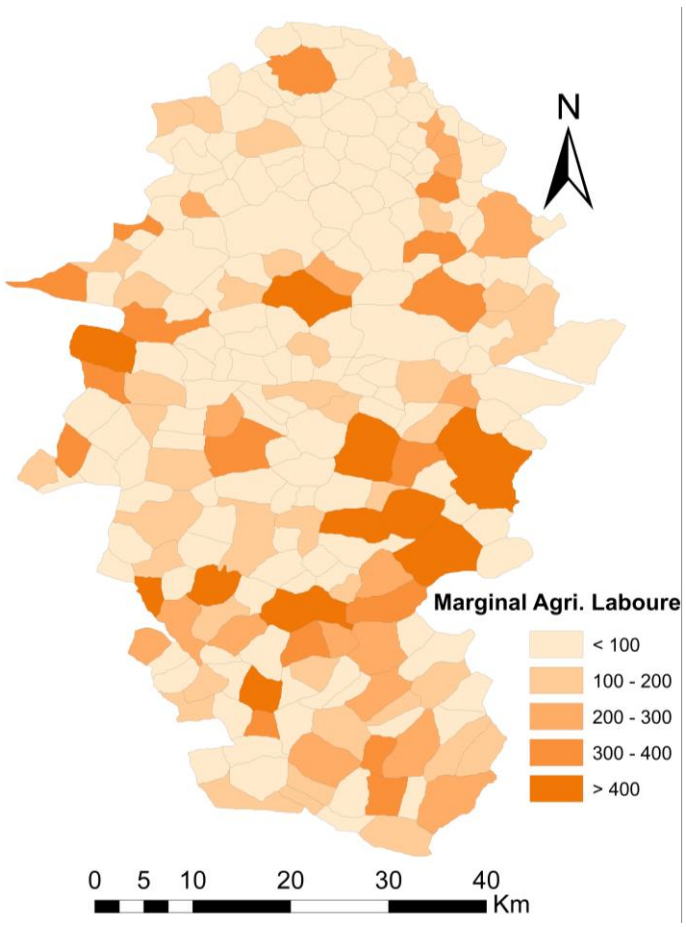
Gurusar (38). A comprising to census 2001 the number of Marginal Cultivator are decrees in the south-west direction of the district, villages like a Kabarwala only (3),Kot Bhai (44) and some village as high rank withKothe Sahib Chand(253), Bhalaiana (418) and KotliAblu (280). In both maps a large number of villages in average category (<50) of Marginal Cultivators.Out of 236 villages showing in the map, 21 Villages in the Category of more than 150 Marginal Cultivators in 2001 map and 14 villages in 2011 map.

Map No. 3.8 Marginal Agricultural Labourers

2001



2011



As per census data 2011 Muktsar district has total Agricultural Laborers population is 10,5546 comprising of 80,798 main Agricultural Laborers and 24,748 marginal Agricultural Laborers. The Agricultural Laborers population of the district in census 2001 is 89,064.Among Villages of district, Rupana Village (1916) is the most, Marginal Agricultural Laborers population and Karai Wala village (2) is least number

of main cultivators according to 2011 census. Other villages in high order of their Agricultural Laborers population are Gurusar (522), Husnar (501) and Bhahm (562). In the lowest number of Agricultural Laborers in Tamkot (17),Doda (92), Bhagsar (74) Villages.

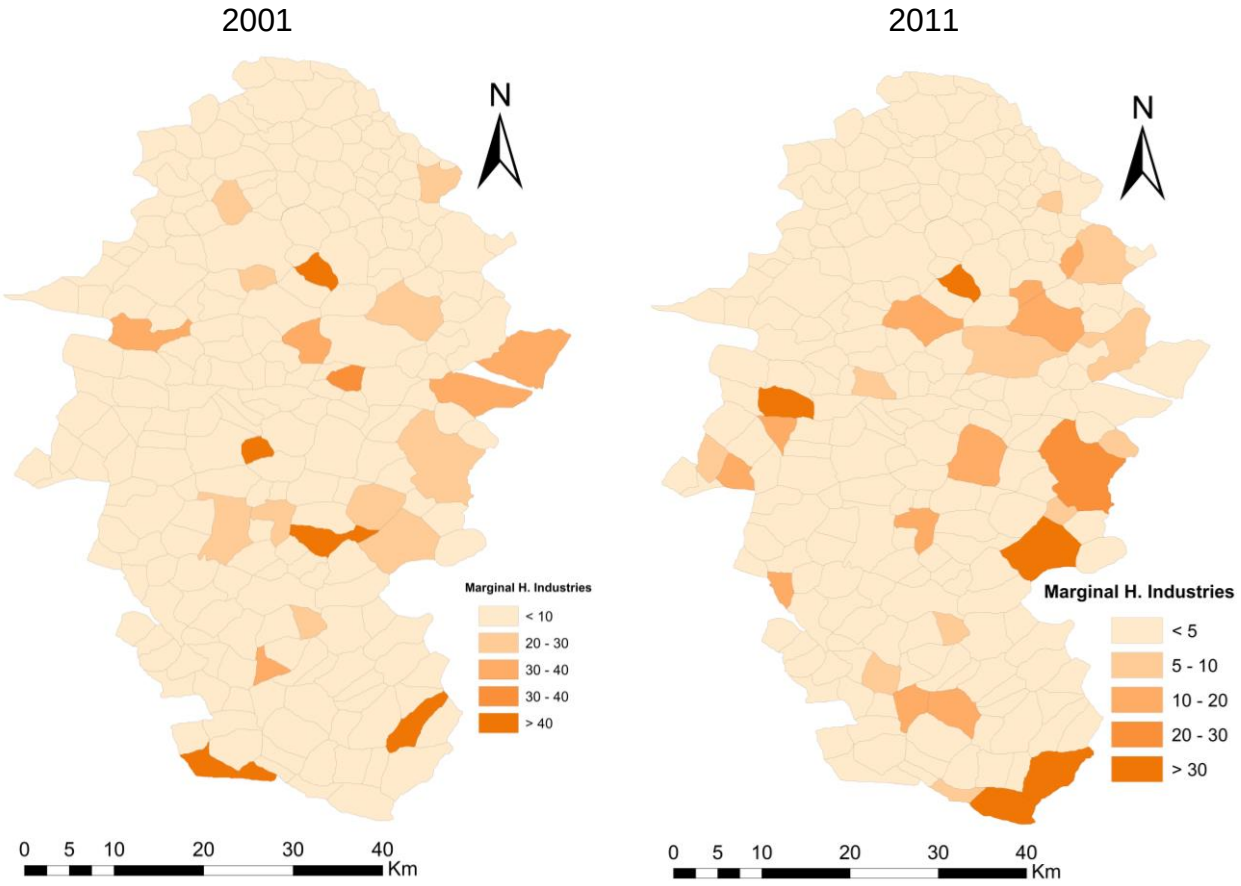
In comparison to census 2001, the numbers of Agricultural Laborers are large where number of villages under the category of less than (<100) person work as Marginal Agriculture Labors. The large number of Marginal agriculture Laborers mostly found in the big villages of the district like a Kauni (657), Kotli Ablu (360),Bhagsar (440) and Channu (858). Mostly low number of Marginal Agricultural Laborers found in North part of the Muktsar Block villages like a Doda (7), Kotli Ablu (1), Baddian (5) and Kabarwala (1).

Marginal Household Industries

As per census data 2011 Muktsar district has total Household Industries population is 2779 comprising of 2122 Main Household Industries and 657 Marginal Household Industries. The Household Industries population of the district in census 2001 is 4632.

Among Villages of district, Giddarbaha Village (250) is the most, Marginal Household Industries population and the village Alamwala (1) is least number of Marginal Household Industries according to 2011 census. Other villages in high order of their Household Industries population are Kot bhai (23), Warring Khera (32), DholSangu (39)Killian wali and Tarkhanwala (30). In the lowest number of Household Industries in the Lambi (2), Jhurar (4),Bhundar(5) and Rathrian (3). In comparison to census 2001 the numbers of Household Industries a large number of villages comes under the category of less than (<10) person work as Marginal Household Industries. The large number of Marginal Household Industries mostly found in Dhol Sangu (137), Singhawala (71), Aulkh (57), and Fakarsar (49). Mostly low number of Marginal Household Industries found in North part of the Muktsar Block villages like a Doda (3), Karaiwala (0), Gursar (3), Alamwala (1).

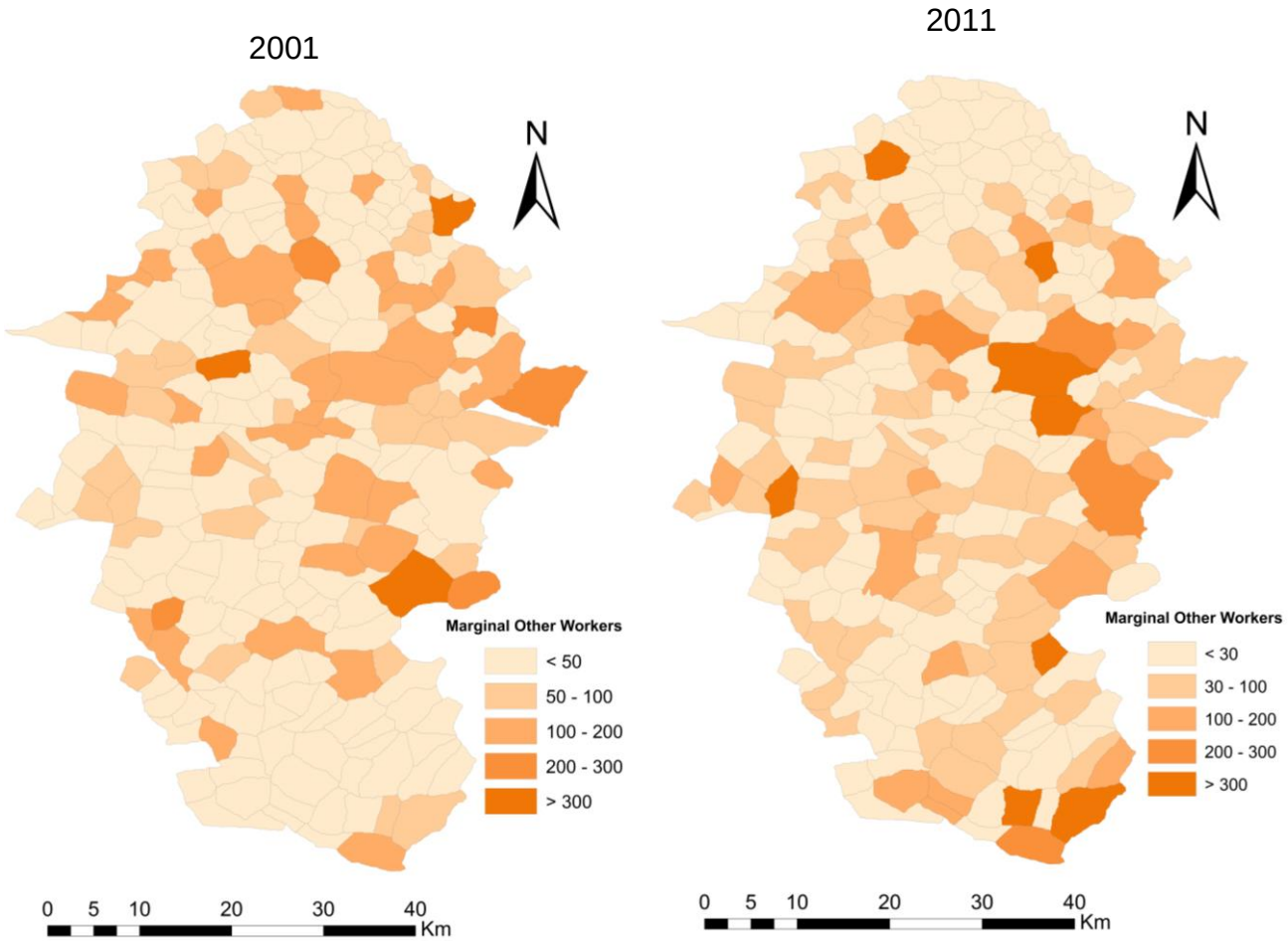
Map No.3.9 Marginal Household Industries



Marginal Other Workers

Among Villages of district, Killianwali Village (537) is the most Marginal others Workers population and the village AbalKhurana and Adhnian (5) is least number of Marginal others Workers according to 2011 census. Other villages in high order of their Marginal others Workers population in Birwan and Bodiwala with (415), Ghumiara (346) and Doda (339). In the lowest number of Marginal others Workers in the Mehna (18), Baddian (7), Tarkhanwala (15) Villages. A comprising to census 2001 the numbers of Marginal others Workers, the large number of villages under the category of less than (< 50) person work as Marginal others Workers. The large number of Marginal others Workers mostly found in the big villages of the district like a Giddarbaha (575), Bhangchori(62), and Madahar Kalan (335). Mostly low number of Marginal others Workers found in a Dabra (1), Ghumiar(8), Chhabianali (22), Sarawan (25) and Jhurar (97).

Map No.3.10 Marginal Other Workers



Non Workers

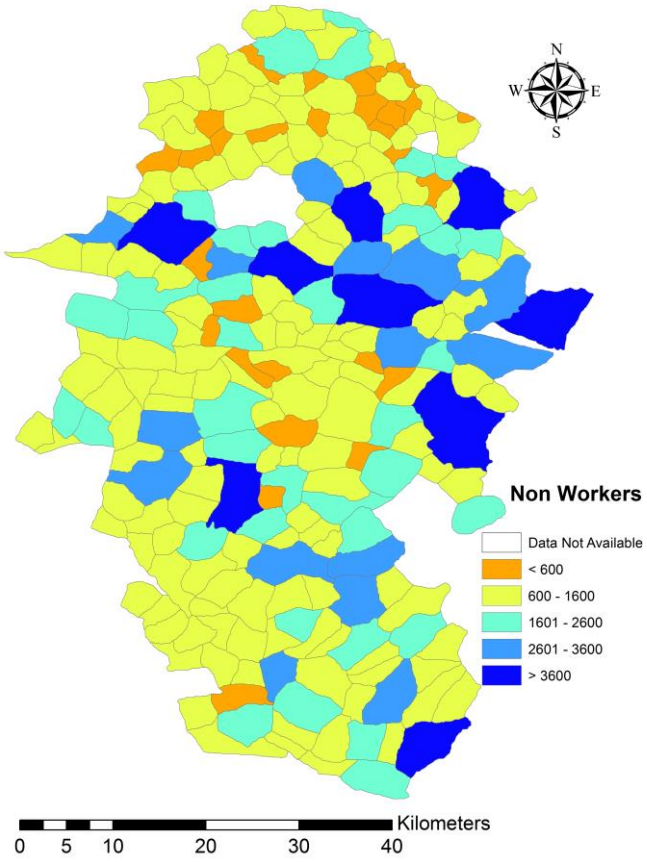
According to census 2011 the district Sri Muktsar Sahib has total Non Working population is 56, 6570. The Non-working population of the district in census 2001 is 33, 2103. Among Villages of district, Doda Village (13070) is the most, Non-Worker population and is the Sunian village (25) is least number of Non-workers according to 2011 census. Other villages in high order of their Non-Worker population are Kot bhai (13135) Kotli Ablu (8703) Harika Kalan (8024),Bhagsar (7669), Bhulaiana (7334) and Kauni (7312). In the lowest number of Non-Worker in Chak Dohak (127) and Randhawa (297).

The Non-working population of the district in census 2001 is 33, 2103. Among Villages of district, Kot Bhai (6981),Doda Village (6962) is the most, Non-Worker

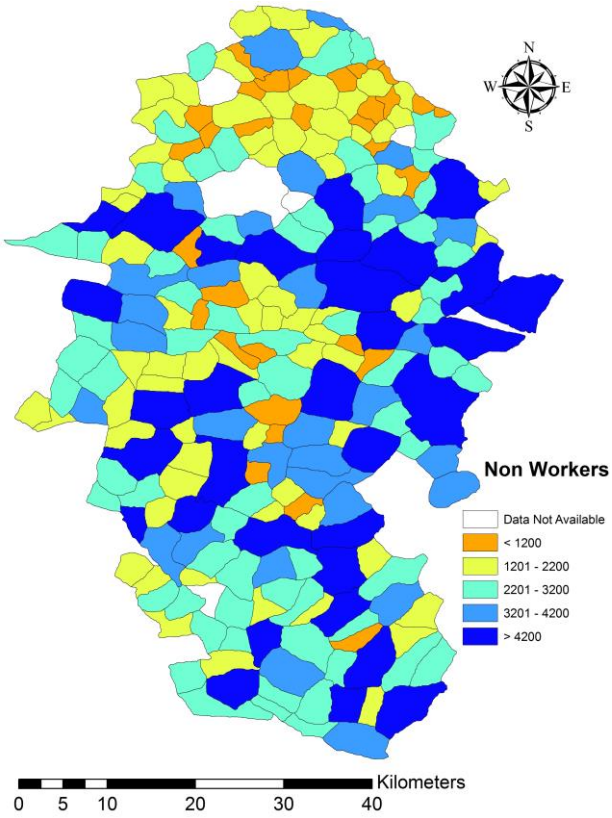
population and is the Chak Dohak and Sunian village (3) is least number of Non-workers according to 2001 census. Other villages in high order of their Non-Worker population are Bhagsar (4757) and Kotli Ablu (4132). In the lowest number of Non-Worker in Randhawa (148), Shekhu (422), Karniwala (386) and Manianwala (382).

Map No. 3.11 Non Workers

2001

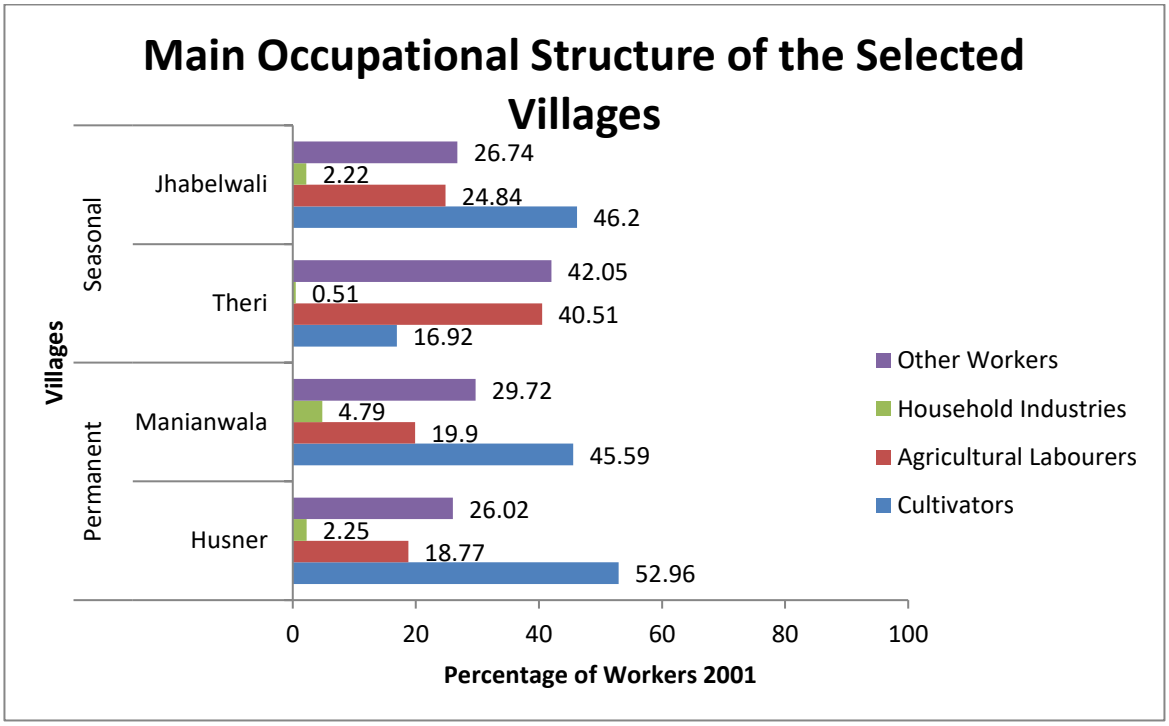


2011



3.8 Occupational Structures of the Selected Villages

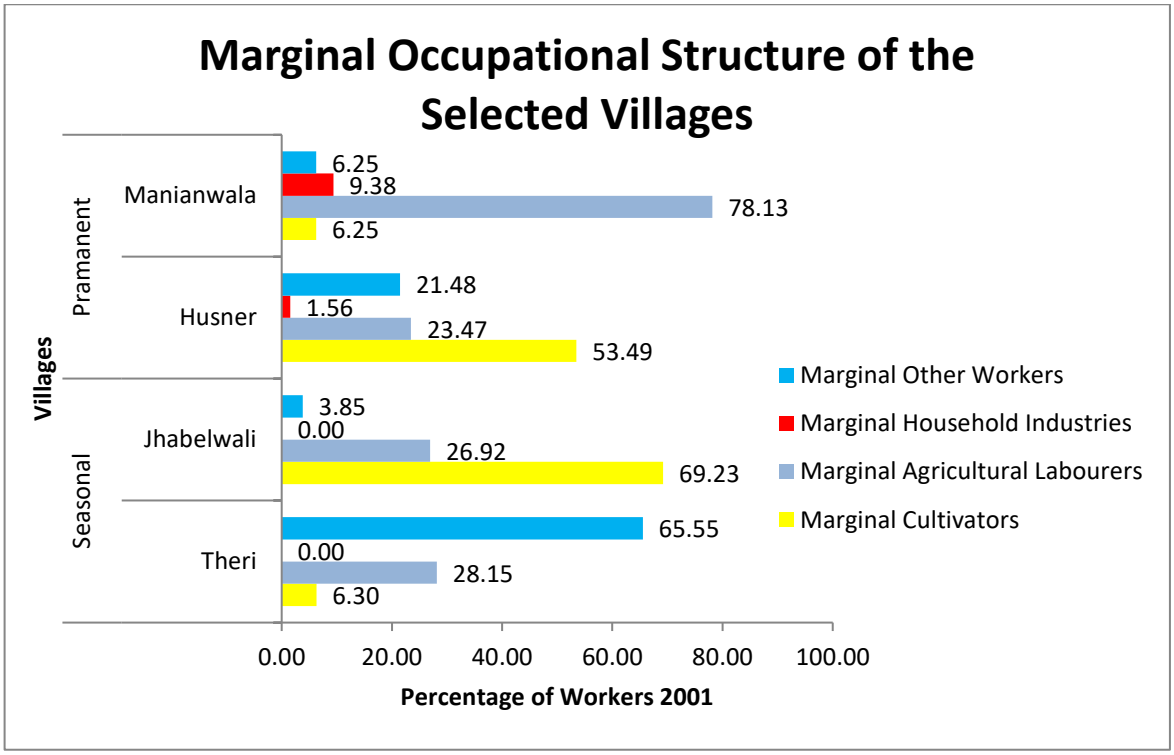
FIGURE NO. 3.10



Source: Census of India, 2001

Fig.3.10 shows the Main Occupational Structure of the Selected Village of the Survey, According to the census 2001 data the largest Number of Cultivator population in all the selected villages. The largest number of Main cultivator in Husner Village (50.96 %) Husnar village under the Permanent waterlogged area, the Their Village is the lowest number of Cultivators as compare to other villages. The second largest working class is Agricultural Labourers, in the Selected villages the number of Agricultural Labourers is half of the Cultivators only in Village Their the Largest number of Agricultural Labourers (40.51%). The Number of other Workers in all the villages between 20 to 30 % of the total population. Only the Theri (42.05%) village is the highest number of other workers. The number of household industries in the selected villages is very less only 2 to 5 % population as Household Industries works.

FIGURE NO. 3.11



Source: Census of India, 2011

Fig.3.11 shows the Marginal Occupational Structure of the Selected Village of the Survey, According to the census 2001 data the largest Number of Cultivator population in all the selected villages. The largest number of Marginal cultivator in jhabelwaliVillage (69.23 %) jhabelwali village under the Seasonal waterlogged area, the Their Village is the lowest number of Cultivators as compare to other villages. The second largest working class is Agricultural Labourers, in the selected villages the number of Agricultural Labourers is half of the Cultivators only in Village Manianwala the Largest number of Agricultural Labourers (78.13%). The Number of other Workers in Theri and Husner is largest share of the total population in the Theri (65.55%) village is the highest number of other workers. The number of household industries in the selected villages is very less only 2 to 5 % population as Household Industries works. Villages under the Seasonal waterlogging, village Jhabelwali and Theri 0 % of Household Industries.

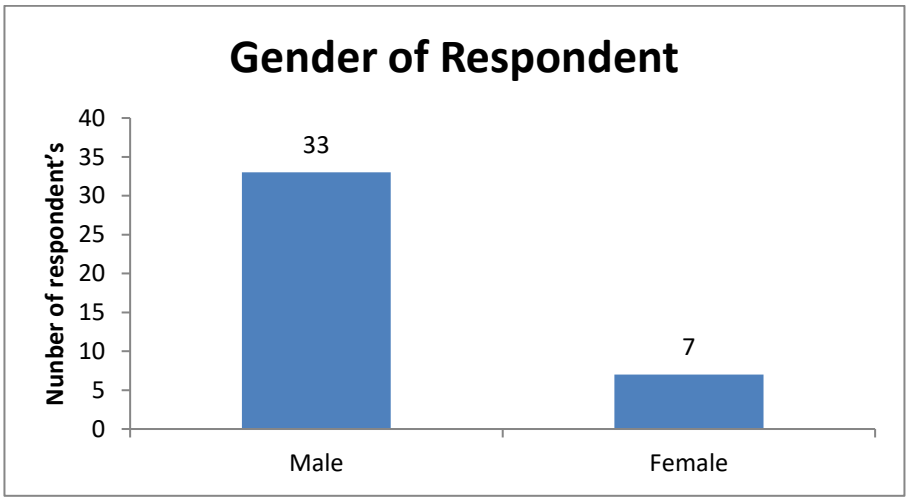
CHAPTER-4

Household Survey

To verify the results of secondary data, survey was conducted where questionnaire and personal interview methods have been used as an alternative for the survey. In this chapter, an attempt is made to analyze the effect of Waterlogging on occupation Structures of the Study area. Random sampling method has been used for the selection of the respondent's but the target group of population is age group of 40+ and above for sampling in the Selected Villages of the Sri Muktsar Sahib District of Punjab.

4.1.1 Gender of Respondent

FIGURE NO. 4.1



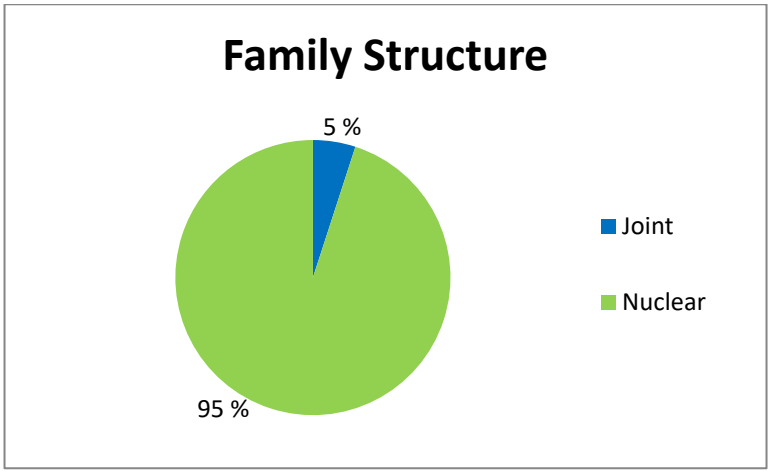
Source: Field Survey, 2018

During the survey of selected villages of Sri Muktsar sahib district, we have sampled the population of 40 persons, distributed in 4 Villages. In them the female respondents are 7 and male respondents are 33 (Fig 4.1) out of 40 respondents.

4.1.2 Types of Family

Family is the primary institute which deals with interaction of person with society and start socialized life of person. According to Fig.4.2, it is revealed that there are types of families in the Study area. It is observed that 95% are Nuclear families and only 5% are Joint families in study area.

FIGURE NO. 4.2

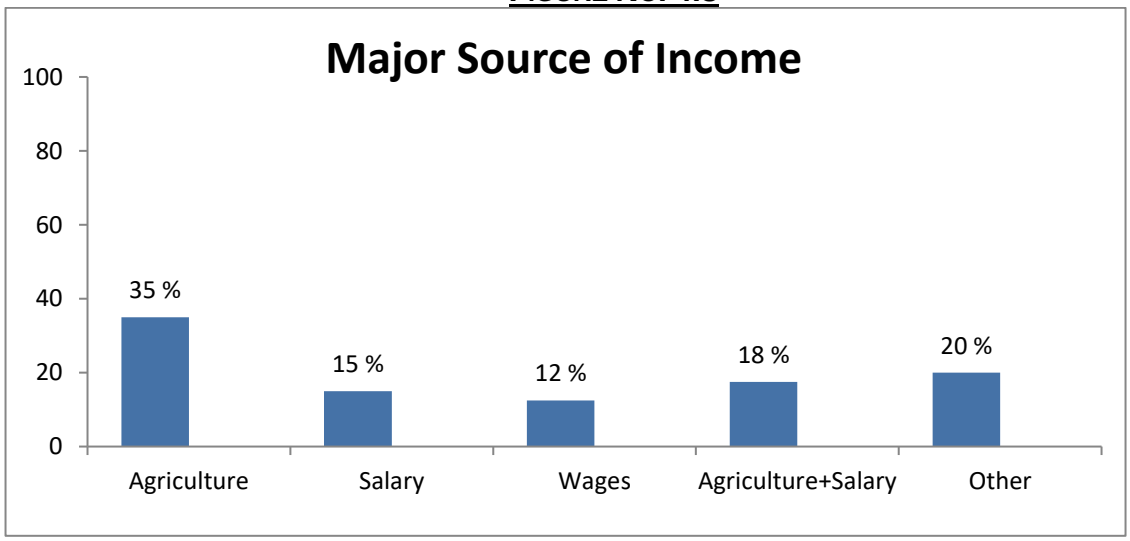


Source: Field Survey, 2018

4.1.3 Major Source of Income

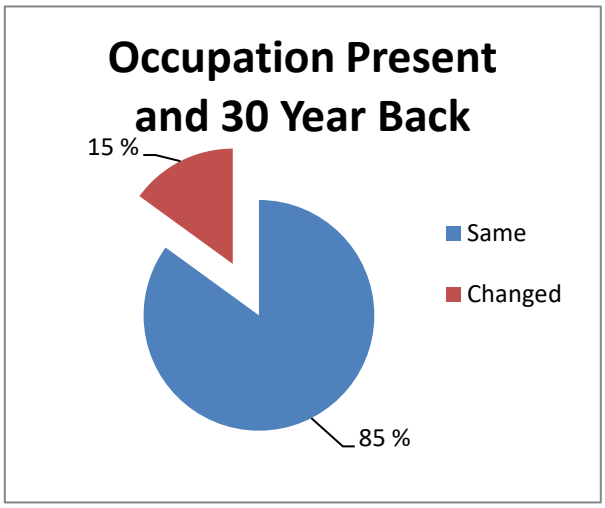
Income is the main indicator of the socio-economic condition of the peoples; study tried to understand the main source of income, according to collected survey data agriculture is the main source of income of 35% peoples and 18% peoples main income source is agriculture + Salary, 15% peoples depends on salary, 12% on daily wages and 20% peoples main source of income is Other (Abroad, Businessman and agriculture land rent).

FIGURE NO. 4.3



Source: Field Survey, 2018

4.1.4 Occupation Statues



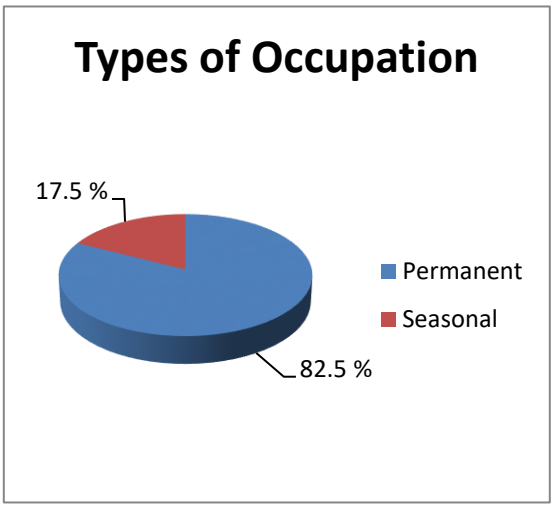


FIGURE NO. 4.4 **FIGURE NO. 4.5**

Source: Field Survey, 2018

To determined the change of occupational structures in Sri Muktsar Sahib, with the help of secondary data sources, but to verifying the result of Change with the help of survey. According to the Survey data, only 15 present people change Occupation and 85 present people as a same occupation at present and also 30 year back. Show in the Figure 4.4 the 15 % people changed your occupation and 85 % peoples are same occupation, 30 year back and present time. According to people response on this question, some small cultivator families are changed your occupation agriculture to laborer, private jobs like bus driver, conductor helper on shops etc and small engender in other occupations.

4.1.5 Type of Occupation

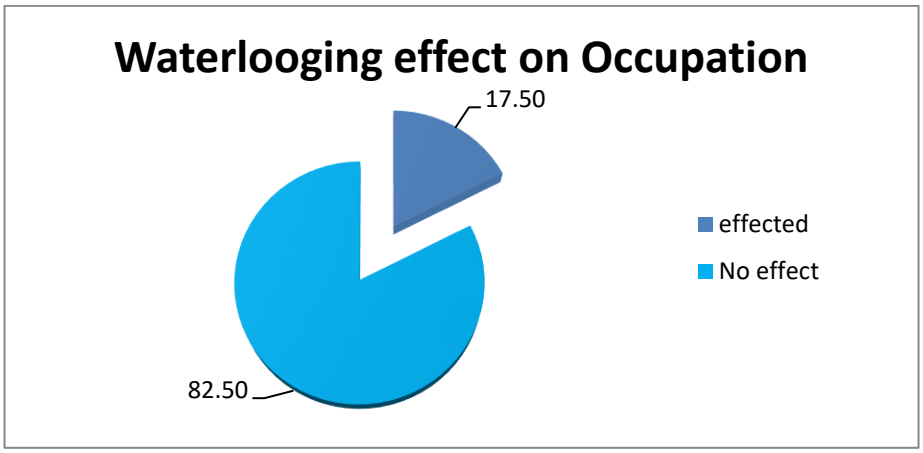
Occupational structure is a key component of population composition. It gives a proper illustration of ratio of the working and non-working population in an area and also depend on the type of working population in an area. I have also carry out, throw the field survey the peoples of the waterlogged areas, are engaged in so many occupations, some are permanent and some are seasonal occupations. To determined the types of occupation in study area. According to the survey data shows in the figure number 17, large number of people are engaged in the permanent occupations, 82.5 present people engaged in permanent occupations (cultivators,

permanent laborer and Governmental job person) and 17.5 present people are engaged in seasonal occupations' like(seasonal laborer, private jobs etc).

4.1.6 Effect of Water logging on Occupation Structure

To determined the effect of water logging on occupational structures in Sri Muktsar Sahib, with the help of secondary data sources, but to verifying the result of effect to change with the help of field survey. According to the Survey data, figure number 4.6 shows, 82.50 percent people said, water logging not affect the occupation and only 17.50 percent people says water logging effect on occupation.

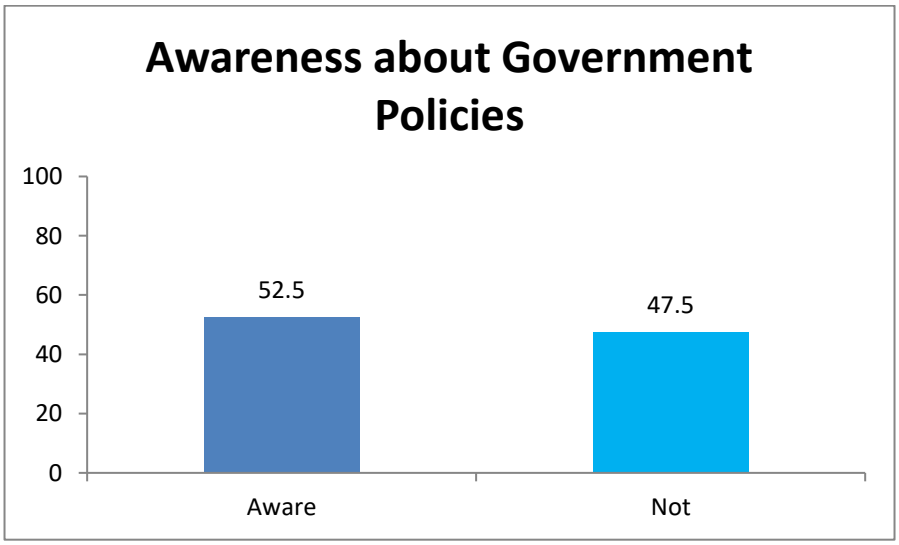
FIGURE NO. 4.6



Source: Field Survey, 2018.

4.1.7 Awareness about the Government Policies

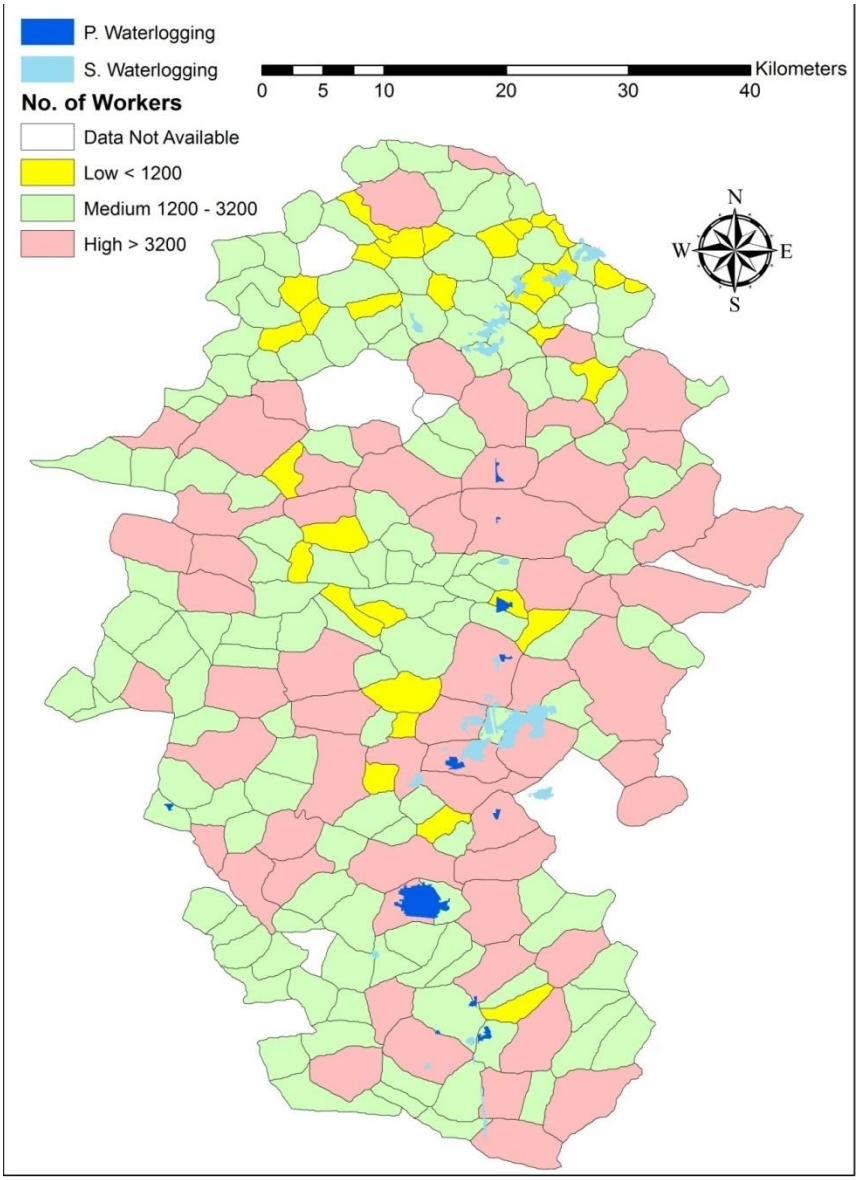
FIGURE NO. 4.7



Source: Field Survey, 2018.

Various types of Government policies(fishing policy, subsidy for home and tractor and other , for the peoples of the water logging areas but sometimes people not aware about that, according to survey data, carryout during the 52.5 % peoples aware about the policies and 47.5 % people not aware about the governmental policies, data shows in the figure number 4.7.

Overlay map of waterlogging areas and workers in Sri Muktsar Sahib, 2011.



CHAPTER-5

Conclusion

Waterlogging problem is not new it started since the period of 1980 after the introduction of Sirhind canal and Rajasthan Feeder Canal. The area under waterlogging both permanent and seasonal is increasing year by year and also shifting toward south-western part. The present study is based upon both primary and secondary source of data. Primary source of data includes field survey, mapping of waterlogging with the help of GIS software, Bhuvan Geo-portal and personnel observation. The secondary sources of data are Journal Articles, Reports, Newspapers, Books, web sources etc.

The study indicates that the distribution and change in occupation structure is widely varies from the period of 2001 to 2011. On the basis of Census data there has been change in occupation structure from the same period.

On the basis of field survey it is observed that the family structure is nuclear in study areas that is 95 percent and only 5 percent people belongs to joint families. The major source of income is agriculture that comprise of 35 percent, Government and private jobs 15 percent, 12 percent wages, 18 percent Agriculture + salary and others occupations are 20 percent. Questions are asked about change in their occupation structure since 30 years in which 85 percent people respond that there is no change in occupation whereas only 15 percent people respond change in occupation.

A question was asked to people regarding impact of waterlogging on their occupation in which more than 80 percent people respond that there is no impact and remaining people respond in the favor of impact of water logged condition on occupation. More than 52 percent people are aware about government policies regarding waterlogging tackling policies. Apart from these 48 percent people are unaware about any government and non- government policies.

The general overlay analysis of the mapping of waterlogged areas and workers indicates that there is no impact of waterlogging on occupation structure of people in study areas.

References

Agnihotri et, a. (1992). Econometric consideration for Reuse of drainage effluents in wheat production. In *Agriculture Water Mangement* (pp. 249-270).

(2011). *Census of India.* New Delhi: Government of India.

Chandna, R. (1986). *Geography of Population.* New Delhi: Kaylani Publishers,Ludhiana.

Datta, K. (1997). Economic issues and analysis of technological and institutional solutions. *Indian Journal on Agricalture Economices* .

Gajja, B., Sharma, V., & Joshi, P. (1994). Productivity variation and land irrigability class in Kakrapar canal command area in Gujarat. *Indian Journal on Agriculture Economices* .

Gosal, G. (1958). The Occupational structure of India's Rural Population- A Regional Analysis. *The National Geographical Journal of India* , 137.

Gowrishankar, D., & Dhinakaran, R. (1997). Land degradation and rectification strategies. *Yojana* , 18-20.

Gujja, B., Purohit, M., Parshad, R., Dhalaliwal, G., Randhawa, N., & Dhawan, A. (1997). Conference on Ecological Agriculture., (pp. 499-511). Chandigarh.

Joshi, P., Chonde, V., & Foster, J. (1996). Farmers' perception of land degradation : A case study. *Economic and Political Weekly* , 89-92.

Joshi, P., Gajja, B. L., & Singh, J. (1994). Adverse effects of land degradation : some evidences on saline and water-logging. *Indian Journal: Agriculture Econimic* , 48-586.

Khan, A. A. (2003). Water logging and Salinization . *Major Thraet from our Agriculture* , 1-17.

Mangat, H. U. (1981). Water logging in Muktsar Town and Adjacent Area- Its Causes and Remedies. *Journal Inst. Engineer* , 193-199.

Punjab, G. o. (2008). *The Statistical Abstract of Punjab.* Economic and Statistical Division. Chandigarh: Economic Adviser to Government.

R, G., & A, K. (2014). Impact of Indira Gandgi Irrigation Project. *IGU Regional conference.* Poland.

Sharma, K. (2001). Indira Gandhi Nahar Pariyojana. *Scientific Assembly at Maastricht, The Netherlands.* Jodhpur.

Sharma, V., Gajja, B., & Shah, D. (1995). Managing land and water resources for sustainable agricultural development. *issues and options* , pp. 46-65.

Singh, J., & Nandal, D. (1993). Sustainability of agriculture on degraded irrigated lands in Haryana. *Indian Journal on Agricuture Economices* , 48-56.

Singh, J., & Singh, J. (1995). Land degradation and economic sustainability. In *Ecological Economics* (pp. 78-86).

Singh, S. (2013). WATER LOGGING AND ITS EFFECT ON CROPPING PATTERN AND CROP PRODUCTIVITY IN SOUTH-WEST PUNJAB : A CASE STUDY OF MUKTSAR DISTRICT. *Journal of Economic & Social Development , IX*, 71 - 80.

Umali, D. (1993). *The irrigation induced salinity : A growing problem for development and the environment.* Washington: World Bank .

Annexure I: Questionnaire

Waterlogging Problem in Socio-Economic Context: A Study of Selected Villages of Sri Muktsar District

Name of Village._____
Household No.

Section 1: Household Profile

1) Gender: 2) Family Structure: Joint/ Nuclear

3) Category: General/OBC/SC/ST/Others 4) Major Source of Income:

5) From how many years your family living in this village?

Have you migrated from somewhere, if migrated: why?

Migrated from	Purpose of Migration

6) Family Member Profile

Sr. no.	Relation	Age	Education	Occupation	Type of Occupation (Seasonal/ Permanent)	Income

Section 2: Occupation Change over 30-40 years

7) Do you or your family members was doing the same occupation 30 years back?
Yes No
If no, then what was the occupation then?

8) If you're main occupation is agriculture, then how much land do you have?
A). < 5 b). 5-10 c). 10-15 d). > 15

9) How much agriculture land did you have 30 years back?
Same as Present More than Present Less than Present

10). Do waterlogged affect your occupation?
A). Yes B). No

If yes: what do you do during Waterlogged?

During Non-waterlogged what do you do?

Section 4: Awareness about government policies

11) Do you know about fishing policy implementation by government in your area?

A) Yes B) No

If yes what are you doing with the policy?

12) If governments start fishing activities, would you go for such occupation with government help?

13) Any suggestion to make water logging areas helpful in income generation?

Annexure II

Field Photographs

Salinization 	**Salinization effected Soil** 
Bushes in waterlogged areas 	**Fishing Pond** 
Interaction with local 	**Waterlogging affected agriculture**