IMPACT OF CORPORATE FARMING AND AGRICULTURAL DEVELOPMENT IN UTTAR PRADESH

Ph.D. Thesis

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Supervisor
Dr. L.C. Mallaiah

Submitted by
Amit Singh

Department of Economics
School of Economics and Commerce
Babasaheb Bhimrao Ambedkar University
(A Central University),
Lucknow-226025 (U.P.), India

Enrolment No. 398/13

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Dedicated

To my

Beloved Family

BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY
•LUCKNOW•
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ESTABLISHED 1996

बाबासाहेब भीमराव अम्बेडकर विश्वविद्यालय
विद्या विहार, रायबरेली रोड, लखनऊ - 226 025
Babasaheb Bhimrao Ambedkar University
(A Central University)
Vidya Vihar Raebareli Road, Lucknow - 226 025

Letter No. 140/DE/BBAU
Date 28-09-2018

CERTIFICATE

This is to certify that the thesis titled **"Impact of Corporate Farming and Agricultural Development in Uttar Pradesh"** submitted by Mr. Amit Singh is an original research work and has not been previously submitted in part or full for the award of any other degree or diploma to this or any other university.

The thesis submitted to Babasaheb Bhimrao Ambedkar University, Lucknow satisfies all the requirements as stipulated in the **Doctor of Philosophy (Ph.D.)** regulations -1999 as amended in 2008/2010/2013 and it is fit for submission and evaluation for the award of the degree of Doctor of Philosophy of the University.

Date 28/9/18
Supervisor

28/9/18
Head of the Department

Phone: +91(O) 522-2440820, 2440822, **Fax:** +91 (O) 0522-2441888
Grams: BABVERSITY **e-mail** : info@bbauindia.org **Website:** bbuindia.org.in

DECLARATION

I declare that the entire thesis entitled "**Impact of Corporate Farming and Agricultural Development in Uttar Pradesh**" submitted to the Babasaheb Bhimrao Ambedkar University (A Central University), Lucknow for the award of Doctor of Philosophy in Economics. It is my original work and it has not previously been produced for the award of any degree, diploma, fellowship or similar other titles anywhere. This research study is carried out under the supervision of Dr. L.C. Mallaiah, Department of Economics, School of Economics and Commerce (SEC), Babasaheb Bhimrao Ambedkar University (A Central University), Lucknow, Uttar Pradesh, India.

Place: Lucknow

Date:

Amit Singh
Department of Economics
Babasaheb Bhimrao, Ambedkar,
Lucknow, Uttar Pradesh

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Date: Amit Singh

Place:

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LIST OF ABBREVIATIONS

GDP:	Gross Domestic Product
GSDP:	Gross State Domestic Product
GOI:	Government of India
HYV:	High Yield Variety
WTO:	World Trade Organization
MNCs:	Multinational Corporations
NSSO:	National Sample Survey Organization
NABARD:	National Agricultural Bank for Rural Development
CSO:	Central Statistical Organization
NIE:	New Institutional Economics
NAP:	National Agriculture Policy
NPF:	National Policy for Farmers
NCF:	National Commission on Farmers
ICT:	Information and Communication Technology
MSP:	Minimum Support Price
HLL:	Hindustan Lever Limited
CAF:	Corporate Agriculture Farming
MRTP:	Monopolistic and Restrictive Trade Practice
SCBs:	Scheduled Commercial Banks
CCBs:	Commercial Bank Branches
PACS:	Primary Agricultural Credit Societies
PLDB:	Primary Land Development Bank
RRBs:	Regional Rural Banks
FCI:	Food Corporation of India
SWC:	State Warehousing Corporation
CWC:	Central Warehousing Corporation
NSDP:	Net State Domestic Product
BIF:	Big India Farms
IIEFL:	Ion Exchange Enviro Farms Limited
NDDB:	National Dairy Development Board
DIC:	District Industry Centre
CIS:	Commonwealth of Independence States

Chapter-I

INTRODUCTION

Chapter-I

INTRODUCTION

India is an agriculture dependent economy. Agriculture plays an important role in the process of economic development. Besides providing food to people, agriculture generates employment opportunities, savings, supplies raw materials or inputs to industrial sector and earns foreign exchange. Agricultural development is an integral part of overall economic landscape. At the time of Indian Independence, the share of agriculture in total GDP was more than 55 per cent and 70 per cent of population was depending on agriculture sector for its livelihood. Thus at the time of independence, the Indian economy was an agriculture-based economy. Now, the share of agriculture in total GDP has declined from 51.9 per cent in 1950 to 15.4 per cent in 2015-16 (GOI, 2016) and employs 52 per cent of the total workforce. Hence, there is a continuous steady decline in its contribution towards the GDP and the agriculture sector is losing its shine and anchor position in the Indian economy. The problems with that the Indian agricultural scenario is burdened at present times are many but this undermines the importance of the sector and the role in the holistic and inclusive growth of the economy and country. Therefore, fostering a rapid, sustained and broad-based growth in agriculture remains a major priority for the government.

Consistent with trends of economic development at the national level, role of agricultural sector in the state economies is also changing rapidly. The share of agriculture in Gross State Domestic Product (GSDP) has declined significantly during the last two decades. In some of the states, such as Bihar, Punjab, Uttar Pradesh, Haryana, Rajasthan and Orissa, this sector today contributes more than one-quarter of GSDP, while in some states, such as Gujarat, Kerala, Karnataka, Tamil Nadu and Maharashtra, the sector contributes less than 20 per cent to GSDP (CSO). However, contribution of agriculture to GSDP has declined in almost all States between 1993-94 and 2004-05. The decline was the highest in Karnataka (16 per cent), followed by Haryana (14.2 per cent), and Kerala (13.7 per cent). In Karnataka, decline was mainly due to significant increase in the share of service sector (from 37.9 per cent in 1993-94 to 54.7 per cent in 2004-05) mainly driven by the information technology industry. Similarly, in Haryana, the decline is due to faster development of services sector in cities around the national capital region.

The agriculture sector revival is being taken on priority, through various interventions at different levels because of its potential in reducing poverty, safeguarding against social unrest, bridging income inequality and ensuring food security. The global experience of growth and poverty alleviation shows that GDP growth originating in agriculture sector is at least twice as effective in reducing poverty as GDP growth originating outside agriculture. Thus, agriculture sector should continue to be the engine of growth and development in India.

1.1 Problems of Indian Agriculture Sector

In the agriculture sector, rapid developments are happening due to the advent of new technologies despite its decline in the share of the national GDP. However this sector is also facing various problems, some are in general areas but others are in institutional and technological domain. Farmers are facing several general problems like indebtedness, absence of crop rotation and population pressure. The rural people are borrowing large amount of loans regularly for meeting their requirements for production, consumption and also for meeting their social commitments. Due to crop failures and poor income arising out of low prices of crops, the farmers fall into debt trap and cannot arrange sufficient money for repay their debts. Thus, the debt of farmers gradually increases and leading to the problem of rural indebtedness. On the other hand, absence of crop rotation is another problem faced by the Indian agriculture sector. Proper rotation of crops is essential for successful agricultural operations as it helps to regain soil fertility. Due to poor literacy rates in the Indian farming sector, the benefits of crop rotation are not widely appreciated and due to this, the land loses its fertility. Similarly, increasing population pressure is another challenge for agriculture sector. About 70 per cent of the total population of India is directly or indirectly dependent on agriculture. At present, the per capita agricultural land is only about 0.10 hectare as against 0.30 hectare in 1951. The world average of per head availability of agricultural land is about 4.5 hectares. The rapid growth of population, industrialization, and urbanization are putting enormous pressure on arable land. Subsistence farming is another concern for the agriculture sector in India. Despite the eleven 5 year plans of GOI, in greater parts of the country, Indian agriculture is in dismal state. The cultivators and farmers grow crops mainly for the family consumption.

Small size of land holding is the main institutional problem faced by the Indian agriculture sector. Over 70 per cent of the holdings are either small or marginal i.e. less than one hectare. The small size of holdings is mainly due to the law of inheritance and other socio-cultural and economic factors. Moreover, the fields are scattered and fragmented. The small size of holdings and fragmented fields are unsuitable for the modern methods of agriculture. Another major challenge that is facing by the Indian agriculture sector is defective land tenure system. A few landlords in India own a major part of cultivable agriculture land and do not till themselves but give it to the tenants on crop-sharing system because the farmer does not have the capacity and willingness to increase production. Another area of concern is lack of credit and marketing facilities. Due to inadequate credit facilities, the cultivators are not able to plan their investments in agriculture. Although after nationalization of commercial banks there has been improvement in the financial resources but mostly big landlords have reaped such benefits. Agriculture marketing is still an immense concern in the rural areas. In the absence of proper marketing facilities, the farmers are dependent on local traders and middlemen for the disposal of their agriculture produce that is sold at throw away price.

Indian agriculture has also been suffering from the technological problems. Inadequate use of inputs like fertilizers & High Yield Variety (HYV) seeds is the main concern. Indian farmers are not applying sufficient quantity of fertilizers on their lands. Moreover, the supply of HYV seeds is also minimal in the country. Indian farmers are still applying seeds of indifferent quality. They have no financial ability to purchase good quality HYV seeds. The supply of HYV seeds is also insufficient in the country. Thus, the farmers are mostly using traditional variety of seeds whose average yield could be often less than half of the yield of an improved variety of seeds. Problem of irrigation is also a major concern in the agriculture sector. In the greater parts (over 56 per cent) of the country, agriculture is largely dependent on rainfall, especially the summer monsoon. Unfortunately, the pattern of summer monsoon is highly inconsistent and consequently, the variability in rainfall is high which affects the agricultural returns badly. Only about 55 per cent of the total cropped area is under irrigation wherein the farmers are more confident about their agricultural returns even at the failure of monsoon, as it happened in 2009. Although India is the second largest irrigated country in the world after China, only one-third of

the cropped area is under irrigation. Lack of mechanization is another issue of Indian agriculture sector. In spite of the advancements in the agriculture technologies, most of the farmers are using the conventional methods of ploughing, sowing, irrigation, thinning and harvesting. Marginal and small farmers tend to use more human labour resulting in lower yields. Some of the economists felt a suitable farming systems could solve the problems of Indian Agriculture and increase the production, productivity and employment.

1.2 Evolution of Farming System in India

Since the independence, India's agricultural development strategy has passed through different phases. The period of planned development may divide into two parts, the dividing line being the mid-sixties when the New Agricultural Strategy (Green Revolution) took its final shape. The policies of the government before and after this dividing line are associated not only with differences in technical knowledge and its application in agriculture but also differences in the philosophy of agricultural development.

At the time of independence, the prevailing land tenure system was complex and it was believed that land tenure system was unsuitable from the viewpoint of both, production and social or economic justice aspect. Hence the program of land reforms has taken place. Land reforms agenda included the abolition of intermediaries between the state and the cultivator, tenancy reform, reducing concentration of land ownership and the consolidation of fragmented land holdings. Land reforms could not make much progress and failed due to lack of political will, legal hurdles, improper implementation and inadequacy of reliable records. Due to failure of land reforms, the government appointed a committee on agrarian reforms under the chairmanship of J.C. Kumarappa. He submitted his report in 1950 and concluded that collective farming is to be suitable in essence for the development of reclaimed wasteland. The committee also suggested three other alternatives namely capitalist farming, state farming and individual peasant farming.

Peasant farming system is a system of farming in which an individual practices as a sole proprietor who possesses permanent, inheritable and transferable rights of land. This system of farming did not improve the production situation in India and thus failed. The failure of this system is due to scattered and uneconomic

holdings where the small size of land itself becomes a bottleneck to full utilization of other indivisible resources. This means serious diseconomies of small-scale and results in high average costs of production and low yields per acre per man that leads to farmers living under vicious circle of poverty.

The system of large-scale capitalist farming would then seem to provide an alternative to dwarf peasant farming. This mode of organization would enclose substantial areas, establish large units of cultivation, invest capital, and mechanize farm operations, increase productivity, market and large surpluses. But this system of farming also fails on the ground of adverse effects of mechanization and displacement of labour, concentration of land resources in few production hands, a sharp tilt towards cash crops instead of food grains production, employment, social desirability and feasibility.

There are two other modes of farming systems namely, collective farming and state farming. In India, these two farming systems involve mechanization of agriculture. Moreover, they are facing same problems as of the capitalist farming. In state farming, the economic efficiency is highly doubtful. It includes the bureaucratic management, administrative delays and low incentives to agriculture. It seems to make the capitalist farming unsuited for emulation in India.

Then, the idea of co-operative farming was surfaced in the form of "co-operative village management" in the First Five Year Plan (1952) with the village as the unit of land management with individual families or group of families cultivating blocks of land allotted by the village management body. However, the right of ownership of the village land would be recognized and compensated through an ownership dividend at the end of each harvest. Dandekar (1974) comment that, "this was a rather primitive concept based on a utopian notion of a village and plain ignorance, or unwillingness to see the truth, about how the village community functioned." The Second Plan (1956) placed an even larger emphasis on co-operative farming and stated that targets of co-operative farming should be linked with those of agricultural production with the help of the National Extension Service and the Community Development Programme. The third Plan (1961) also mentioned the possible contribution of co-operative farming to rural progress and it was expected to develop as a mass movement at the village level. For the third plan, a programme for the organization of several pilot projects was accepted by the GOI. During the period

of the third plan, however, the official emphasis on co-operative farming started declining and in the fourth plan document (1969) the shift in the emphasis from co-operative farming towards service co-operatives connected with the agricultural credit, marketing, and consumer needs became clear enough. In the beginning of the fifth plan (1974) co-operative farming has halted to be mentioned any more. The main causes of failure of co-operative farming are farmers' attachment with land, lack of co-operative spirit, illiteracy, lack of capital, dishonesty of the societies and repayment of debt.

In the 1960s, the Green Revolution allowed India to overcome chronic food deficits and the food grain production has increased significantly from 82 million tons in 1960-61 to 129 million tons in 1980-81 and 213 million tons in 2003-04, to meet out food security and attain self-sufficiency especially in the production of staple foods such as rice and wheat. Basically, the Green Revolution stands for producing more food and other agricultural products from less land. Modernization is one of the main concepts in the Green Revolution. The practices were made up of using high-yielding varieties of seeds, modifying farm equipment, and substantially increasing chemical fertilizers. This allowed growth and sustainability. At the beginning of the Green Revolution, there was a large growth in Indian agriculture however, instability arose and the Green Revolution was on a rapid decline.

Economic reforms of 1991 have also focused on the development of Indian agriculture sector. Economic reforms process involved deregulation, reduced government participation in economic activities and liberalization. Although there is no any direct reforms for agriculture but the sector was affected indirectly by devaluation of exchange rate, liberalization of external trade and removal of protection to the agriculture industry. During this period opening up of domestic market due to new international trade accord and WTO was another change that affected agriculture. This raised new challenges among policymakers. Because of this, a New Agricultural Policy was launched by the GOI in July 2000.

This new agricultural policy has assigned a key role to private sector. Private sector participation through promotion of Contract Farming and Land-Leasing Arrangements (Corporate Farming), which will accelerate the technology transfer process and bring more cash inflows to the cash-strapped farm sector and ultimately will create assured market and high value added to the farm produce. Basic purpose of

adoption of such a policy is to provide a proper linkage between "farm and market" by giving farmer an assured price and procuring the farm produce on the one hand and ensuring timely and adequate input supply to the agro-based and food industry on the other hand. Need for such a policy has its genesis in the demand and supply disequilibrium that agriculture faces, where farmers have to dump this production for the want of buyers on the one hand and agro-based industries face difficulties in procuring quality inputs on the other (Dhillon and Singh, 2006).

The model of contract farming is also not working properly because small and marginal farmers are not getting benefits from this farming system. Contracted firms are biased when they have contract with the farmers and they often contract with large farmers. Another reason of failure of contract farming is illegal contract between a firm and farmer. The price of produce is low in the market. The firm rejected the produce on the basis of quality criteria and therefore farmers accrue losses. Firms also do not take any risks in the production process. All the risks due to calamities are also borne by the farmers. The contract farming is not at all beneficial to the small and marginal farmers. However, it helps in land consolidations for large-scale operations of agriculture utilizing modern equipment and technology in the cultivation. It may help to manage the production and productivity, but it can lead to an exploitation of small and marginal farmers in the village. Further, it requires development of a permanent legal framework in the interest of small and marginal farmers.

1.3 Corporate Farming: Meaning and Status

The corporate farming describes the business of agriculture, as the practices of mega-corporations involved in food production on a large scale. It is a modern food industry and encompasses not only the farm itself but also the entire chain of agriculture-related business including seed supply, agrichemicals, food processing, machinery, storage, transport, and distribution, marketing, advertising and retail sales. The ultimate goal of corporate farming is to vertically integrate the entire process of food production up to the point of the distribution and sale of food to consumers. It refers to direct ownership or leasing in of farmland by business organizations in order to produce for their captive processing requirements for an open market. When it is done for captive purposes it is known as captive farming. Though most of the time the two terms are used interchangeably (Singh, 2006). Asian economies like India and Pakistan have resorted to corporate farming in a bid to lure multinationals into

investing in the agricultural sector. Economies of U.K. and U.S. have already witnessed this business phenomenon in their agricultural sector. They are proofs of a highly developed food industry with a well-developed agricultural system.

The corporate farming has no correct legal framework in India at present, the agribusiness firms are increasingly choosing leasing in land option to resort to corporate farming as a way out of this situation. Table 1.0 shows the status of land leasing in the states as of October 2016 in India. Some of the corporate agencies in the states are asking for long-term lease (20-30 years) of farmers land for corporate farming. The agriculture is a state subject and many state governments in India have attempted liberalization of land laws, especially land ceiling laws for allowing the corporations in agriculture.

Table: 1.00 Legal Status of Land Leasing in States as of October 2016

State/UT	Land Leasing Restriction	Adoption of Model Land Leasing Law
Andhra Pradesh	Partial	No
Arunachal Pradesh	Ban	No
Assam	Partial	No
Bihar	Ban	No
Chhattisgarh	Ban	No
Goa	Ban	No
Gujarat	Ban	No
Haryana	Partial	No
Himachal Pradesh	Ban	No
Jammu and Kashmir	Ban	No
Jharkhand	Ban	No
Karnataka	Ban	No
Kerala	Ban	No
Madhya Pradesh	_	Yes
Maharashtra	Partial	No
Manipur	Ban	No
Meghalaya	Ban	No
Mizoram	Ban	No
Nagaland	Ban	No
Odisha	Ban	No
Punjab	Partial	No
Rajasthan	Partial	No
Sikkim	Ban	No
Tamil Nadu	Partial	No

Telangana	Ban	No
Tripura	Partial	No
Uttar Pradesh	Partial	No
Uttarakhand	Ban	No
West Bengal	Partial	No
Andaman and Nicobar Islands	Ban	No
Chandigarh	Ban	No
Dadra and Nagar Haveli	Ban	No
Daman and Diu	Ban	No
Delhi	Ban	No
Lakshadweep	Ban	No
Puducherry	Ban	No

Source: Study Report on Agriculture Marketing and Farmer Friendly Reforms across Indian States, NITI Aayog; PRS

The states of Maharashtra and Gujarat have also enacted laws to allow corporate farming on government wastelands by providing large tracts of these lands (up to 2000 acres each) to agribusiness companies on a long-term (20 year) lease. The Chhattisgarh state government is also making available about 20 lakh hectares of land for Jatropha (bio-fuel) cultivation. Under this scheme, an individual can lease up to 200 hectares of land at a price of Rs 100 per hectare per year for the first five years. For subsequent years, these rates could be increased. The state government has already formulated an action plan including the setting up of the Chhattisgarh Bio-Fuel Development Authority, identifying Government-owned waste or fallow land as well as consulting task force in various districts (The Hindu Business Line, Sept. 2, 2005). Earlier, the government of Andhra Pradesh had attempted corporate farming under a project in Kuppam of Chittor district during 1997-2002 where the purpose was to test the feasibility of large-scale farming through contract farming on lands leased by agribusiness company (BHC Agro India Private Limited- an Israeli consultancy firm). The focus was on precision farming, drip irrigation, and quality standard. Now corporate farming also has been started in the States of Punjab, Maharashtra, Gujarat, Uttar Pradesh etc. **It is nothing but the transformation of agriculture as industry.** It also helps for consolidation of fragmented land holdings in India. The agricultural sector is being converted into an industrial sector, as multinational corporations are interested in direct participation in farming and cultivation. Corporate farming has the merits and demerits in Indian agriculture systems

1.3.1 Merits of corporate farming

1. Reduced Agricultural Waste

Timely harvesting of crops helps avoiding wastage of food. This increases the yield produced from the same input. Around 2 per cent of the total farmlands in the U.S., under this type of farming, produce as much as 14 per cent of the overall crop production. The increase in output leads to decrease in food prices in the country.

2. Better Quality Yield

Corporate are in a better position to protect the crops through extensive use of pesticides. Corporate farming helps to ensuring minimal damage to crops and a better quality yield. This farming also encourages the employment of food cultivation techniques and increases the storage life of crops for exports simultaneously.

3. Reduction in Price Crops

This farming is definitely synonymous with large outputs that lead to economies of scale. Hence, it helps to reduce the price of food items. This means pay lesser amount for the same food than did 5 years back. This will help keep a check on food inflation and bring down the prices of crops and thus, makes cheap food available to all and in large quantities.

4. New Technology

A concept that is predicted to soon popularize in capital-intensive economies is the precision technology. Tractors will be run through the control of satellites to harvest crops in a much lesser time. This will inadvertently avoid wastage due to deterioration.

5. Boosting the Agricultural Sector

Industrialization of agriculture has helped in rapid production of crops to meet the needs of the economy and revived the importance of agriculture in the GDP. It will also increase exports. Increase in agricultural production through the use of advanced technology has obviously boosted the agri-scenario in developed and developing economies of the world.

1.3.2 Demerits of Corporate Farming

1. Lower Profits for Household Farming

As agribusinesses are widening their horizons in agriculture, this has severely affected the livelihood of many farmers. In economies thriving on this type of farming, farmers face problems of reduced profits or increased costs. This has largely affected the sustainability of their occupations. They are then forced to enter into contracts with companies for growing contracted crops on their farmlands that these corporates buy at their quoted prices. They are left with no decision-making controls.

2. Reduced Nutrition

It also compromises on the nutritional value of food by using high amounts of insecticides and pesticides to prevent damage to crops. They blindly use food additives, coloring agents, chemicals and hormone injection to speed up the process of crop maturity. Such genetically modified crops lack nutritional content in comparison to organically grown nutritious crops. This has become a great topic of political and economic debate in recent times.

3. Higher Environmental Costs

Mechanization of agriculture through the use of technology has although increased the pace of all production processes, it has made it difficult for the environment to cope up with this speed. It interferes with the natural and biological processes of the environment. Moreover, corporate farming may soon be a threat to the water bodies that will quickly dry up from excess irrigation, polluting of fisheries by disposal of chemical wastes, depletion of oxygen in the atmosphere and increasing threat to all those engaged in agriculture. It also pollutes the soil and is negligent towards animal health welfare.

4. Risk of Monopolistic Economies

It tends to encourage food production by only a handful of large companies. This will promote monopoly or oligopoly in the markets by concentration of production capacity and power and create flaws in the existing system of market forces.

1.3.3 Growth of Corporate Farming in India

Contract farming and corporate farming have been encouraged by the government as possible solutions to problems of Indian Agriculture. The small sized, fragmented, uneconomic landholdings and lack of competitiveness of agricultural

produce are main reasons for eroding profitability of the agricultural sector. State governments across different states such as Andhra Pradesh, Tamil Nadu, Gujarat, West Bengal and many more are amending laws to encourage the practice of corporate farming. Prime agricultural land and wastelands are being purchased or leased in by corporate houses, to undertake agri-business ranging from seed supply, agrichemicals to storage, transport and retail sales. The large corporates primarily motivated by profits, invest huge amounts of funds towards research and modernization of agriculture and with complete control over land holdings are able to maximize produce for both sales in the open markets as well as their own retail food processing. Reliance Fresh, Tata agri-chemicals, Sterling Agro, Mcdonalds, Hindustan Lever are few examples of entry of private sector into the primary sector. The problem of the Indian farmer is that the farm land should be owned by the independent farmer and input costs like farm machinery, crop insurance, fertilizers, irrigation, pesticides, fuel, and seeds should be borne by the corporates. But corporate farming at present is bringing back feudalism as corporate farmers are working as contractual labourers of the corporates that have bought their lands and employed them. The small farmers, now landless, continue to be plagued by problems of hunger and debt. Corporate farming can be economically and socially beneficial if it gets the marginal farmer a remunerative price. It adds to the export capacity of the country by discovering international markets for the fresh produce, fruits, vegetables and processed primary goods of consumptions thus contributing to the growth of agriculture. Credit requirement is not a constraint for the big corporates as they have huge funds at their disposal as well as plentiful support of the financial institutions and banks. They can undertake large-scale investments necessary for marketing from packaging, warehousing and transportation of primary goods. Today there is a huge demand of organic foods among consumers and such cultivation is being taken up by the businesses to cater the changing preferences. However, corporate farming has its fair share of pitfalls that can reverse trends of growth and increase social injustice. Since the corporates continue to operate on the motive of profits, they will not be too concerned with the welfare of the farmers. Production will become completely market-oriented substituting subsistence cropping by commercial cultivation. More and more output produced will be for the export basket rather than satisfying domestic needs of consumption (Bhosale, 2015).

Therefore, corporate farming is not as rosy as it seems. Although its benefits cannot be denied, its negative consequences have far-reaching effects in the long run. Short-sightedness of the government to reap benefits in the present can lead to economic disparity in the future. It also willingly invites intrusion from strong foreign corporates to interfere with the economic and agricultural situation of a country. In translation, there will be insensitivity to the demands of the people as they focus on profit maximization in agriculture. This may mark the onset of severe global food crisis. Contract farming is another way forward to deal with the usefulness of agribusinesses when corporate farming is not used to abuse the commercialization of agriculture.

Now corporate farming also has been started in the state of Uttar Pradesh. Due to initial stage of corporate farming in Uttar Pradesh very less literature is available. Hence, the present study explores the impact of corporate farming on agricultural development in Uttar Pradesh by reviewing the earlier studies on agricultural development, farming system and land issues.

1.4 Review of Literature

The review of literature plays a vital role in establishing a back drop for any research work. The purpose of the present study can be clarified by reviewing the available literature on the subject. Since the corporate farming system is a recent phenomenon in India and; research in this field is still at an early stage. Therefore, an attempt has been made to review the available literature on different farming system organization.

Meena (2016) explain the meaning of corporatization, difference between the corporatization and privatization and process of corporatization of agriculture in India. He also analyzes the impact of corporatization of agriculture on farmers, production, and food security. Corporatization is not the dangerous thing but monopoly of the corporate can be harmful for the economy. The present project shows that whole chain of agriculture process from seeds to selling and distribution of the final agriculture products is coming under control of a few Multinational Corporations (MNCs). These MNCs are indirectly making use of land and farmers to making profits and on the other hand, farmers are becoming poorer day by day. Hence, there is an urgent need to review of agriculture policies. Small farmers should be encouraged to take food crops rather than cash crops for food security. Again

government should put money in research on input cost-cutting methods (technology) in agriculture.

Swain, Kumar and Raj Kumar (2012) evaluate the scenario of corporate farming and its economic viability in comparison with contract farming in India. The authors take various examples for critical analysis of contract farming and corporate farming in India. Cases related to contract farming are the Pepsi case, Rallis India case, state-led contract farming in Punjab and some other cases while in corporate farming examples of Jamnanagar included to suggest that contract farming addresses the problem of market access but in many cases, the contract tend to be one-sided. If the government takes proper care in regulating the terms of contract, greater social welfare is achieved. Indiscriminate opening up of agricultural sector to corporate, companies can impact the social and economic equilibrium of unutilized cultivable lands in India. Proper steps have to be taken by the government for making most of the corporate farming model that brings in technology, efficiency and sustainability together for growth and development of the agriculture sector.

Gupta (2014) inquired into how corporate hegemony of multinational or transnational corporations has emerged in the food and agriculture activities all over the world and what social impact it entails. She found that the developing countries are yet to develop their competence to protect their autonomy and control over genetic resources, maximum bio-prospects and equitable sharing of benefits and reduce unreasonable high dependence on imported seeds to sustain viable agriculture systems. In the changing context of corporate globalization, climate change, and global food crisis, the corporate hegemony is becoming a threat in subverting national sovereignty, undermining democracy, destroying genetic diversity and jeopardizing human rights. So, there is a need to strengthen the role of national institutions in the fundamental and applied biotechnology research that links the modern science with traditional knowledge with the direction of serving the immediate and long terms needs of the people and country to attain self-sufficiency.

Reddy and Singhal (2015) discuss the scope of growth and issues of agriculture and the need of multinational companies to enter into the agriculture sector and how the entry of corporates can change the agriculture by taking the examples of existing conditions in comparison with other countries. They also broadly discuss adaptability of the corporate farming in India, its growth prospects, challenges,

advantage of corporate farming, existing factors in different parts of the world and future of agriculture sector. In the paper, authors found that the traditional farming families are shifting into new segments and leaving agriculture that may be adverse indication of growth and development in India as the food security is the key towards a sustainable development. So, we need corporates entry into full-fledged farming where corporates procure its own technology, employ both technical and non-technical staff and produce the food grains for both the uses of country and exports through which India can sustain food security. Corporate farming can brought back educated youth into the agriculture sector and involve those who have left it. Corporates can also adopt advanced technologies to improve irrigation system.

Chandio (2015) analyses the corporate farming and its likely effects on the labour redundancy and food security. In general, this paper discusses impact of corporate farming on social fabric of the society. He used secondary data, reviews and consultative opinion of stakeholders. He also did a comparative study of leasing contracts of countries to find out the fears of the local stakeholders to see whether these contracts provide enough safety for the country's food security and employment of the local agriculture workers. Present study found a strong case against the Pakistan government plan to sell out agricultural land to corporate agricultural companies. These companies could make food dearer to the local population and deprive participation of local farmers in the economy. Small and marginal farmers could not compete with these companies and they may have to exit from agriculture, which leads to agriculture labour redundancy and finally can impact farmer's income. Hence, the corporate farming on a given terms and conditions do not seem beneficial to the Pakistan economy in short run as well in long run.

Mani (2013) criticizes the experiment of corporate agriculture adopted by the Andhra Pradesh government. He pointed out that the Kuppam experiment in corporate farming has led to various undesirable and hazardous consequences. This experiment has failed to increase the productivity in any significant measure, or where a certain increase in productivity had taken place- it was completely offset by the long-term effect of diminishing the soil fertility and draining of water resources. Diversion of food grain crops to non-food grain crops; it created a shortage of food

grain on the one hand, and reduced the returns due to excessive competition from various countries in such agriculture commodities. Overall this experiment may have an adverse consequence for the agriculture sector in the A.P. and may impact the lives of masses of the peasantry. Besides, it can also have a long-term impact on the environment.

Abbasi (2012) explores and analyzed corporate agriculture farming related policy initiatives in Pakistan and learn from other country experience as well. He also explores the key drivers in agriculture change in Pakistan in general and corporate agriculture farming in particular. The central objective of the study was to contextualized the state of small farmers and understand impact of corporate farming in the context of food security and climate change. This study is based on secondary data and work of eminent scholars in the agriculture. By using this data a thorough analysis was carried out to find dynamics of agrarian change, special focus on understanding how small farmers can be affected by corporate farming. He found that Pakistan has transformed from quasi-feudal society to a more capitalist orientation in agriculture sector. Those small farmers have been worse off in agriculture, during the last 30 years, who were either landless or engaged in sharecropping system. He also found that food, fuel, and water resources are key drivers behind motivations of acquiring land in the country. It can be concluded that while potential of gains from corporate farming might be real, there is a need to re-examine corporate agriculture farming from the perspective of food security and well-being of small landholders. He also found that the corporate farming is not a viable solution to food security and environmental problems. Therefore, a cautious approach needs to be taken by any country while adopting the corporate farming model.

Ghosh (2003) has analyzed the effect of corporate farming and trade liberalization on small farmers in India. She argues that the multinational companies monopolize markets with large farms and dictate prices in a less competitive environment. The multinational companies dominate in the markets through horizontal and vertical integration. As these companies have large resource base and worldwide networks so they have no compulsion to buy from a particular markets and sellers. In such situations of monopoly and monopsony, the small and marginal farmers get worse off.

Kesavan and Swaminathan (2014) pointed out that family farming has several principles and practices in common with the evergreen revolution should have all the financial, technological, policy and market support so that the food nutrition security can be maintained. They also emphasize on zero hunger. According to them, zero hunger cannot be achieved only with building buffer stock in warehouses but it also requires livelihoods for getting access to food and nutrients to eliminate hidden hunger. They also suggest that the corporate farming in the current situation of India and several developing countries cannot match the family farms in achieving zero hunger. They also pointed out that the corporate farming displaces three to four jobs for every single job created. Monocropping practiced by the corporate farms is not conducive to develop strategies to provide agricultural remedies to nutritional maladies in different agro-ecological regions. Hence, the corporate farming largely fails on both the ecological and social dimensions of sustainable development. They also recommend that there is need to widely employ such type of policy that can help family farmers in the world.

Williams (2002) discusses the key issues affecting agriculture, environment, rights, and safety in the U.S. agribusiness. Central to the story is the influence of corporate farming in shaping government policy, politics, legislation and the economic and social well-being of rural communities. American consumers and independent family farmers have been the losers to the agriculture industry. Farmers forced to buy the inputs from a few suppliers or a monopoly. Farmers must then sell their produce to a few buyers or an oligopsony. And they must compete in an unfair, over concentrated marketplace. Farm incomes are declining and many farmers service debt year after year. Consumers also lose by being forced to cope with unhealthy food and live in polluted environment. Further, as the companies have flourished, rural communities have suffered economic, social, political, environmental, mergers and vertical integration costs. For example, a case study of the state of Virginia has been done that highlights the effect of corporate farming on rural communities. The main finding of the report was the farm bankruptcies, water and air pollution, reduced tax revenue and increased demands on social services. The report concludes that the U.S. must reform its policies to ensure long-term sustainable agriculture. New policies are needed to stop companies from using the American farmers to harvest record profits, leaving farmers with less and less to show for their hard work.

Democracy must be reintroduced into the country agriculture, bringing more competition, more corporate responsibility and less money in politics.

Nair and Menon (2006) assemble and analyse some micro-level data available on tenancy in Kerala. More specifically, they examine the prevalence of tenancy across locations and crops, characteristics of lessors and lessees, the terms of lease and the income derived from lease cultivation. They suggest that the expansion of lease farming would definitely results in improving the performance of agriculture and generation of income and employment opportunities for rural area peoples. Entry of self-help groups also widened the lease farming. They also suggested formation of a lead bank that would function as an intermediary between those who want to lease out their lands and those who want to lease in. Hence, this is the responsibility of the state government to formulate an appropriate policy for lease farming.

Singh (2006) profiles cases of corporate farming practice and examine the rationale for allowing corporate farming in India in the context of its agriculture and rural sector. He points out that the rationale is weak and not supported by international evidence on corporate farming. Corporate farming is promoted on the grounds that large-scale corporate agriculture is more efficient than peasant farming prevalent in the country and that it leads to better allocation efficiency, induces higher private investment in agriculture, and results in higher output, income, and exports. He challenges these claims drawing on various studies on the national and international experience of corporate farming. He concludes by suggesting alternatives like consolidation of land holdings and contract farming, for making better use of corporate resources for agriculture development. Contract farming does not make small farmers landless, unlike corporate farming. Even the environmental aspects of contracting are not as damaging as small farmers maintain control over farm operations which is good for environmental sustainability.

Lobao and Stofferahn (2007) evaluated studies investigating the effect of industrialized farming on community well-being from the 1930 to 2007. Based on sample of 51 studies, they document the research designs; evaluate results as to whether adverse effects were found. They also delineate the aspects of community life that may be affected by industrialized farming. Main findings of the study were, 57 percent found largely detrimental impacts, 25 percent were some mixed detrimental impacts and 18 percent found no detrimental impact. Adverse impact

was found across an array of indicators measuring socio-economic conditions, community social fabric and environmental conditions. Beneficial effects of industrialized farming were few and confined largely to income related socio-economic conditions. 22 per cent of studies provide evidence of these effects but only 6 percent report largely beneficial effect. The results of the study demonstrate that public concern about industrialized farms is warranted and in turn, the states have legitimate public interest in regulating the corporate farms.

Pray and Latha (2012) focuses on the private innovations and its contribution to the agricultural productivity and incomes. The study has disclosed that research and innovation by private industry led to the boom in cotton exports of generic pesticides and agricultural machinery. Similarly increase in innovation and research and development were led to increase in demand for agricultural products, and in turn demand for land, labour and water saving inputs. Ultimately this will allow large Indian corporations, business houses, and foreign firms to invest in agriculture and agribusiness.

Singh (2012) examines the various aspects of farm policy and practice in Punjab from a small-holder perspective. He also discusses new mechanisms such as contract farming, corporate farming and policies granting agricultural incentives and subsidies before putting forward suggestions to benefits small-holders and ensures the sustainability of farm sector. He shows that the policy either ignores small-holders or pays lip services to their concerns. The policy bias and lack of representation of small-holder interest has resulted in corporatization of the farm sector. Large operators are increasingly taking control of it and manipulating agriculture policies to their advantage in the name of small-holders and potentially creating a farm crisis.

Singh, S. (2012) examines the new corporate interface with primary producers in a small farmer-dominated economy. He also examine contract farming arrangements to show the exclusion of small producers from the retail chain, the performance of modern food retail chains in India and their spread and penetration into or interface with farmers, policy and regulatory issues and some of the mechanisms and institutional innovations for inclusive agricultural marketing systems. He suggests that small farmer requires professional training in marketing and technical aspects of production. He also emphasis on the development of agencies and farmer bodies

need to identify crops suitable for smallholders, which are of short duration, labour intensive and less risky and carry out value chain mapping and analysis to attempt a market linkage based on this analysis.

Sharma (2008) has explored the determinants of participation in contract farming in order to observe whether contract farming affects the farm income or not. The study has focused on contract farming and its importance in the present context. Contract farming enables farmers to access better quality inputs such as seeds, fertilizers, pesticides, extension services and credit from the corporate sector. The study has concluded that there is a need to promote non-political farmers and organizations to improve smallholders bargain powers as well to reduce transition costs to agribusiness companies.

Dhillon and Singh (2006) analyze the working of contract farming in Punjab as practiced by a private industrial unit, which is engaged in the agro-processing. They also try to find answers to many questions related to contract farming (e.g. questions about rationale, performance, and benefits of contract farming) on the basis of survey of farmer contracting with Nijjer Agro-industries. In this paper, they only focused on micro level. They used lottery method for the selection of farmers and interviewed with the help of a pre-designed questionnaire. By using interviewed method they collected information about size of land holding, leasing in and leasing out of acreage of land, their education and age profile, and concluded that adoption of contract farming is more prevalent among medium-size farmers. Its adoption is also more prevalent among more educated farmers. They also concluded that contract farming gives farmer an assured income but there is feeling of exploitation among the farmers due to varying quality norms adopted by the company. Hence government must play a pro-active role for implementation and monitoring of the contract.

Kumar and Kumar, P. (2008) examined the effect of contract farming on income and employment generation and has identified constraints and prospects of contract farming in the state of Karnataka. Their study has revealed that the total income is more to contract farmers, almost double, than noncontract farmers. Employment generation on contract farms has also been found almost double compared to that on non-contract farms. Female labour has been observed to dominate over male labour on both types of farms. They have been found the delayed payment for crop

produce, lack of credit for crop production, scarcity of water for irrigation, erratic power supply and difficulty in meeting quality requirements to be the major constraints faced by contract farmers, whereas, scarcity of water for irrigation, erratic power supply, lack of credit for crop production and lower price for crop produce are the major constraints expressed by non-contract farmers.

Mann (2012) aims to evaluate the impact of contract farming in India on inclusive and sustainable growth. She uses examples from case studies on various corporate initiatives in rural India such as Mahindra Subhalabh, ITC, e-Choupal and Pepsi Co. etc. She clarify the nature of contract farming in the Indian context and then focuses on contracts between a transactional approach with a transformational strategy geared to deliver a more equitable and inclusive set of benefits to all actors from end-to-end of the trading network. She also breaks new ground to shift from better, cheaper and faster ways of leveraging contract farming from a shareholder to a stakeholder perspective.

Dev and Rao (2005) examined contract farming in oil palm and gherkin in Andhra Pradesh. They observed the despite various shortcomings, on the whole contracts were working well in both the crops. While contract farming had solved the problem of supply of quality raw material for the processor, the latter were enabling or even in some instances unwilling to meet the needs of the cultivators. The authors also observed that contracting firms preferred large farmers and in some cases neglected the smaller ones. Authors, therefore, suggested for some form of government intervention to ensure proper enforcement of contracts especially in the case of small and marginal farmers.

Narayanan (2012) demonstrates the heterogeneity of welfare impacts of contract farming participation by estimating an endogenous switching model, using survey data for 474 farmers in four commodity sectors (gherkins, papaya, marigold, and broiler). She shows that net welfare gains vary widely both across contracted commodities and across farmers within a commodity sector. While contracting in papaya and broiler are associated with improvements in net profit per month for those participating and potential improvements of 47 percent and 123 percent for current non-participants, the impact of gherkins and marigold are more ambiguous. The standard deviation of point estimates of treatment effects is quite large indicating variability in welfare gains from contracting to different farmers even

within the same commodity sectors. It is therefore important to recognize that notwithstanding the sign of average treatment effects, contract farming arrangements have diverse impact on income for individual farmers.

Minot and Hu (2009) compare contracts and non-contract growers of apples and green onions in Shandong province of China in order to explore the constraints on participation and the impact of contract farming on income. They find little evidence that firms prefer to work with larger farmers though all firms in the area are quite small. Using a Heckman Selection model, they find that contract farming raises income even after controlling for observable and unobservable household characteristics. These results suggest that contract farming can help raise small-farm income, though question remains regarding the number of farmers that can be brought into such schemes.

Singh, V. K. (2009) investigates the issues in corporatization of agriculture from legal point of view. His emphasis is on the state of Uttar Pradesh in India. He discusses land reforms, problems of small and marginal land holdings and wastelands runs through the contract farming and corporate farming. He also analyzes the existing corporate models of farming like cooperatives and producer companies. He also point out the issues associated with these corporate models. He recommends that there is a need to develop a comprehensive legislation that supports the corporate agriculture activity. He supported the statement given by Sharad Joshi who says that corporatization of agriculture is the way to go for India. Farmers should get rid of the cooperative model and should be introduced to corporate model to improve farming. Further author said that India should look towards finding solution to the criticism of corporate farming and a judicious implementation of the scheme in a phased manner. The observations are more relevant for Uttar Pradesh as the economy of the state is predominantly agrarian. Author also suggested a model to actualize 'gentleman-farmer' revolution.

Nair and Menon (2006) examines some micro-level studies on tenancy in Kerala, more specifically, its prevalence across locations and crops, characteristics of lessors and lesses, the terms of lease and the income derived from lease cultivation. The main findings of their study were that the expansion of lease farming results in improving the performance of agriculture and generation of income and employment opportunities for the poor. They suggest that it is the responsibility of the state to

formulate an appropriate policy framework in promoting small-scale lease farming. Such a policy framework would ensure not only the surety of tenure and the lessors right over land, but also spell out local level mechanisms to organize contracts between lessors and lessees, making available the relevant information on the availability of land for lease, its quality etc. to potential tenants.

Wittmaack (2006) discussed the changing landscape of agriculture. Corporate farming in the United States has changed drastically over the last century. Technology has improved farmers' ability to produce. As technology improved, corporations began to increase activity in the agricultural sector. Sectors such as livestock are more susceptible to corporate farming. Many Americans are opposed to the corporate farming because of the perceived negative effect on rural America. Limiting corporate farming, though, is not a good way to protect rural America. He identifies the alleged negative effects of corporate farming, why it is occurring, and why it should not be opposed.

Simmons, Winters, and Patrick (2005) examine contract growers of poultry, maize seeds and rice seed in Indonesia. They also use a Heckman Selection model. They find that poultry contracts and maize seed contracts resulted in improved returns to capital, while no significant impact was found in the case of rice seed. Contract seed growers were generally larger than the independent growers, but contract poultry growers tended to smaller than independent poultry growers. They conclude that the contracts increase income and welfare, reducing absolute poverty.

Society for Conservation and Protection of Environment (SCOPE) (2003) study is to contribute to the global understanding on Commercial Pressure on Land (CPL), initiated by the International Land Coalition. This study is focused on policy of attracting international investment in agriculture sector on the name of corporate agriculture farming (CAF). This study shows that the race to acquire productive lands for food security. Multinational Companies (MNCs) of the world eying on vast land in Pakistan, where the government of Pakistan offers state lands with extremely luring investment package. High food prices and food importing factors impress the countries to invest in Pakistan agriculture sector. However, international media and civil society is keenly following the global rush of land deals. International media and civil society was alerting the stakeholders in Pakistan about the possible threat of large-scale land acquisitions. The civil society organization is

working for the rights of farmers and secure land tenure considers this policy against peasants who have been waiting for judicious land and agrarian reform in the country. Further, the study has found the policy on CAF has short and long-term environmental consequences. In view of climate change and water shortage, it is not wise to give free access to corporate farming companies to exploit land and water. This study recommends that the stakeholders have consensus that land and agrarian reform should be completed to empower millions of landless farmers and establish secure land system in the country with financial facilities to small farmers. Food security must be considered at top priority while making any policy related to agriculture sector.

Tadem (1981) criticizes the corporate rice farming program as being contrary to the aim of agrarian reform. He pointed out that the corporate farms have not substantially raised rice productivity. The program's 5-year record shows an average production is only 69.72 cavans/hectares. On the other hand, Masagana 99 farmers utilizing small-scale methods, having a higher production average of 71 cavans/hectares. This proves that small family size farms are much more efficient than large-scale corporate farms. Hence, he recommends that the review of corporate farming program with the view of correcting the deficiencies that plague its existence. Higher production and profit returns of the companies must be regarded as secondary goal. The role of the peasant producer should be primary. In other words, this program should be peasant-centered. Only then the program will be unified and consistent for rural development.

Ahamad (2003) examines the major implications in the farm sector that are anticipated as the WTO agreement is implemented in Pakistan. In the recent past Government of Pakistan declared CAF as an industry and 19 Multinational Companies were approved to initiate their operations in agriculture. This study also raises the question:- what is the future of small farmers that are 81 percent of country farms under the new dimensions of CAF. Many adverse implications are anticipated on small farmers as MNCs start their operation. Small farms would disappear in the long run due to process of economic cannibalism. These small farmers would either opt for signing contracts for production for large companies or serve as paid employees of MNCs. On the other extreme is the possibility that the small farmers may leave agriculture profession and migrate to urban areas for

earning their livelihood. This will create problem of urbanization. Author recommends some points to improve the CAF policy. First, there is a need of general awareness among the farmers regarding WTO principles and laws and its implications on farm sector and economy. Second, waste and barren land should be leased out to MNCs. Third; organized markets should be developed for local marketing to offer an alternative channel to small farmers as compared to international competitive markets. Lastly, a well worked out plan should be prepared to absorb the displaced farmers in the rural areas as multinationals take over farming business under CAF.

Singh and Asokan (2003) studied four different cases of contract farming, namely gherkins, basmati paddy, broiler chicken, and sunflower. They observed that gherkin farmers were satisfied with contract farming as the returns were higher than competing crops. Basmati growers, however, were not satisfied as their yield and income were lower compared to normal paddy. In the case of broilers, the growing charges paid to the farmers were low compared to their investment, making the investment non-viable. Regarding the sunflower, the authors were not able to meet any of the growers due to time constraint.

Warning and Key (2002) study contract farming of peanuts in Senegal. NOVASEN, a private company contacted 32000 growers and produced approximately 40000 tons of peanuts annually. They use two Heckman model and find that the increase in gross agriculture revenues associated with the contracting is statistically significant and large, equal to about 55 percent of the average revenue of non-contact farmers.

Singh (2002) examines the rationale, practice, and problems of contract farming in vegetable crops in the agriculturally developed farming in Punjab that has faced the problem of sustainability of growth since the early 1980s. It is found that agribusiness firms deal with relative large producers and their contracts, which are biased against the farmers, perpetuate the existing problems of the farm sector such as high chemical input intensity and social differentiation. Contracting has, however, lead to higher farm incomes and more employment for labour. There seems to be an inherent contradiction in the objectives of the contracting parties and those of the local economy.

Dileep. et. al. (2002) studied contract farming of tomato in Haryana. They observed that contract farming system for tomato considerably reduced the yield uncertainty and completely removed the price uncertainty among its farmers. The study also observed that the processing firms were biased towards large farmers while selecting farmers for the contract. Their major suggestion was that the contracting system made legally obligatory on the part of the contract farmers and the processing firms to strictly adhere to the contract by bringing suitable legislation measures by the government.

Mitchell (2002) addresses the acute consequences of an underdeveloped local agriculture through his case study of Egypt in the 1970s. He discusses landholdings and the distinction in agricultural production between small family farms and the larger, more capital-intensive farms. He points out that- small farmer produce larger yields per acre than large farmers. That institutions like the USAID and the IMF showed a bias towards the large-scale agro-processors in Egypt and overlooked the fact that smaller agro-processors often employ more people, often produce a more nutritious product, and often do so at a lower overall cost.

The various studies reviewed above, have investigated the farming system organization and development of farming system in different contexts. Only a few studies have made an attempt to analyze the impact of corporate farming on small and marginal farmers. Therefore, the current study is intend to fill this crucial gap in understanding the impact of corporate farming on small and marginal farmers in the state of Uttar Pradesh.

1.5 Need of the Study

Farming is an age-old means of livelihood for millions of Indians. In India, around 70 per cent farmers are small and marginal. These farmers have less resource for investment in farming. Public investment in agriculture sector also continues to decline leading to a low capital formation. Due to a low capital formation farmers can-not invest in farming activities and end up with low agricultural production. Many times, these farmers would not be able to sell their products at a better remunerative price due to the lack of buyers and, often farmers are forced to throw their products. On the other hand, the agri-based industry, which requires timely and adequate inputs of good quality agricultural produce, falls short of such raw material.

Government adopted various farming system models to solve these problems but all these farming system models have not been beneficial to the small and marginal farmers. In the current reforms in farming system, the GOI is allowing private sector investment in the agriculture sector and thus making the model of corporate farming available in India. The entry of the corporate sector can solve some problems related to farming through land-leasing and buying from farmers. A few corporate companies are involved in the agriculture in the form of contract or corporate farming systems. The corporate farming is very long-term leasing in of land from small and marginal farmers operating at large scale operating farming systems. Hence, there is a need to examine the feasibility of the corporate farming whether the corporate farming has improved the socio-economic conditions of small and marginal farmers in terms of agriculture production, sustain the soil health and food security of the country. Further, this study will focus on the issue of land ownership and ownership rights. This is the main issue of the corporate farming. There is threat of ownership rights of small and marginal farmers. Hence, this study is conducted with the following main objectives. The main objectives of the study are:

1. To study the impact of corporate farming in Uttar Pradesh in terms of production, productivity, income and expenditure.
2. To examine the economic viability of corporate farming in terms of revenue and cost.
3. To study the economic conditions of small and marginal farmers in terms of income, employment, poverty, education and consumption.

1.6 Hypotheses of the Study

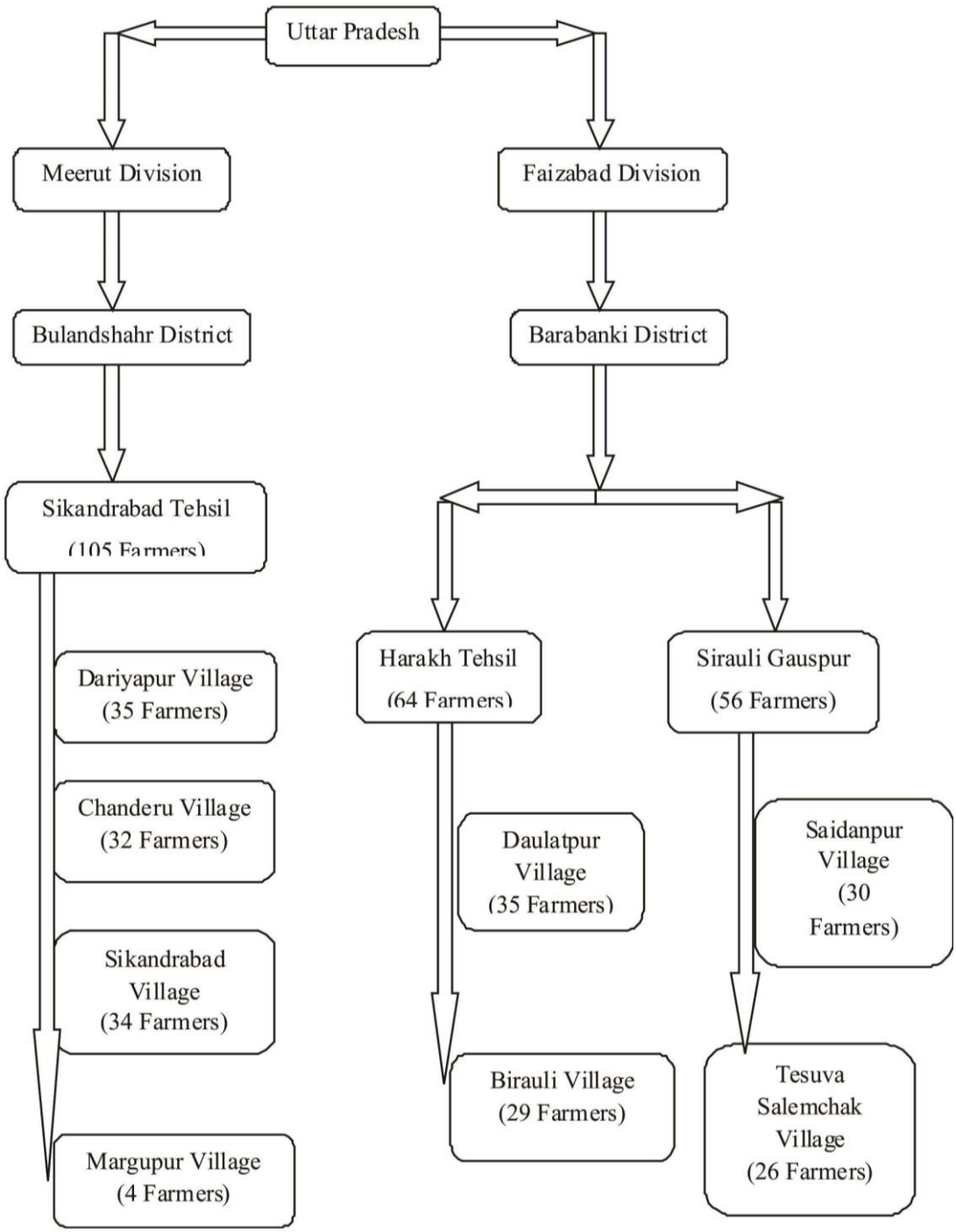
1. Corporate farming is economically viable with positive impact.
2. The small and marginal farmers are working as labour in their own land and facing exploitation from the companies.

1.7 Methodology

Present study is a micro level and field study. This study is based on primary information/data. The purpose of this study is to analyse the socio-economic conditions of leased out farmers in the corporate farming system. The samples of the study are leased out land owners involved with the corporate agricultural firms/companies (Sun Shine Agri Farms Pvt. Ltd. in Bulandshahr district and Hi-tech

Agriculture & Consultation in Barabanki district) in the Uttar Pradesh. Two districts of the U.P., namely Bulandshahr and Barabanki are selected for the field survey in which two corporate agriculture firms are currently running the corporate farming. The corporate farming has been started since 2012-13 in both districts. The purposive sampling method has been used to select the sample of the farmers. The size of sample is 225. We have taken 105 household farmers from Bulandshahr district and 120 household farmers from Barabanki district. In Bulandshahr district out of 105 household farmers, 22 belong to General category, 76 belong to OBC category and 7 belong to SC category respectively. Similarly, out of 120 household farmers, 49 belong to OBC category, 71 belong to SC category and there is no general category farmer in Barabanki district. Data is collected through field survey contacting households of the leased out land farmers in the villages of selected districts. For data collection, structured questionnaire is used. The data was collected during 2016-17 period. Sample selection procedure is shown by flow chart.

Sample selection Procedure



Further, to support the study secondary data is also used. The sources of secondary data are National Sample Survey Organization (NSSO), National Agricultural Bank for Rural Development (NABARD), U.P. at a Glance, Statistical Diary of U.P., Central Statistics Office (CSO), Bulandshahr District Sankhyakiya Patrika, Barabanki district Sankhyakiya Patrika and Statistical Abstract. The software

like SPSS, STATA is used in the present study. A few basic statistical tools are used to analyse primary and secondary data. We used simple percentage and descriptive statistics for the analysis of primary data. For the analysis of primary data dummy regression model and logit model regression techniques are also used. The time periods are different at the different level of analysis. Few case studies are also used to supporting argument. Present work is organized into seven chapters on the significance of the theme of the study which is given as follows:

The first chapter "Introduction" consists of problems of agriculture, agriculture issues, challenges, role of agriculture in India, meaning of corporate farming, merits and demerits of corporate farming, growth of corporate farming in India, review of literature, need of the study, objectives of the present study, hypothesis, and research methodology.

The second chapter entitled Theoretical Framework. This chapter discusses the various views and theories related to farming system organization. It also discusses policies, programmes and committees on agriculture sector development at the state and national level.

The third chapter is devoted to Farming System and Agricultural Development in Uttar Pradesh. This chapter analyse agricultural growth and identify the issues and problems associated with the agricultural sector in the state of Uttar Pradesh since independence and appropriate ways for the development of agriculture sector in future. Agricultural development in term of land utilization, production, productivity, cropping pattern, inputs, credit, agricultural market, agriculture labour, technology and policies, and programmes have been analysed in the state of Uttar Pradesh.

The fourth chapter discusses the Profile of Agricultural Corporate Companies in India. There are many examples of corporate farming. So, this chapter discusses the technology, land size acquired, crop production of these companies. It also discusses the impact of corporate farming on small and marginal farmers who give their lands on lease.

The fifth chapter relates to Socio-Economic Profile of the Study Area in Uttar Pradesh. In this chapter, the socio-economic conditions of the farmers in selected districts are discussed. This chapter shows overall picture of selected districts in terms of geographical area, population, literacy rate, education facilities, land use pattern, cropping pattern, land holdings, irrigation facilities, employment, and industries.

The sixth chapter is primary survey result of impact of corporate farming in Uttar Pradesh. The impact of corporate farming is analysed and examined in term of socio-economic development of the small and marginal farmers. This chapter reveals the change in the social status of the farmers of the society, economic equality in the state of Uttar Pradesh. The economic development is shown in terms of production, income, employment, wages, savings, education and consumption of the farmers. The impact of corporate farming is studied through collection and analysis of the primary data on the socio-economic variables from the samples of 225 lease-out land farmers from the two districts of Uttar Pradesh.

The seventh chapter deals with findings and conclusions of the present study and indicates the policy measures for betterment of farming system and agricultural development.

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Chapter-II

FARMING SYSTEM: THEORETICAL FRAMEWORK

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Indian agriculture was traditional and stagnant at the time of independence. The main characteristics were feudal land relation, low productivity and primitive technology. After independence the first task of the Indian Government was to initiate growth process of agriculture. Abolition of intermediaries in agriculture like Zamindars and Jagirdars was accomplished after Independence. Although, Zamindari system was abolished but it continues to exists in a different garb. Land reform laws have proved ineffective and therefore big landlords still rule the roost in rural areas. They lease out their land to tenants and charge high rents. The various tenancy malpractices hardly provide any incentive to tenant farmers to improve land and productivity. Hence, small and marginal farmers have improved marginally as compared to big landholders.

There is also tremendous pressure of increasing population on cultivable land. This has lead to overcrowding which resulted subdivision and fragmentation of land holdings. When cultivation is done on small and fragmented farms, farmers are obliged to maintain a minimum number of agricultural implements and capital in fixed forms. They are useful in a few operations in the year. During the rest of the period, they remain unutilized. Due to the limitations of the size, they remain underutilized. Similar is the situation regarding labour. In small farms, labour is in excess quantity remain isolated and unutilized in the face of a general scarcity of resources. These scattered resource surpluses cannot be effectively mobilized for production because they are in the possession of different scattered unorganized farmers. Hence, the challenges poised by various problems and constraints in the establishments and functioning of the production organization and the need for its continued growth to contribute to rural and small farmer development call for innovative models of farming organization in India. Several models have been tried and need to be evaluated to provide lessons for India and elsewhere in the developing world.

The 20th century also brought about significant changes to the economics of global agriculture. In more developed countries such as the United States, the face of agriculture was once that of the small family farmer. Today, the agricultural landscape in developed countries and to some extent in developing countries is dominated by

large farming operations. While many of these operations are still family-owned and farm size, management, and production methods remain diverse. On the whole, farms are larger and more mechanized and specialized than ever before (Sumner and Wolf, 2002).

Thus, India is also not different from other countries of the world. The private sector as well as the government, is at crossroads in the choice of the best models for farming organization development in determining as to what kind of institutional and organizational arrangements/models are appropriate for overcoming current constraints and maximizing their contribution to rural and small farmer development. So, this chapter focuses on the mainly conceptualization of farming system; second, theoretical outline of farming systems, and last the major institutional and organizational models which have been proposed in India, and evaluated from the point of view of performance and contribution to rural and small farmer development. We draw lessons from the experiences of those models.

2.1 Definition of Farming System

Farming system is a unique and reasonably stable arrangement of farming enterprises. This system is manages by household in accordance with their goals, resources and preferences. These factors combine to influence the output and production methods.

Different scientists have defined farming system in different ways. However, many definitions, in general, convey the same meaning that it is a strategy to achieve profitable and sustained agricultural production to meet the diversified needs of farming community through efficient use of farm resources without degrading the natural resource base and environmental quality (Rana & Chopra, 2013). Some of the definitions are as follows:

Farming system is a resource management strategy to achieve economic and sustained agricultural production to meet diverse requirements of farm livelihood while preserving resource base and maintaining a high level of environmental quality (Lal and Miller, 1990).

Farming system is a decision-making unit incorporates the farm household, cropping and livestock system that transform land, capital and labour into useful products that can be consumed or sold (Fresco and Westphal, 1988).

The viability of any farming system depends largely on its ability to contribute to the economic security of the key factors in the farm and food system. At the farm level, economic security includes following objectives:

- Ensure individual farm business viability
- Maintain farm household economic security
- Maintain or increase the quality of life of farm families and workers

2.2 Theoretical Framework

Theoretical framework is one of reliable base of any course of research. The subject economics has been developed with various theories. These theories developed by several well-known economists. Therefore, research work must be within the theoretical framework. Agriculture economics is one of the branches of economics, which apply basic economic theories. These theories explain the economic development path of economies of the developed as well as developing countries.

The classical economists considered economic development as a function of land, labour, and capital. They pointed towards the importance of capital accumulation through agricultural development. The neo-classical didn't attach any significance to agricultural development.

Further, development theories of Leibenstein, Nelson and Rosenstein Rodan stressed the importance and need for large capital investments in accelerating the process of economic development. Rosenstein Rodan and Nurkse emphasized the need for simultaneous development of agricultural and industrial sectors in the development programmes of the economy, whereas Hirschman considered industrial sector to be the leading sector in economic development.

The growth stage theories put forward by Marx and Rostow maintains agricultural productivity as a precondition to the emergence of industrial capitalism. Mobilization of savings to generate sufficient investment was the necessary economic mechanism for Rostow's take-off.

Below is the outline of some of the most relevant theories for explaining the relationship between the farming activities and agricultural development in the developing economies like India. Following theories given in context with agricultural economics.

2.2.1 Economic Theories

Ambedkar's View on Agricultural Development

Dr. Ambedkar was one of the great personalities who advocated dynamic changes in the society. He had fully devoted his life for improving the condition of downtrodden people in India. His views deal with agriculture and landmark in the field of economics. His views on land holding, collective farming and land revenue are most useful in the present time. Dr. Ambedkar also stresses on the need for industrialization so as to move surplus labour from agriculture to other productive occupations, accompanied by large capital investments in agriculture to raise yields. He also puts emphasis on extremely important role for the state in transformation of agriculture and advocates the nationalization of land and the leasing out of land to groups of cultivators who are to be encouraged to form co-operatives in order to promote agriculture.

In the era of globalization, agricultural growth rate is not only stagnant but also indicates continuous declining trends. It is commented that the government has concentrated only on the technical problems and thus ignored institutional problems. The sub-division and fragmentation is the main obstacle in the development of agriculture sector. It led to small and uneconomic holdings, which resulted in fall in agricultural productivity. This calls for further research to accelerate the growth rate of agricultural sector. So, India needs to make appropriate changes in its agricultural production system.

Traditional Approach

Every developed country passes through the traditional type of farming. Traditional farming based countries are poor and they spend a large amount of their income on the food items.

Mellor gave the theory of agriculture development in 1966. According to him, traditional agriculture tends to be characterised by low level of utilization of resources, low levels of productivity and relatively high levels of efficiency in combining resources and enterprises. These three factors are interrelated. Collectively they suggest little scope for rapidly increasing either total production of productivity per unit of the resources within the context of traditional agriculture, but a great scope for increasing total production and resource productivity through technological change.

But in the present time, the small and marginal farmers have limited resources to invest in the agricultural activities i.e. they cannot adopt new technology in the farming. Thus, lack of capital leads to less production of agricultural crops. So, there is a need to make changes in the farming system organization which can improve the conditions of the small and marginal farmers and improve their welfare.

Lewis Theory

Prof. W.A. Lewis developed a theory of economic development with unlimited supplies of labour. He tried to apply the classical model to the problem of economic development of underdeveloped countries. This model explains how unlimited labour supply of labour can be used as an instrument of development. He divided economy into two sectors namely, capitalist sector and subsistence sector. The development of the capitalist sector can be done by transferring the labour from traditional sector to capitalist sector (Lekhi, 2011).

Thus, in economic expansion there is a transfer of people from subsistence sector to capitalist sector which in turn, will increase total product and share of capitalist surplus. This will lead to a rise in the level of savings because capitalists have higher propensity to save and as a result, reinvestment of profit increase. This pushes up total product of economy and more labour from the subsistence sector is attracted to produce this product. Thus, on the one hand, the level of production in the economy increase and, on the other, more and more people formerly engaged in the subsistence sector get employed in the capitalist sector.

Therefore, the Lewis model is relevant in the economic development of the underdeveloped economies because most of the farmers belong to small and marginal land holdings category. Average size of land holdings has been increasing. So, farmers are not getting profit from farming activities and they are willing to quit from agriculture sector. They also migrate from the agriculture sector to modern sectors of the economy for betterment of their welfare.

Schultz's Theory

Prof. T.W. Schultz has given a comprehensive and brilliant explanation of the question, how to transform traditional agriculture into a highly productive sector of the economy. According to Schultz, transformation problem is basically an investment problem. Investment in agriculture will improve the performance of this sector. Thus, it is not a problem of supply of capital but to determine the forms of

investment in agriculture to make it more profitable. Schultz approach treat agriculture as a source of economic growth. To make agriculture a powerful engine of growth, it is pre-requisite to invest in this sector which in turn generates incentives to guide the farmers (Lekhi, 2011).

Even today, the agriculture sector is facing the investment problem. So, the thought of the Schultz is very relevant in agriculture development in developing countries like India. In India public investment is decreasing since two decades. This leads to farmers commit suicide in every part of the country. Farmers have less resource to invest in agriculture sector. To overcome from this crisis government allowed the private sector to enter into agriculture. It seems that entry of private sector can solve the problem of investment in agriculture.

New Institutional Economics Approach (NIEA)

New Institutional Economics is a multidisciplinary field which includes the aspects of economics, history, political science**,** sociology, business organization and law. Oliver Williamson coined the phrase the "New Institutional Economics (NIE)" but it originally emerged with Coase's 1937 article "The Nature of the Firm". This new direction of economics considers that the cost of transacting determined by institutions and institutional arrangements is the key to economic performance. Therefore, institution plays a significant role in the determination of economic efficiency, distribution and performance.

According to Williamson "NIE" is different from the "old institutional economics" pioneered by Commons and Veblen. Further, old institutional school argued that institutions are a key and responsible factor in explaining and influencing economic behaviour, but with little analytical rigor. Neo-classical economics, on the other hand, ignored the role of institutions. Economic agents were assumed to operate almost in a vacuum (Kherallah & Kirsten, 2002).

NIE approach relaxed some assumptions of neo-classical model (full rationality, zero transaction cost and perfect information) but the assumption of self-seeking individuals attempting to maximize an objective function subject to constraints still holds. Other than this, institutions under NIE are included as an additional barrier. According to Langlois (1986) the problem with many of the early institutionalists is that they wanted an economics with institutions but without theory;

the problem with many neo-classicists is that they want economic theory without institutions; so NIE tries to provide an economics with both theory and institutions.

Relevance of NIE Approach in Farming

Due to advancements in the NIE approach, it has been applied to agricultural development changes. The most notable applications are in the field of agrarian structure, technology systems including provisions for improved seeds, marketing, trade, management of resources, micro-institutions for credit and poverty alleviation.

In most of the countries, agricultural production is changing from family-based, small-scale farms to large scale farms that are more tightly aligned across the production and distribution value chain. In addition, the trend of market-orientated reforms, following multilateral trade liberalisation and especially structural adjustment programmes in developing countries, has led to the increased integration of world markets (Reardon & Barrett, 2000). This meant that farmers in the developing world are now, more than ever, linked to consumers and corporations of the rich countries. Although most of the changes in agricultural and food markets are taking place in developed countries, they have far-reaching implications for agricultural development efforts in developing countries. The changes in food and agricultural markets have influenced the need for higher levels of managed coordination. This has resulted in the introduction of different forms of vertical integration (contract farming and corporate farming) and alliances, which have become a dominant feature of agricultural supply chains.

Adding to this, issue of food safety is more likely to be a concern in the case of fresh food products, which include fresh meat, seafood, vegetables and fruits, and which account for half of the value of total food and agricultural exports from developing countries (Unnevehr, 2000). The need to control for high perishability and safe handling requires specialized production, packing techniques, and refrigerated transport. These require large capital investments and also involve investment in research, development, and marketing, which small and medium producers cannot easily afford. As a result, processors have avoided traditional spot markets and have engaged in more direct market channels such as market and production contracts, full ownership or vertical integration.

Against the background of deregulation and as the vertical coordinating characteristics of global agricultural industrialization increases, there is a need for

more specific analytical techniques for contract evaluation using the transaction cost economics paradigm (Cook, 2000). This would require the examination of alternative "institutional arrangements" which could minimize transaction costs (Kherallah& Kirsten, 2002).

Transaction cost is relevant for agricultural market analysis in developing countries and the changes in the agricultural sector in general. As the agricultural sector becomes a more globalised and deregulated industry, the transaction becomes the unit of analysis. This implies that transaction costs economics can potentially offer useful insights to agricultural policy research in the developing countries. In the context of the greater need for coordination, the role of transaction costs, trust and relationships, formal and informal contracts, vertical linkages, information asymmetries and strategic alliances will become very important. Especially the important thing is to analyse the institutional response at the farm level with globalisation. Globalization also questions how can we include small farmers in export markets? Hence, there is a need to understand the role of contracts and how they emerge. The transaction costs framework can contribute in explaining the choice of contracts among farmers and traders & local traders and multinationals.

Analysis of Agriculture Policy Issues by NIE Approach

Co-operatives and Other Farmer Organisation

Co-operatives and farmer organisations are institutional arrangements. The importance of it has re-emerged recently to organize small farmers in developing countries in the wake of agricultural market liberalization. The advantages of organizing farmers into groups includes, among other factors, a reduction in the transaction costs of accessing input and output markets, as well as improving the negotiating power of small farmer's vis-à-vis large buyers or sellers. The history of traditional cooperatives, on the other hand, suggests that cooperatives have not always been successful at serving the needs of its members, and their popularity had wane in the few decades preceding the 1990s. Cooperatives suffered from various organizational problems and a lack of clearly defined property rights assignments resulting in opportunistic behaviour (such as free-riding, moral hazard, agency problems), bureaucratic inefficiencies and under-investment in the cooperative.

The NIE can inform the design of such organizations and cooperatives to prevent their failure. The NIE renewed interest in a new type or "new generation co-

operative" that addresses the weaknesses of the traditional co-operatives by strengthening the assignments of property rights to its individual members and reducing the incentives for opportunistic behaviour (Cook & Iliopoulos, 2000).

Contract Farming and other Vertical Integration

The contract farming in developing countries, -in particular, provides a good platform to assess the future of contract farming. If we accept the premise that contract farming remains an important vehicle to keep small farmers involved in markets for high-value crops, it is now important to take the lessons from the experience with contract farming and use it to improve the working of this institution. With evolution and increasing prevalence of vertical coordination in agriculture, the theoretical framework for evaluating these developments has also evolved. Several aspects in the New Institutional Economics such as contract theory, agency relationships (principle-agent problems; incomplete contracts), transactions costs and the boundaries of the firms have now become key focus areas (Barry et. al., 1992). This theoretical framework is useful in analysing the relationships between the farmer (agent) and the vertical coordinator (the principal), where decisions about the extent of vertical coordination and related contract specifications can influence the financial position and performance of both the principal and the agent. In the context of contract farming, this framework can be used to analyse and address the problems that could typically constrain or lead to the break-down of contractual relations in developing country agriculture. So the NIE approach could be considered in the policies of agriculture sector.

2.3 Agriculture Policies in India

Before green revolution, Indian agriculture saw different policy reforms such as abolition of intermediaries, imposition of land ceilings, institutional changes etc. The green revolution treated as second phase of agriculture policy reforms. This period focused on credit, marketing, research, extension etc. After 1991, agriculture sector impacted by liberalization policy. The economic reform of 1991 opened the door of domestic market but it threatens the agriculture sector. This gave a call to more competitiveness in agriculture sector as it raised a lot of new challenges and opportunities. In this backdrop, the Indian government announced the first National Agriculture Policy (NAP) in July 2000.

2.3.1 National Agriculture Policy 2000

National Agriculture Policy focused on untapped growth potential of Indian agriculture like strengthening rural infrastructure to support faster agricultural development, promote value addition, and accelerate the growth of agri-businesses. It creates employment in rural areas, secure a fair standard of living for farmers and agricultural workers and their families. It also discourages migration to urban areas and faces the challenges of inequality arising out of economic liberalization and globalization. NAP envisaged attaining a growth rate in excess of 4 percent per annum over the next two decades. This growth is to be achieved through a combination of measures including structural, institutional, agronomics and tax reforms. Privatization of agriculture and price protection of farmers in the post quantitative restriction regime would be part of the Government's strategy to synergise agricultural growth. The focus of the new policy is on efficient use of resources and technology, adequate availability of credit to farmers and protecting them from seasonal and price fluctuations.

Private sector participation would be promoted through contract farming and land leasing arrangements to allow accelerated technology transfer, capital inflow, assured markets for crop production, especially of oilseeds, cotton, and horticultural crops. Private sector investment in agriculture would be encouraged, particularly in areas like agricultural research, human resource development, post-harvest management, and marketing.

It is therefore included conserving soil, water and biodiversity. NAP recognized that growth needs to be demand driven and it should cater to domestic markets and maximizes benefits from exports of agricultural products in the face of the opportunities emerging from economic liberalization and globalization. Ultimately, it looks forward to a growth that is sustainable i.e. technologically, economically and environmentally.

Indeed, NAP has been considered as a balanced policy to fulfill the present needs of the Indian agriculture. This policy is adopted as a co-ordinate approach for bringing green revolution, white revolution and blue revolution. Therefore, the new policy is known as a policy of promising rainbow revolution. Through this policy, a ray of hope emerged for fulfilling the growing requirements of food self-sufficiency and towards providing the food security for the millions of the people in India. It will

help to get the 4 per cent growth rate per annum in the agriculture sector. But the policy could not achieve most of such targets. It is observed that the NAP has also failed to identify those backward states which are still lagging behind in utilizing their full potential. Therefore, a balanced approach should be developed to remedy these loopholes. Similarly, the policy argued in favour of encouraging private participation in agriculture sector which would be helpful for big landlords but a huge strength of small and marginal farmers have not supported its aim. Lastly, there is a lack of coordination between central and state government in implementing various promotional programmes for the agricultural development in India. Therefore, the central and state governments should develop a monitoring mechanism to evaluate implementation of the policy in a more rational manner (Dhar, 2014).

2.3.2 National Policy for Farmers (NPF), 2007

The Department of Agriculture and Co-operation and the Ministry of Agriculture has brought out a National Policy for Farmers, 2007 based on the report of the National Commission on Farmers (NCF) under the chairmanship of Prof. M. S. Swaminathan. Government has already implemented the National Policy for Farmers (NPF), 2007. With the specific aims, this policy has been entered in the agrarian field to protect the farmers in India. Therefore the objectives of the NPF are to improve economic viability of farming system and increase net income of farmers. NPF includes, inter-alia, asset reforms in respect of land, water, livestock, fisheries and bio-resources; supply of good quality seeds and disease-free planting material, issue of soil health passbooks to the farmers and integrated pest management system; region and crop-specific implements and machinery; support services for women; timely, adequate and easy reach of institutional credit at reasonable interest rates and farmer-friendly insurance instruments, support services and inputs like application of frontier technologies, agricultural bio-security system, use of Information and Communication Technology (ICT) and setting up of farm schools to revitalize agricultural extension; coverage of farmers under a comprehensive national social security scheme, effective implementation of Minimum Support Price (MSP) across the country and establishing community foodgrain banks, development of agricultural market infrastructure and terminal markets for agriculture, curriculum reforms in agricultural universities; special categories of farming like organic farming and

contract farming; rural non-farm employment initiative for farm households; and integrated approach for rural energy.

The NPF policy not only provides the appropriate price of produce and trade policy mechanisms to increase the farmers' income but also control the risk management measures for adequate and timely compensation to farmers in case of natural calamities. It is highlighted in this policy that it will compete the unfinished agenda of land reforms. NPF is paying an attention towards sustainable rural livelihood for the farmers. The NPF determines to provide foster community-center under which rural people facilitate with food, water, and energy security systems in rural India. It also ensures nutrition security at the level of every child, woman and man. There is also a motive of the policy to introduce measures which can help, attract and retain youths in farming system and processing of farm products for higher value addition by making farming intellectual stimulating and economically rewarding. It provides appropriate opportunities with adequate measure for non-farm employment households simultaneously. Finally, NPF wants to make India a global outsourcing center in the production and supply of the inputs required for sustainable agriculture, products, and processes developed by the biotechnology and with the help of information and communication technology.

The NAP and NPF are the revolutionary attempts by the Government of India. The government wants to revitalize the small and marginal farmers' lives so that they can come into the mainstream of country's economy. Land leasing farming (corporate farming) has come in the agriculture field because of NAP 2000. At present, this type of farming is going on in some states of India.

There are several studies and committees which suggested a suitable farming system to enhance the agriculture production and productivity for the agriculture development. India has adopted several farming systems to develop the agriculture. This chapter explains the various models of farming systems which are adopted for the development of Indian agriculture.

2.4 Farming System Organization Models in India

In the modern world, a number of alternative models of agricultural organization have been in vogue in different countries with varying degrees of success. In India, there are the six patterns of farm organization working since the independence.

Peasant Farming Model

It is now a generally recognized fact that given the necessary conditions, small farms are not less efficient than large farms. Individual farming or the system of peasant farming is a system of farming in which the tiller of the soil is the owner of the land under cultivation and different activities of agriculture are undertaken with the participation and co-operation of family members of the household. Under this system, the cultivator has direct relationship with the state and he himself pays the land revenue. He plans and produces the crop and sells or retains a part of his crop at his own accord. With small and uneconomic holdings mechanization is not possible and further subdivision and fragmentation of holdings leads to waste of land, labour, and capital resources of the mass of tillers of the soil. Mostly the peasant produce food crops for self-consumption but where non-food crops exists production for sale to wholesale markets is undertaken. In many regions of the country excessive pressure of population on land, economic backwardness, and lack of industrial growth encourage transfer of land to rural rich and the non-cultivating classes and the continued persistent of semi-feudal relations (Report of National Commission on Agriculture, part XV).

This system of farming has a number of advantages in the tradition-bound and freedom loving society of the Indian rural peasant class. It fosters hard labour, a sense of personal belonging and participated and devotion amongst the family members of the cultivators. These factors are helpful in increasing productivity, more production and reduction in cost of cultivation. Being not prone to large-scale mechanization the possibility of expansion of unemployment is avoided. With huge unemployment and underemployment is existing in the rural sector it is understood that it is to be a suitable farming system for Indian agriculture. Through effective enforcement of ceiling laws and distribution of the surplus amongst the landless labour and marginal farmers, concentration of scarce land resources in the hands of a small section of big farmers could be effectively checked thus helping the decentralization process in the Indian economy.

Peasant proprietorship or the system of farming by individual cultivators is by far the most popular and common form of agricultural organization in India. However, it is a system which has also several demerits. The majority of small and uneconomic holdings do not foster sufficient resources for agricultural development.

The construction of irrigation projects like canals, wells, land reclamation and checking the harmful effects of soil erosion, input distribution and collection of marketable surplus and its transportation and storage to wholesale markets etc., require bigger men and material resources and some sort of a 'action group'. Elsewhere eminent economist Prof. Gadgil had rightly observed that "as long as the agricultural producers in India remain as dispersed and unorganized as they are today, it is futile to talk about planning in relation to them. The first step in making agricultural planning possible in India is to get agricultural producers organized in such a way that they and their organization become interested in the objectives of planning, say, increased and efficient production and are induced to act appropriately" (D. R. Gadgil: Planning and Economic Policy in India).

Estate Farming Model

In the system of estate farming cultivation is organized on a large scale by an individual or a group of individuals. Estate farming can be established either on newly reclaimed lands or in a place where small peasant voluntarily agree to sell off their lands to the estate owner and themselves seek employment, outside agriculture, or at the estate as labourers. In India, there is only limited scope for land reclamation where estate farming could be organized. Secondly, even if the small peasant could somehow be persuaded to sell off their lands, sufficient employment opportunities cannot be created so as to accommodate all those who sell lands to the estates. Another aspect of estate farming is the absence of incentives for higher productivity for the employed labour, since any improvement or deterioration in the land or higher production would not affect their incomes. On the other hand estate owners would be required to pay a considerable amount towards supervisory costs. In such a situation, the tendency of the estate owner is to maximization of profits and this consideration would outweigh all other social or economic considerations of the overall agricultural development of the country. The conditions under estate farming would be similar to a great extent to those of the working of a large farm run by an individual. The farm management studies conducted recently and related to different size-group peasant farms have shown that though the larger land holdings have more of gross and per acre profit, the productivity of land at large-size holdings is lesser in comparison to the smaller farms, and the labour input per acre shows a decline with the increase in size (INDIA, Studies in Farm Management, 1957, Delhi). No doubt there are certain

economies of scale in favour of estate farming however, several factors or criteria of choice as enunciated earlier are not favorable for the adoption of such a model of farming in Indian conditions. Adverse effect of mechanization and displacement of labour, concentration of land resources in few production hands, a sharp till towards cash crops instead of food grains production are some of the few serious objections against this system of farming. While considering the question of the ultimate pattern of agrarian society in India, the Kumarappa Committee rejected the concept of capitalist or estate farming as a general method of farming on the ground that "it would deprive the agriculturists of their rights in land, turn them into mere wage earners and subject society to capitalist control on such a vital matter as supplies of food" (Report of the Congress Agrarian Reforms Committee). Examples of estate farming model are U.S.A. and Western Europe.

State Farming Model

In this model, all resources are owned by the state. The management and exploitation of land is done through state enactments and policies. After the nationalization of all the land resources the agriculture production is done through large-scale farms mostly mechanized and under full state administration through bureaucracy under direct state control. For a country like India, state farming could help in removing the uneconomic pattern of holding, encourage scientific agriculture through mechanized farming practices and generation of marketable surplus which could be a source of faster economic growth. With certain positive factors in favour of a state-administered farming system, however, there are some binding socio-political conditions in India which will not permit the adoption of state farms in India on a large scale. The first and foremost of factors against this system is that the Indian cultivator loves his land like his own family and will under no circumstances like to part with it to give the rights of ownership of land to the state. In a free democratic society where individual freedom is respected and land policy is grounded on the principle of "land to the tiller" a system of state farming could not be adopted as a general system. The Uttar Pradesh Zamindari Abolition Committee while discussing the problem of a suitable agricultural organization was of the view that social values must not be sacrificed to economic efficiency. "If the production of an abundance of worldly goods cannot be organized except with the loss of individual freedom and happiness, many would prefer an economic system that produced less, provided it

gave scope for the full development of human personality" (Report of the Uttar Pradesh Zamindari Abolition Committee, Vol.1). In general, the performance of state farms had any superiority over the other systems. In Russia's totalitarian regime, the state farms virtually failed to achieve their objectives and later policy was to convert them into collective farms. In India, it is doubtful whether state farms could be run on a commercial basis by the agricultural departments. However, a limited number of state farms could be established for research purposes or for some considerations other than profit. This model of farming system can be found in several countries like Poland, Germany and there are some in India as well. This system of farming typically exists in the USSR where the experiment has been attempted on a large scale.

Collective Farming Model

Ever since the early 1930's collective farms became a viable and to some extent popular mode of agricultural organization, particularly after the Russian experiment of transforming of small peasant farms to large-scale collectives through mechanization of agriculture. This model of farming has been adopted by some countries notably by the USSR, Palestine and Mexico. Under collective farming ownership of all the material resources including the land vests in the community as a whole. Cultivation is carried on the whole farm as one unit of organization, through an elected group of members who manage and supervise the performance of all the field work of agricultural operations. However, though the means of production are collectively owned and exploited, the remuneration is graded according to the degree of skills and efficiency of the individual workers. The Kolkhoz revolutionized the agricultural economy of Russia and this successful experiment in collectivization of agriculture turned around lakhs of uneconomic holdings into collective farms, operating through the Machine, Tractor Stations (M.T.S.). After the completion of the second five-year plan in 1938, the Soviet Russia became the top world producer in the production of wheat, barley and oats and significantly increased in the production of certain commercial crops like cotton, flax, tea. Kvutza in Israel and Ejidos in Mexico are often quoted the other successful experiment in the collectivization of agriculture. The Kvutza represent a nucleus of comprehensive co-operation within the framework of an essentially capitalist society and is practically autonomous in all matters of internal management. Kvutza are classical example of willing co-operative

organization in which both production and consumption have been collectively practiced. The broad outlines of common work are planned every day and complaints and negligence of work are very rare. These farms operate under a system of complete mechanization and division of labour. In 1965 although only 28 percent of the agricultural area was under Kvutzautand they have been recognized as successful co-operative organization the world over. Unlike Russian collectives which were primarily created through use of force and violent techniques, the motive force behind Kvutza was education and national unity.

In the collective farms, the merits and demerits are of a similar nature as in the case of the state farms. In India, if collectives are to be organized, the landlords should either voluntarily surrender their rights in land, or these have to be confiscated by law, or land should be taken away by "violent armies of the liberators." Moreover, this type of farming organization is perhaps only possible in socialist State, where on principle; the individual's right to private property is restricted. In India, where the constitution grants each individual the right to own property and to get compensation in case any property was taken over by the State (Article 31, 31-A and 31-B of the Constitution of India), "collective farming" as a national policy, perhaps, cannot be implemented due to its financial and other implications. Apart from the political and financial considerations, collective farming has still to prove its economic superiority over the other models of farming organization. Thus, collective farming has little relevance in India.

Co-operative Farming Model

In the realm of theory and practice co-operation model of farming organization has a long history. A number of countries of Eastern Europe, Mexico, China and other have experimented with co-operative farming. In India also, to solve the problem of small and uneconomic size of holdings a co-operative form of organization in farming was suggested to provide the small producer the economies of large-scale enterprise. The term Co-operative farming means a kind of farming operation where agricultural practices were conducted by individuals on their own holdings jointly with certain common agencies formed on their behalf for the collection and purchase of agricultural inputs like seeds, fertilizers, equipments etc. and also for the sale of their agricultural produce. This is a kind of co-operative farming society available in India. But in real sense, co-operative farming refers to

farming operations which are conducted co-operatively. In this type of farming, small individual holdings are merged into a common unit and accordingly such farm is managed on co-operative basis. In respect of co-operative joint farming, individual retain their ownership of respective plots of land and distribute the income of the farm among the members on the basis of the size and values of the plot along with their other contribution. Such type of farming is again different from the co-operative collective farming followed in socialist countries where ownership of land disappears completely after the formation of co-operatives.

In India, majority of the landholdings are too small. About 76.4 per cent of the total holdings in India are below the size of 2 hectares and on these again 28.8 per cent of total operated area is engaged into these marginal and small holdings. Average area operated in the case of marginal farm is only 0.4 hectares and in case of small farm, it is about 1.4 hectares only. Cultivation on such a small holding is uneconomic and unprofitable. Under such a situation if these marginal and small holdings can be consolidated and if the small and marginal farmers are to pool their land, resources and other inputs and then start cultivating their land jointly by forming a co-operative, they can get the benefits of large-scale farming. This type of farming is known as co-operative farming. In this connection, Mahatma Gandhi observed, "I firmly believe, too that we shall not drive the full benefits of agriculture until we take to co-operative farming. Does it not stand to reason that it is far better for a hundred families in a village to cultivate their lands collectively and divide the income therefrom than to divide the land anyhow into a hundred portions (Mahatma Gandhi, Harijan, February 15, 1942)". Again the Congress Agrarian Reforms Committee also concluded, "Without various co-operative moulds……..co-operative better farming for family farms and co-operative joint farming for holding below basic the efficiency of agriculture cannot be substantially increased (Congress Agrarian Reform Committee Report, 1949)".

This model of farming system organization was very popular at initial stage of the economic planning in India. In order to develop co-operative farming various facilities and incentives in the form of financial assistance, subsidies, additional facilities to supply high yielding seeds, fertilizers and other inputs were advanced by the government. But the progress of co-operative farming was very much disappointing.

All the above models of the farming system failed to solve the agrarian problems of the Indian agriculture. So the government of India decided to allow private participation in agriculture sector by making an agricultural policy 2000. This policy formulates two another farming system models to overcome the problem of inefficiency of production and small size of holdings. These models are contract farming model and corporate farming model. At the moment both models are ongoing in Indian farming system.

Contract Farming Model

The term contract farming generally refers to situations in which a farmer raises or grows an agricultural product for a vertically integrated corporation under a forward contract. Existence of one of the following conditions leads to the emergence of the contract farming: (1) high value specialty crops with lucrative 'niche' market; (2) the need for consistent and reliable supplies on the part of the buyer; (3) a system of input and output market which cannot be met through open market purchases and (4) a labour intensive commodity which small holders can produce efficiently (Little and Watts, 1994). Prohibition of captive farming also drives agribusiness firms into contracting. Moreover, firms in their conquest of specialization do not want to indulge in captive farming as it amounts to making huge financial and human investments into production of raw material. Basically, involvement of four things is necessary for working of such contracts (*a*) pre-agreed price; (*b*) quality; (*c*) quantity (which can be in the forms of minimum and maximum acreage) and (*d*) time of delivery (Singh, 2002). While price, quantity and time of delivery depend upon the mutual understanding of the contracting parties, the quality norm may be decided or monitored by any other agency also. Under contract farming, farmer is required to plant the contractors' crop on his land and is supposed to sell the contractor, an agreed quantity of produce with prescribed quality norms at a pre-agreed price. Contractor, on the other hand, may supply the farmer with selected inputs, including the required technical advice (Glover, 1987; 1990). Contract can be classified according to the operations of the contracting agency. Normally contracting agencies or firms carry two types of operations. One, they act as marketing channel between the farmers and any other big firm at national and international level. On the other hand, they may be involved in the processing of the farm produce. These two categories of firms are not mutually exclusive and there are instances where a firm is involved in both kinds of

operations at different stages (Porter and Philips, 1997). Marketing contracts are practiced with varying degrees and can be classified in two categories. Under first category, a known buyer specifies only sale and purchase conditions. This type of contract is informal in nature and usually, these are practiced by the state or by agencies that have a state approval. In such contracts, state approval is must so that the farmers take them seriously. The procurement of food grains particularly wheat and paddy by the Government of India under minimum support price comes under this category. Under second category of marketing contracts, contracting firm not only specify the sale and purchase conditions but also provides some inputs to the farmer for a price. Production contracts, on the other hand, are quite comprehensive in nature, where all the inputs, know-how and technical assistance are provided by the contractor and in turn, he procures whole of the farmer's crop. These contracts are practiced by the agencies who themselves are engaged in the agro-processing. Contract practiced by some multinationals like PepsiCo falls under this category. The terms and nature of the contract may differ according to variations in the nature of crops to be grown and the context in which they are practiced.

PepsiCo Foods was the first corporate giant to enter into contract farming in Punjab. It started contract farming of tomato crop in early 1990's. Pepsi sold its plant to Hindustan Lever Limited (HLL), another corporate giant, a subsidiary of Unilever in 1995. HLL worked with about 400 farmers in early 1990s for its tomato paste plant with capacity to process around 650 tonnes of tomatoes per day. Nijjer Agro entered the scene in 1991 to prepare tomato paste with plant capacity of around 350 tonnes per day. It started contracting farmers in the same year working with 400 farmers in the beginning.

Many studies looked into the operations of contract farming of the different contracting firms, and the economic benefits that accrue to the participating farmers are unanimously of the view that contract farming although leads an increase in gross returns of the farmers but cost of production also increases simultaneously. Contracting agencies generally deal with relatively large producers and their contracts are biased against the farmers. Such model of contracting perpetuates the existing problems of farm sector rather than solving them. No doubt, such contracts lead to increase in income of the farmers but these are also accompanied by the problems of high input intensity and social differentiation. There exist an inherent contradiction in

the objectives of contracting parties and those of local economies. Study by Rangi and Sidhu (2000) concluded that tomato crop gives better return than the traditional-contracted crops like wheat and paddy.

Contract farming has the potential to substitute for the state in the wake of a neo-liberal reform in the agrarian sector. Private firms can enter to fill the same role and are believed to do so more efficiently. But this may hamper the development of rural infrastructure, being presently supported by State Mandi Board. On the other side, critics see contract farming, through the political economy view where contracting is considered as a tool through which multinational agro-industrial firms can exploit unequal power relationships with growers (Singh, 2002).

Though, contracting poses problems for both the parties still it seems beneficial for both the farmers and the companies. The prime advantage is that the company will purchase all the produce grown, within specified quality and quantity parameters. Contract can also provide farmers with access to a wide range of managerial, technical and extension services that otherwise may be unobtainable (Eaton and Shepherd, 2001). One of the major attractions of contract farming for farmers is the availability of credit provided either directly by company or through a third party. However, farmers can face considerable indebtedness if they are confronted with production problems if the company provides poor technical advice or, there are significant changes in market conditions, or the company fails to honor the contract. This is of particular concern with long-term investments, either for tree crops or for on-farm processing facilities. If advances are uncontrolled, the indebtedness of farmers can increase to uneconomic levels. Sometimes 'compassionate' advances for school fees, wedding etc. resulted in farmers receiving very less or no payments at the end of the season. This will result in high dropout rates, as farmers will consider such contract farming unprofitable.

Corporate Farming Model

Corporate agriculture farming (CAF), at times known as agribusiness, is a term that describes the business of agriculture where the mega-corporations are involved in food production on a very large scale. It is a modern food industry and encompasses not only the farm itself, but also the entire chain of agriculture-related business, including seed supply, agrichemicals, food processing, machinery, storage, transport, distribution, marketing, advertising, and retail sales. The term also includes

the influence of these companies on education, research, and public policy, through their education funding and government lobbying efforts (Wikipedia article on Corporate Farming).

The ultimate goal of corporate farming is to vertically integrate the entire process of food production, up to the point of the distribution and sale of food to consumers. Some corporations are considered to be well on the way to achieving this objective and have become very large in the process, such as Archer Daniels Midland, Monsanto Company, and the privately held Cargill, with 2004 revenues of $62.9 billion (Corporate Watch, 2009, Article).

Corporate farms are mass level industrialized farms that are expensive to operate; input costs include farm machinery, crop insurance, fertilizers, irrigation, pesticides, fuel, and seeds. One major difference between independent traditional farming and corporate farming is that a corporate farmer is usually a contracted employee, rather than the owner of the farm. However, as a matter of fact, ownership itself does not mean independence. An owner-operated farm today faces many constraints that are completely out of the owner's control. Most of these can be seen in light of increasing concentration of ownership, not only of farms, but of the equipment and inputs necessary to farm, and the available sales channels.

Such farms are more common in rich industrialized countries such as U.S.A. and Australia. Government of Pakistan also adopted the Corporate Agriculture Framing policy. According to government of Pakistan CAF is to seek efficiency of agriculture production and increased incomes/revenues by bringing together agricultural production, processing and marketing activities at one place under management of a corporate entity; to improve agricultural productivity and profitability through the use of latest production technology and adequate expertise particularly for exports; to produce high quality agricultural products due to favorable resource base; and to achieve/maintain internationally competitive unit cost of production for all major crops, fruits and vegetables (Government of Pakistan, 2009).

India also allowed the corporate sector in the agriculture sector. Gosh has analysed the effects of corporate agriculture farming and trade liberalization on small farmers. Gosh argues that Multi-National Companies (MNCs) monopolize markets with large farms and dictate prices in less competitive environments. The MNCs dominate the market through a combination of horizontal and vertical integration. As

these corporations have a large resource base and worldwide network, they have no compulsion to buy from a particular markets and sellers. In such situations of monopoly and monopsony, the small farmers get worse off. She also explained that MNCs consolidated their position by integrating the various stages of the agriculture system. Companies like Cargill, Monsanto in food grain and Tyson foods in livestock enjoy greater economic power. Therefore, such extensive control of the food system gives greater leverage to manoeuvre prices which might not always favour the small farmers. The prices are set in a way that the profits of procuring and processing firms are increased while farmers get less and less out of agribusiness. Therefore, despite agribusiness flourishing the farmers owing to less economic power become worse off. Interestingly, both the direct producer and consumer have to bear the effects of falling (farm value) and rising prices (Gosh, 2003).

In India, this is the new way of doing agriculture by corporate farming companies. So, this is the very debatable issue in the Indian agriculture. Prime Minister Narendra Modi also laid emphasis on doubling the farmers' income by 2022 when India would celebrate 75 years of Independence. In the context of doubling of farmer's income corporate farming could be playing a crucial role. So, the government of India has framed the model agricultural land lease law, 2016 and the draft model contract farming law, 2018 to mitigate problems in corporate farming such as allowing landowners to lease out land without fear of losing title. Similarly, contract farming should help farmers as the sponsoring companies can shield them from their post-harvest anxiety about prices, while farmers can benefit from pooled purchases of inputs at affordable prices and access to machinery and knowledge provided by the sponsoring company (Jayachandran, 2018). Hence, the present study tries to examine the impact of corporate farming on socio-economic conditions of small and marginal farmers in the state of Uttar Pradesh.

2.5 Conclusion

The theories above discussed are related to agriculture development through investment and farming system organization. The ultimate goal of all these theories is economic development of the economy through agriculture development. Without agriculture development no economy of world become developed i.e. every developed economy passes through the development of agriculture sector. Policies of the government play a crucial role in the development of the agriculture sector. So,

government of India also adopted various policies for the development of Indian agriculture sector.

Further, transformation of Indian agriculture from peasant farming to corporate farming passes through different farming systems. Need of these farming system is to solve the problems of organization techniques. Such issues have been observed in the present chapter that all the models of farming organization focuses on consolidation of land, because without consolidation of small and uneconomic farm size, mechanization of land by adopting efficient techniques which are necessary to increase the production, social welfare of the small and marginal farmers cannot possibly realized. Hence, the models of peasant farming, estate farming, state farming and collective farming were failed on these grounds.

However, model of co-operative farming system had some positive impact on the agriculture production. This model was successful to some extent due to pooling of small and uneconomic land holdings by the small and marginal farmers. In the initial stage of this system results were satisfactory but after some years this model also failed due to farmers' attachment with land, lack of co-operative spirit, illiteracy, lack of capital, dishonesty of the societies and repayment of debt.

In addition, the new model of contract farming has much scope to solve the problems of Indian agriculture because firms provide the resources to the small and marginal farmers and take the produce at a pre-decided price. Somehow, this model has potential to become a good model if the contract between the firm and farmer should be legal and favorable to small and marginal farmers.

Now, the corporate farming has been also adopted by India with parallel to the contract farming model. Corporate farming can work very successfully in India, given the capital and a strong incentive to diversify investments in order to secure farmers' livelihoods. Corporate farming can play a key role in the livelihood strategies of the youths and the rural poor in India. Besides, the managerial skills, production and marketing skills are also getting highly professional and competitive beyond subsistence agriculture. These require pulling together of resources to be professionally harnessed in a large scale. The economies of scale from corporate farming in terms of financial capital, inputs, research and sustainable development, employment and profits cannot be overestimated (Agri et. al, 2106). These are only initial observations and there is much more to investigate. However, it is clear that the

literature on the corporate farming has many challenges, some of which are self-made but are not easily addressed. Future work in this area will need to identify core mechanisms that details how the corporate farming model is integrated with the global food system (Jacques, P. and Jacques J.R, 2013).

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Chapter-III

FARMING SYSTEM AND AGRICULTURE DEVELOPMENT IN UTTAR PRADESH

Chapter-III

FARMING SYSTEM AND AGRICULTURE DEVELOPMENT IN UTTAR PRADESH

Agriculture is characterised predominantly by small and marginal farmers in Uttar Pradesh. Around 80 per cent of farmers are small and marginal in the state. They are deprived from access to latest farming techniques, farm mechanisation, credit, quality of inputs, marketing facility, post-harvesting facilities, lack of the bargaining capacity and technology. Fragmentation of land is inevitable due to ever-increasing human population and decrease in cultivable land which leads to overcrowding and hence subdivision and fragmentation of land holdings are taking place in Uttar Pradesh. So, there is a need of such a farming system which can solve the problems of agriculture sector in order to achieve agriculture growth and development.

Farming system is the organisation of the farm and these farms are systems because several activities are closely related to each other by the common use of the land, farm labour and capital, by risk distribution and by the joint use of the farmer's management capacity. The analysis of farms is quite important to the subject of development of agriculture sector. A farming system results from a complex interaction of interdependent and interrelated components of elements that bear upon the agricultural enterprises of the rural household. Farmer is at the center who takes decision in an attempt to achieve his aspirations, goals and desired objectives within the limits of technologies available to him. He uses inputs to get outputs in response to the technical elements which is the natural resource endowment in any given location restricting to what the farming system can be. The human element provides the framework for development and utilization of a particular farming system, but in Uttar Pradesh, we are facing the crunch of skilled farmers. The attitudes of government and the generality of the people must be changed positively towards cooperative development since it becomes too difficult to achieve a meaningful balanced development without involving and stimulating the under-utilized rural resources which these cooperatives are trying to pool together to develop themselves. The government should create enabling environment for holding and managing the means of production in the process of developing under-privileged and disadvantaged

areas (Meijerink, 2007). Hence, the farming system plays a crucial role in agriculture development.

Agricultural development denotes the quality of agricultural system of a region. It is a multi-dimensional concept which mainly includes development in strength of cropped land, improvement in farm system, improved farm implements, irrigation system, high yielding improved varieties of seeds, chemical fertilizers, insecticides and pesticides, intensity of cropping and specialization and commercialization of agriculture (Mohammed, 1980). The changing agro-economic scenario drew attention of research workers on farming system development in agriculture. In India majority of the population depends upon agriculture. So, a vast rural mass tries to earn their livelihood from agricultural land. With increasing pressure of population on agricultural land, old methods and techniques of production cannot cope up with growing demand of the people. As a result, farming system methods are adopted to develop agro-economy at state level.

This chapter explains the farming systems and agricultural development in the state of Uttar Pradesh. It explains the trends and changes in the economic variables of agricultural development over period of time in the state. The present chapter is divided into four sections. Section I describes the plan wise growth rate of agriculture and allied sector. Section II discusses land use pattern, trends of area, production, productivity of agricultural crops, source of irrigation, use of chemical fertilisers, credit, agriculture marketing and labour. The constraints, policies, and programmes of agriculture are presented in section III. Finally, section IV deal with conclusion and suggestions.

3.1 Agricultural Development in Uttar Pradesh

Agriculture sector plays an important role in the economic growth of Uttar Pradesh. It provides the basic ingredients necessary for the existence of mankind and also provides most of the raw materials which can be transformed in finished products and then serve as a basic necessity in the human race (Desai, 2010). The state is contributing about one-fifth of the total food grains production at national level. It contributes about 21.55 per cent to the total national production of food grains, vegetables, fruits and milk production and 40 per cent to the total production of potato and sugarcane. However, the state has inter-region and inter-district variation in term of economic and human development. There are also huge wide spread variation in

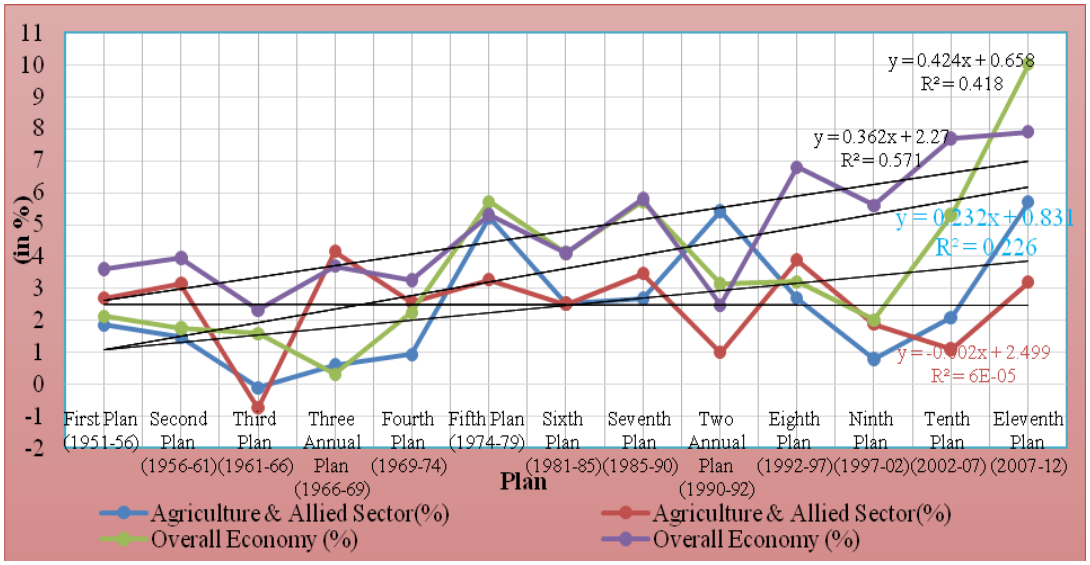
resource endowment, climate, institutional and socio-economic parameters (Raman and Kumari 2012).

The performance of the agriculture sector at the time of independence was very poor and deplorable. Farmers were suffering from heavy debt burden of the money lenders. They were having very small and scattered holdings. Major parts of the lands were occupied by the Zamindars and big farmers. Therefore, the situation of the small and marginal farmers was very miserable. It is seen that small and marginal farmers were illiterate to use proper technology, seeds, and fertilizers. They depend upon rainfall for irrigation. Inspite of these facts, the agriculture sector provides a large number of employment and livelihood to the people. About 70 per cent of our working population is engaged in cultivation. In fact after independence, the government of Uttar Pradesh made several agricultural programmes and policies to increase the agricultural production and ensure job security to the poor farmers who were engaged in cultivation activities. The aim of the government was to solve the problems of the food crisis and give highest priority to the agriculture sector at state level. But this was the period when the state agriculture sector was suffering from various constraints such as lack of the capital, inadequate irrigation facilities, lack of agricultural machinery, lack of fertilizers and pesticides, lack of high yielding varieties of seeds, inadequate transportation facility, insufficient power supply, lack of marketing facility, lack of agricultural research institution, inadequate institutional credit and unequal distribution of land. Therefore, the state planning commission had focused upon development of these factors to increase the agricultural productivity, generate employment and ensure food security at state level. It is found that agriculture sector grew at the rate of 2.9 per cent in 1994-95 and increased to 4.4 per cent in 2011-12 in the state, while industrial growth rate in the state was 17.3 per cent in 1994-95 which decreased to 3.7 per cent in 2011-12. But, in case of service sector, it grew at the rate of 3.6 per cent in 1994-95 and increased to 7.8 per cent in 2011-12 at state level. The overall growth rate was 5.8 per cent in 1994-95 which increased to 6.0 per cent in 2011-12 in the state of Uttar Pradesh. On the other hand, the share of agriculture and allied sector was 39 per cent in 1994-95 that become 29 per cent in 2011-12 in state gross domestic product. In case of the industrial sector, it was 19 per cent in 1994-95 which increased to 21.39 per cent in 2011-12. But the share of service

sector was 42 per cent in 1994-95 that increased to 50 per cent in 2011-12 in Uttar Pradesh.

The growth rate of agriculture and allied sector and overall economy at state as well as national level during plan periods are presented in Table 3.00 and Figure 3.00. It is found that the growth rate of agriculture and allied sector showed fluctuating trend during 1950-51 to 2011-12 at state level as well as national level. The growth rate of agriculture and allied sector in second plan period was less than the first plan period because second plan focused upon development of industrial sector rather than agriculture and allied sector. The biggest change came in third plan period when the government introduced "Intensive Agricultural District Programme (IADP) and High Yielding Varieties Programme (HYVP) to increase the agricultural productivity in the state. But, the extensive and serious drought and famine conditions in 1965-66 adversely affected the growth of the agriculture and allied sector that became negative at state level and national level. In this period the government was forced to imports food grains and adopted "plan holiday" for three years. Further, the government emphasized on effective and favourable techniques for the promotion of agricultural productivity. Therefore, the condition of the agriculture sector started to improve in positive trends at state level.

Figure- 3.00 Growth Rate of Agriculture and Allied Sector during the Plan Period at State Level and National Level



Sources: Planning Commission, Uttar Pradesh

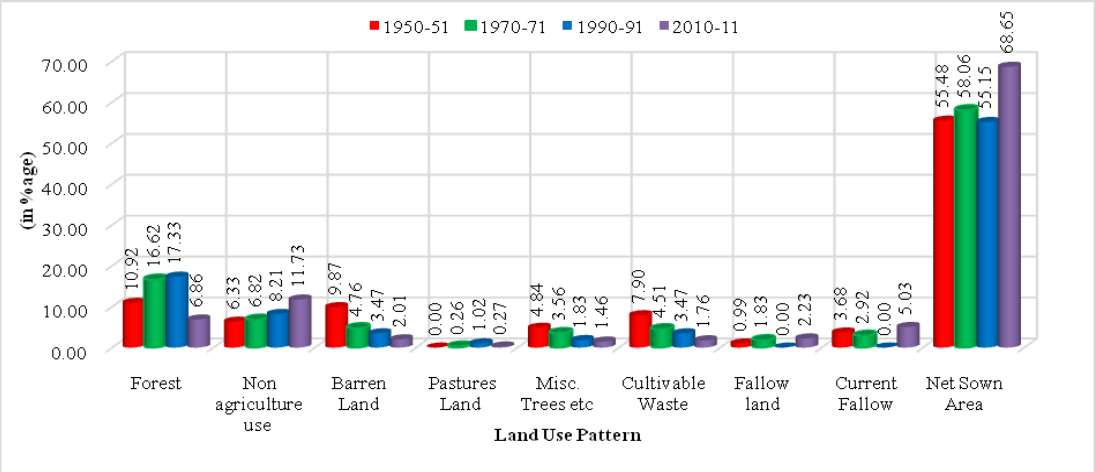
The fifth plan has achieved highest growth in agriculture sector in the state. This period accounted for highest expenditure on agriculture sector at state level. This plan period solved the problems of inputs and implementation of the technology but

unfortunately, the inflationary situation (1973-74) and the declaration of emergency in 1975 decreased the growth of the agriculture sector in the state. In sixth plan, the growth rates of all sectors were highest which further declined during seventh plan period in the state. Therefore, the government implemented new economic policy mainly to devaluate currency, to finish the industrial licensing regime, allowing foreign direct investment, opening the door of public sector for private sector, abolition of MRTP Act, removal of quantity restrictions on imports, reduction of exports and imports tariff, wide-ranging and financial sector reforms (Singh, 2013). The major focus of new economic reforms was to increase the growth of agriculture at state and national level. Consequently, the growth rate of agriculture and allied sector become 5.7 per cent and overall economic growth was 10 per cent during eleventh plan. But it is clear that the new economic reform increased the growth of the service sector is more than industrial and agriculture sector due to growth of information technology, education, hospitals, cinema halls and multiplexes, shopping malls and entertainment driven by the various fiscal incentives and promotion of private sector. Uttar Pradesh has emerged a key hub for information technology and information technology industries, including software, capital business process outsourcing, and electronics. Currently the economy of the Uttar Pradesh is dominated by service sector. Industrial growth slowed down because there was inadequate and low infrastructure along with lack of planned industrial development and low investment. The door for foreign direct investment in agricultural sector has opened but the export of the agricultural goods has been decreasing and import of the agriculture goods has been increasing.

3.2 Land Use Pattern

Land is the most vital resource as well as driving force for the economic development of the state. Land development is vital for acquiring higher growth rate and achieving maximum output in the state and country. Therefore, the programmes and policies on land development must be given proper attention. Obviously, land has the characteristics of fixity in supply and scarcity. So, land use pattern is directly concerned with the maximum use. Table 3.01 and Figure 3.01 shows land use pattern of Uttar Pradesh during 1950-51 to 2010-11.

Figure-3.01 Land Use Pattern of Uttar Pradesh during 1950-51 to 2014-15



Source: Directorate of Economics and Statistics, Government of Uttar Pradesh

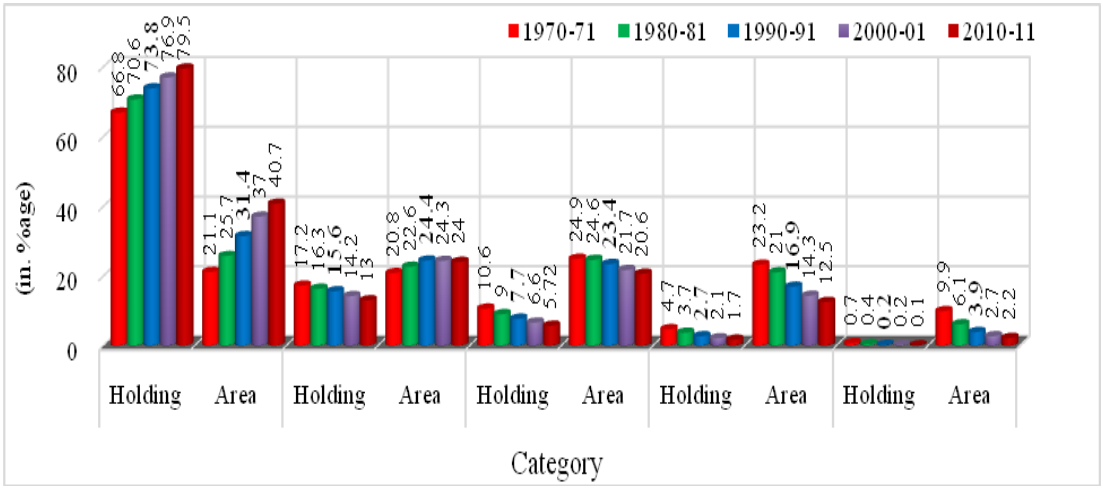
It is found that approximately 11 per cent area was under forest in 1950-51 which around 7 per cent in 2010-11 at state level. On the other hand, the area under non-agricultural use was 6.33 per cent in 1950-51 and that around 12 per cent in 2010-11 in the state. With regards to barren land, the area was around 10 per cent in 1950-51 and sharply decreased to 2.0 per cent in 2010-11 at state level. In case of pastures and other graze land, the area was almost negligible in 1950-51 and became 0.27 per cent in 2010-11 whereas the area under misc. trees etc. was 4.85 per cent in 1950-51 which 1.46 per cent in 2010-11 in the state. Considering the area under cultivable land was around 8.0 per cent in 1950-51 that sharply decreased to 1.76 per cent in 2010-11 at state level. The area under fallow land and current fallow was around 1.0 per cent and 3. 68 per cent in 1950-51 respectively and it decreased to 2.23 per cent and 5.03 per cent in 2010-11 in the state. The percentage of net sown area was 55.48 per cent in 1950-51 which 68.65 per cent in 2010-11 in the state. Overall from the analysis, it has been observed that around 69 per cent of the available land has been allocated under the area of agriculture in the state. Majority of area in the state are under single cropping, current fallow and other fallow. There is a possibility of agricultural development through increase in net area sown and multiple cropping patterns in the state of Uttar Pradesh.

3.3 Land Holdings

The state of Uttar Pradesh has observed fast increase in the number of small and marginal operational land holdings. In the state, more than 80 per cent of the land holdings consist of small and marginal farmers. However, these small and marginal

farmers have the poor socio-economic conditions. Consequently, it has an adverse effect on the growth of agriculture sector at state level. This is because the average cost of cultivating the crops in small land holdings is higher as compared to the cultivation of crops in large land holdings. However, the small and marginal farmers are more efficient in producing per hectare of land due to surplus labour and quick returns. Therefore, the growth of agriculture sector can be encouraged in the state with active support of government to these small and marginal farmers in this direction. Table 3.02 and Figure 3.02 highlights the number and area of operational holdings in Uttar Pradesh from 1970-71 to 2010-11.

Figure-3.02 Number and Area of Operational Holdings in Uttar Pradesh during 1970-71 to 2010-11



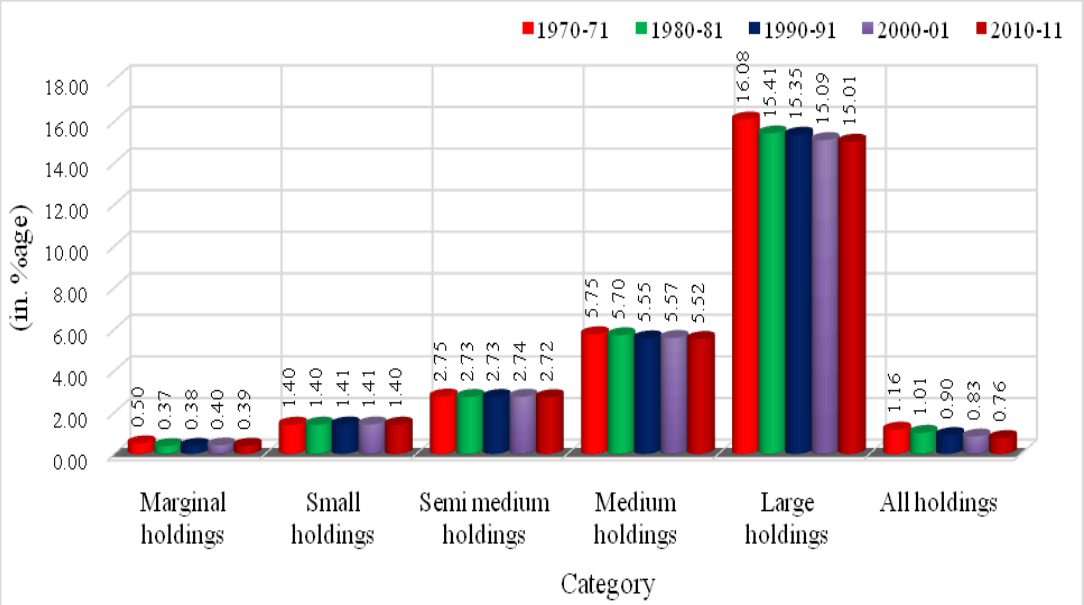
Source- Directorate of Economics and Statistics, Government of Uttar Pradesh

It is found that the percentage of number and area of marginal land holdings was 66.8 per cent and 21.10 per cent in 1970-71 respectively which increased to 79.5 per cent and 40.7 per cent in 2010-11 at state level. With regards to small holdings, the number and area was 17.2 per cent and 20.8 per cent in 1970-71 that became 13 per cent and 24 per cent in 2010-11 in the state. In case of semi-medium holdings, medium holdings and large holdings, the number and area has continuously decreased during the study period at state level. It is observed that the number and area of marginal farmers have increased during the study period. In fact, the high division of land has been restricting and hindering the diffusion of modern technology in agriculture. Apart from characterization by the largest proportion of small and marginal land holdings among all size class, there is also high incidence of tenancy

cultivation dominated largely by landlords which is decreased the growth prospects because such small segments of land remained out of investment at state level.

Average size of land holdings in Uttar Pradesh during 1970-71 to 2010-11 are presented in Table 3.03 and Figure 3.03. It is found that the average size of small and marginal holdings was 1.40 ha and 0.50 ha in 1970-71 respectively that became 1.40 ha and 0.39 ha respectively in 2010-11 at state level. On the other hand, the average size of semi-medium holdings, medium holdings, and large holdings has shown decreasing trends during the study period in the state. In case of 'all holdings', it was 1.16 ha in 1970-71 that decreased to 0.76 ha in 2010-11 in the state of Uttar Pradesh.

Figure- 3.03 Average Size of Land Holdings in Uttar Pradesh during 1970-71 to 2010-11



Source: Directorate of Economics and Statistics, Government of Uttar Pradesh

Overall from the analysis, it has been observed that the average size of land holdings in all categories have shown decreasing trends during the period 1970-71 to 2010-11 in Uttar Pradesh.

3.4 Production and Productivity of Crops

Agriculture sector plays an important role in the economic development of Uttar Pradesh. Uttar Pradesh is one of the major Food grains producing states in the country. Wheat and paddy are the most important crops of the state. But, agriculture sector in Uttar Pradesh is highly diversified and suffering from fluctuations in agricultural production and productivity in inter-region and inter-district. The compound annual growth rate (CAGR) of area, production and productivity of major

food grain crops and non-food grain crops in Uttar Pradesh during 1984-85 to 2013-14 are presented in Table 3.04. It is found that area, production and productivity of wheat grew at the rate of 0.50 per cent, 2.13 per cent and 1.62 per cent respectively during the 1984-85 to 2013-14 period. Similarly, the area, production, and productivity of rice grew at 0.29 per cent, 1.85 per cent and 1.56 per cent respectively during the study period in the state. The growth rate of area, production and productivity of Bajara, Jawar, Maize, Barley, Arhar, Gram and Rapeseed and Mustard had shown a widespread variation during the study period in the state. Regarding cereals, the area, production, and productivity grew at -0.03 per cent, 1.76 per cent and 1.78 per cent whereas, coarse cereals grew at the rate of -2.42 per cent in area, followed by -0.73 per cent in production and 1.73 per cent in term of productivity at state level. In case of pulses, it is found that the area, production, and productivity grew at the rate of -2.12 per cent, -2.17 per cent and -0.06 per cent during the study period at state level. The area, production, and productivity of food grains grew at the rate of -0.35 per cent, 1.49 per cent and 1.84 per cent respectively during the study period in the state.

Considering sugarcane, the growth of area, production and productivity was 1.04 per cent, 1.53 per cent, and 0.49 per cent, whereas the growth of area, production, and productivity of potato was 1.98 per cent, 2.88 per cent and 0.89 per cent respectively during the study period at state level. The area, production, and productivity of oilseeds grew at the rate of -2.15 per cent, -0.71 per cent and 1.48 per cent during the same period at state level. With regards to cotton productivity, the area, production, and productivity grew at the rate -7.74 per cent, -8.62 per cent and -0.96 per cent respectively during the study period at state level.

Hence, from the analysis, it has been observed that the compound annual growth rate of area, production, and productivity of food grain crops and non-food grains crops has extensive variations during the study period at state level. It is also noticed that cropping pattern is changing in Uttar Pradesh. The area of foodgrain crops are shifting towards traditional crops to commercial crops at state level.

However, Uttar Pradesh is food grain-producing state of the country. The growth rate of food grains was not satisfactory during 1950s. It is because of this reason that the government introduced high yielding varieties seeds of food grain crops to increase the productivity. Consequently, productivity of food grains increased

during green revolution period. But further, growth rate of agriculture sector started showing declining trends which resulted in the problem of food security at state level. Table 3.05 shows that the compound annual growth rate (CAGR) of area, production, and productivity of major foodgrain crops and non-food grain crops has been analysed in three phases such as Phase I (1984-85 to 1993-94), Phase II (1994-95 to 2003-04) and Phase III (2004-05 to 2013-14) in Uttar Pradesh. From the analysis, it is found that the area of wheat grew at the rate of 0.81 percent during phase I, followed by 0.28 per cent after new economic reform period i.e. phase II, and became 1.03 per cent during phase III at state level. In case of production of wheat, grew at the rate of 3.15 per cent during phase I, followed by 1.44 per cent after new economic reform period i.e. phase II, and further increased to 3.42 per cent during the phase III at state level. With regards to productivity of wheat, it grew at the rate of 2.33 per cent during the phase I, with 1.16 per cent during phase II and become 2.36 per cent during phase III. In fact, it is noticed that phase III accounted for highest growth rate in terms of area, production, and productivity of wheat crop.

In case of rice, it has stagnant growth rate during the phase I, with 0.45 per cent during phase II, and increased to 0.74 per cent during phase III. On the other hand, production of rice grew at the rate 4.22 per cent during phase I, decreased to 1.21 per cent after new economic reform period i.e. phase II, and become 4.12 per cent during the phase III at state level. In case of productivity of rice grew at the rate of 4.21 per cent during phase I, followed by 0.76 per cent during phase II, and become 3.36 per cent during phase III at state level. It is observed that growth rate of production, as well as productivity of rice, was impressive during phase I and further declined due to unfavorable conditions of monsoon, changing the cropping pattern and farming system at state level.

Similarly, the area of cereals grew at the rate of -0.10 per cent during the phase I, with -0.27 per cent during phase II, and increased to 0.69 per cent during phase III at state level. On the other hand, production of cereals grew at the rate of 2.99 per cent during phase I, sharply decreased to 0.98 per cent during phase II and increased to 3.51 per cent during the phase III at state level. In case of productivity of cereals grew at the rate of 3.09 per cent during phase I, and decreased to 1.25 per cent during phase II, and become 2.80 per cent during phase III at state level.

Considering the area of coarse cereals, it grew at the rate of -2.55 per cent during the phase I, with -3.65 per cent during phase II, and become -0.95 per cent during phase III at state level. The production of coarse cereals grew at the rate of -0.35 per cent during phase I, with -2.95 per cent during phase II, and increased to 2.08 per cent during the phase III at state level. In case of coarse cereals productivity grew at the rate of 2.26 per cent during phase I and decreased to 0.73 per cent during phase II, and further increased to 3.06 per cent during phase III at state level. In fact, it is clear that the area of coarse cereals grew at negative rate during all phases at state level whereas production and productivity of coarse cereals grew at mixed rate in the state of Uttar Pradesh.

Pulses are the major nutritious food items in Uttar Pradesh. However, the growth rate of area, production, and productivity of pulses had widespread fluctuations during the study period in the state. It is found that the area of pulses grew at positive rate i.e. 3.56 per cent during the phase I, further become negative i.e. -4.30 per cent during phase II, and become -1.74 per cent during phase III at state level. On the other hand, production of pulses grew at the rate of 3.11 per cent during phase I, -3.83 per cent during phase II, and become -0.61 per cent during the phase III in the state. In case of productivity of pulses grew at the rate of -0.43 per cent during phase I, followed by 0.49 per cent during phase II, and become 1.14 per cent during phase III at state level.

At state level, the area of foodgrains grew at the rate of 0.51 per cent during phase I, then became -0.93 per cent in phase II, and further became 0.37 per cent during phase III. On the other hand, the production of food grains grew at the rate of 3.0 per cent during phase I, decreased to 0.64 per cent and increased to 3.31 per cent during the phase III. In case of productivity of food grains, it grew at the rate of 2.47 per cent in phase I, decreased to 1.59 per cent in phase II, and further increased to 2.93 per cent during phase III.

In case of non-foodgrain crops, it is found that the area of oilseeds crops grew at the rate of -1.35 per cent during phase I, -4.96 per cent and further became -0.47 per cent in phase III at state level. In case of oilseeds production, it grew at the rate of 4.21 per cent in phase I, decreased to -4.94 per cent in phase II, and became -1.39 per cent during phase III in the state. On the other hand, productivity of oilseeds grew at the rate of 5.63 per cent in phase I, decreased to 0.02 per cent in phase II and further

became negative i.e. -0.93 per cent during phase III at state level. The area of sugarcane grew at the rate of 2.16 per cent during phase I, decreased to 0.76 per cent after new economic reform period i.e. phase II and became 0.63 per cent during phase III. In case of production of sugarcane, it grew at the rate of 4.73 per cent in phase I, -0.39 per cent during phase II, and became 0.78 per cent in phase III. Similarly, productivity of sugarcane grew at the rate of 2.52 per cent during phase I, with -1.14 per cent after new economic reform i.e. phase II, and became 0.15 per cent during phase III at state level. On the other hand, the growth rate of area, production, and productivity of potato was 2.88 per cent, 3.51 per cent, and 0.62 per cent during 2002-03 to 2011-12 in Uttar Pradesh. Overall, from the analysis, it is observed that the growth rate of area, production, and productivity of food grain crops and non-food grain crops has extensive variations as well as fluctuating trends during all study phases in Uttar Pradesh.

3.5 Trend in Average Yield of Major Crops

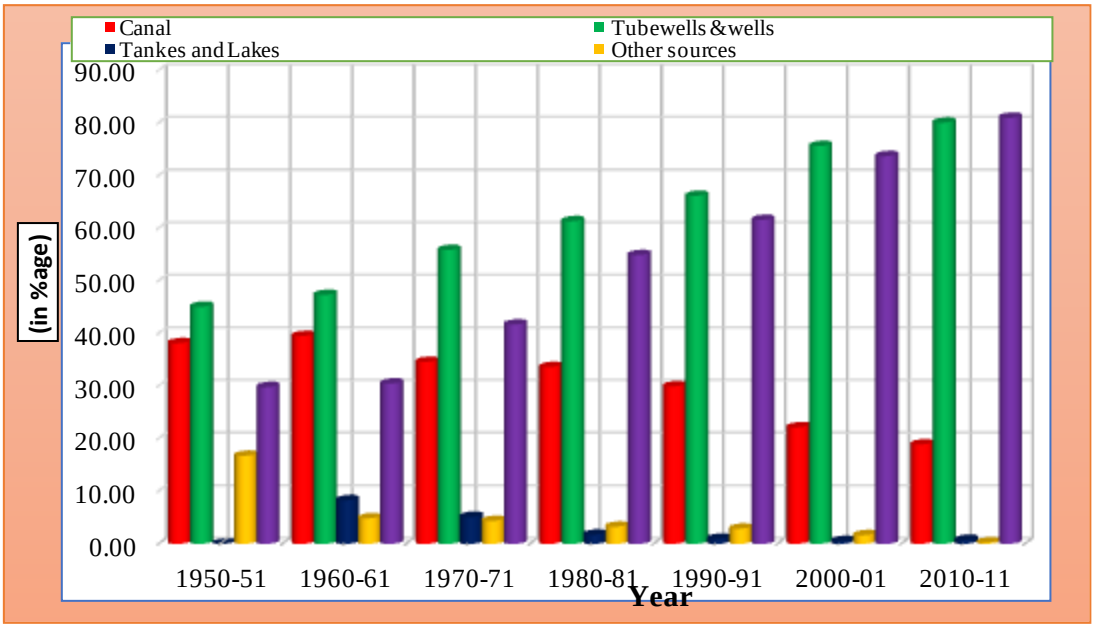
Agriculture sector of Uttar Pradesh is also highly diversified. It produces many crops due to its comparative advantage of wide area of agro-climate variability. The state is one of the major food grains producing state at national level. However, cropping pattern is changing which means that a change in the proportion of area under different crops. The average productivity (Qtl/hect) of the major crops during 1950-51 to 2010-11in Uttar Pradesh has been presented in table 3.06. It is found that the productivity of rice was 5.19 Qtl/hect in 1950-51 that increased to 21.22 Qtl/hect in 2010-11 at state level. On the other hand, the productivity of the wheat was 8.21 Qtl/hect in 1950-51 which increased to 31.11 Qtl/hect in 2010-11 in the state. In case of pulses, productivity was 27.68 Qtl/hect in 1950-51 and further sharply declined to 8.24 Qtl/hect in 2010-11, whereas the productivity of food grains was 6.89 Qtl/hect in 1950-51 that increased to 23.91 per cent in 2010-11 at state level. In case of non-foodgrain crops, the productivity of oilseeds was 5.24 Qtl/hect in 1950-51 which increased to 8.36 per cent in 2010-11, whereas, the productivity of sugarcane was 291.04 Qtl/hect in 1950-51 and become 567.72 Qtl/hect in 2010-11. The productivity of potato was 78.08 Qtl/hect in 1950-51 which increased to 241.49 Qtl/hect in 2010-11 at state level. Overall, from the analysis, it is observed that the productivity of non-foodgrain crops is increasing at a faster rate compared to the productivity of foodgrain crops during the study period at state level. In fact, it is clear that the shift towards

foodgrain crops is to non-foodgrain crops mainly due to the higher profitability in Uttar Pradesh.

3.6 Irrigation

Irrigation plays very vital role in the growth of agriculture and allied sector in Uttar Pradesh. The percentage of net area irrigated by different sources in Uttar Pradesh during 1950-51 to 2010-11 has been shown by table 3.07 and figure 3.04. It is found that the irrigated area by tube wells and wells has increased during the study period at state level. Canals are the second best source for irrigation in the state and have shown declining trend during the same period at state level. In case of tanks and lakes, declining trends have observed during the study period at state level. Currently, it has been observed that about 80 per cent of irrigation work is being done by tube wells and wells and 19 per cent by canals and remaining 1.0 per cent is done by tanks, lakes and other sources at state level. On the other hand, the percentage of net area irrigated to net area sown was 29.8 per cent in 1950-51 and increased to 81 per cent in 2010-11 at state level. Overall, it is noticed that more than 50 per cent of gross cropped area seems to be under rainfed area and it depends upon the gamble of monsoon which is a matter of concern. Hence, the policymakers need to increase expenditure on irrigation in drought-prone areas in the state of Uttar Pradesh.

Figure-3.04 Net Area Irrigated by Different Sources in Uttar Pradesh during 1950-51 to 2010-11

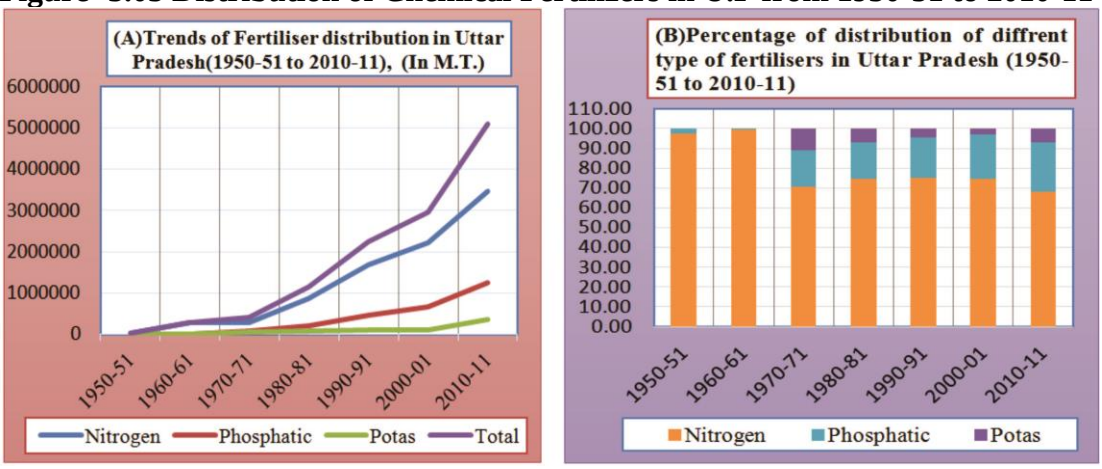


Source: Directorate of Agriculture and Statistics, U.P.

3.7 Use of Fertilizers

The use of fertilizers is very important for increasing land fertility and increasing agricultural productivity in Uttar Pradesh. Table 3.08 and figure 3.05 (A) shows the distribution of chemical fertilizers in Uttar Pradesh during 1950-51 to 2010-11. The distribution of nitrogen fertiliser was 20,000 million tonnes in 1950-51 which increased to 3,47,6864 million tonnes in 2010-11. On the other hand, the use of phosphate fertiliser was 500 million tonnes in 1950-51 which increased to 1,25,3453 million tonnes in 2010-11. The distribution of potash fertilizers stood at 45,000 million tonnes in 1970-71 and increased to the amount of 3, 58,092 million tonnes in 2010-11 at state level. The total distribution of chemical fertilizers was 20,500 million tonnes during 1950-51 that increased to the amount 50, 88,409 million tonnes in 2010-11 in Uttar Pradesh.

Figure- 3.05 Distribution of Chemical Fertilizers in U.P from 1950-51 to 2010-11



Source: Statistical Abstract U.P., 2013

Figure 3.05 (B) reveals that the percentage of distribution of different type of chemical fertilisers to the total chemical fertilizers in Uttar Pradesh. It is found that the percentage of distribution of nitrogen fertilizer was 97.5 per cent in 1950-51 which decreased to 68.3 per cent in 2010-11 at state level. On the other hand, the percentage of phosphate fertiliser was 2.4 per cent in 1950-51 which increased to 24.6 per cent in 2010-11 while the percentage of potassic fertilizer was 10.9 per cent in 1950-51 that became 7.0 per cent in 2010-11 at state level. It is observed that the percentage of nitrogenous fertiliser and potassic fertiliser has gone down and phosphatic fertilizer has been goes up respectively during the study period in Uttar Pradesh.

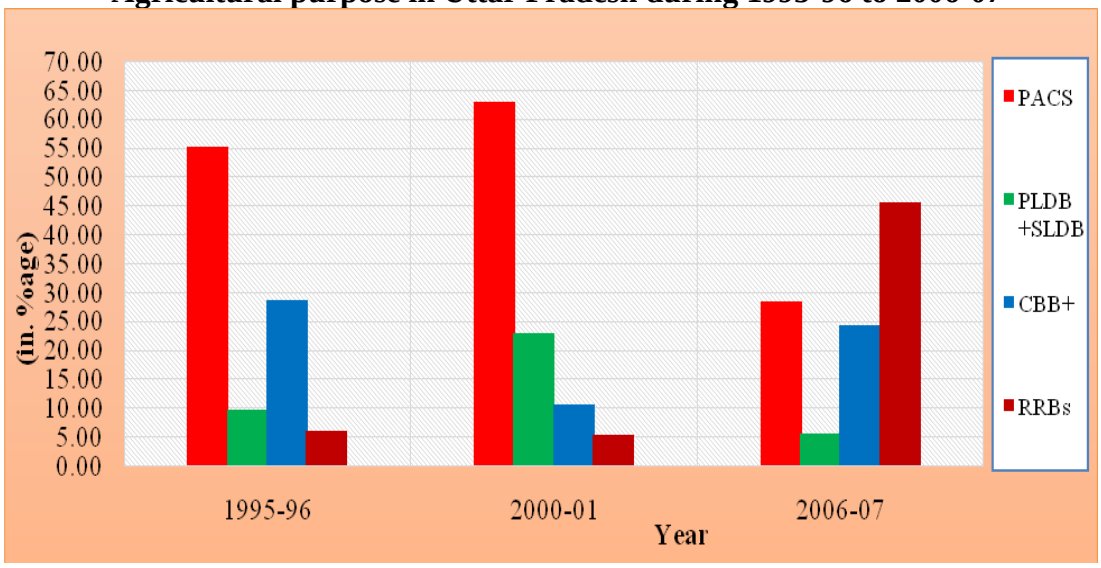
3.8 Agricultural Credit

Credit is one of the vital requirements of the farmers which help them to meet the investment as well working capital requirements. Poor credit services for investment are an important hindrance for expansion of area under HYV seeds and use of optimal measured quantity of inputs. The availability of credit for agriculture sector must be easy, adequate and timely. Despite of a large network of rural financial institutions, a large portion of the rural population is continuously neglected by the formal banking sector at state level and national level. On the other hand, inflexible credit flows and security-based lending system is widespread in formal Indian banking sector. Lack of trained technical staff, poor eligibility and security problems are some of the other reasons behind insufficient credit flow towards agriculture sector at state level. It must be corrected for speedy and easy flow of the credit to the agriculture sector at state level. It is found that credit flow to agriculture was Rs. 6, 15,245 crore in 2009-10 up to November 2009 and the numbers of accounts were Rs. 31, 89,941 crore at state level. On the other hand, the amount of credit disbursement to agriculture by nationalized banks was Rs. 3, 568.45 crore in 2003-04, followed by Rs. 5,674.29 crore in 2004-05 that increased to Rs. 7, 895.8 crore 2006-07 at state level. With regards to public and private banks, it was Rs. 10922.69 crore and Rs. 1610.23 crore in 2006-07 in the state. Considering, credit flowed by SCBs/CCBs, Land Development banks, and regional rural banks was Rs. 1878.69 crore, followed by Rs. 407.23 crore and Rs. 4007.41 crore in 2006-07 at state level.

The percentage of institutional credit taken from different agencies for agricultural purpose in Uttar Pradesh during 1995-96 to 2006-07 are presented by table 3.09 and figure 3.06. It is found that the performance of institutions/agencies has increased for the development of the agriculture sector during the study period at state level. The percentage of credit flow by primary agricultural credit societies (PACS) to the total institutional credit for agricultural purposes has decreased from 47.9 per cent in 1991-92 to 14.8 per cent in 2006-07. On the other hand, the contribution of primary land development banks (PLDBs) has also decreased from 23.2 per cent in 1991-92 to 10.4 per cent in 2006-07 at state level. The percentage of commercial bank branches (CBBs) and regional rural bank branches (RRBs) in total institutional credit for agricultural purposes have increased from 12.3 per cent to 24.6 per cent and 17.8 per cent to 50.2 per cent respectively during the study period at state level. It has been

observed that in spite of various successes, institutional credit agencies are facing several problems in the state. Consequently, the credit agencies have failed to meet the demand of agricultural credit among small and marginal farmers at state level. Co-operatives banks, commercial banks, and regional rural banks have been facing high cost and risky rural lending. As results, these banks are avoiding to meet their target for agriculture credit. Providing timely and adequate credit to small and marginal farmers is a problem for institutional credit agencies at state level. Hence, the farmers are dependent upon non-institutional source of the agricultural credit and are committing suicide in several parts of the state due to increasing indebtedness and malpractices of the non-institutional credit agencies in state of Uttar Pradesh.

Figure-3.06 Percentage of Institutional Credit taken from different Agencies for Agricultural purpose in Uttar Pradesh during 1995-96 to 2006-07



Source: Agriculture Census, Uttar Pradesh.,
Where, PACS: Primary Agricultural Credit Society, PLDB+SLDB: Primary Land Development Bank/ Branch of State Land Development Bank, CBBs: Commercial Bank Branches, RRBs: Regional Rural Bank.

3.9 Agriculture Marketing

Marketing is a key instrument in the development of the agriculture sector in the state of Uttar Pradesh. Agriculture marketing includes the movement of agricultural produce from farms where it is produced to the consumers or manufacturers. It also includes the marketing of production inputs like fertilizers, pesticides and other agricultural chemicals, livestock feed, farm machinery, tools and equipment and services to the farmers (Patnaik, 2003). The basic feature of

agricultural efficient marketing system is not only to provide the opportunities to purchase the consumer goods but also to provide incentives to the farmers to produce more. It should also encourage true competition among the traders and stop the exploitation of farmers' particularly small and marginal farmers in the state. It is clear that in the market system, farmers sell their agricultural produce directly or indirectly to the consumers and other rural associations.

Agriculture marketing systems are classified into three broad categories in the state and national level such as (i) Rural Primary Markets (ii) Secondary/Assembly Markets (iii) Wholesale Markets. The rural primary markets cater to the local demand and it is located in nearby village as haats. The secondary markets are located nearby the centres of wholesale or nearby production centres which cater to the distant demands, whereas, wholesale markets accumulate large quantity of agricultural produce from different sources and it caters into small collection to meet the needs of retailers in the country. According to the 10^{th} Plan documents for state of markets in India, "the current market system is dominated by traders. There is appropriate and effective linkage between the producers and sellers continue to be weak. The absence of rural road connectivity and other infrastructure, improper management, lack of market intelligence has resulted in a system that is unfavourable to the farmers. The adverse impact of all these is more pronounced in the case of small and marginal farmers who constitute about 75 per cent of the entire farming community. The primary rural markets are the first contact point for the rural producers and sellers. There are over 27 thousand primary rural markets, scattered across the country. These are, however, not equipped with basic facilities such as platforms for sale and auction, electricity, drinking water, link roads, trader's premises, and facilities for post-harvest management. The private sector and joint ventures for setting up markets need to be encouraged with suitable policies and incentives for free and competitive trade (Chakraborty, 2003). The marketing infrastructure deserves special attention in case of horticultural crops like fruits and vegetables. Because due to fragile nature of horticulture produce, farmers sell their produce immediately after harvest which until reaches the final consumers passes through the various types of intermediaries. This large chain of intermediaries results into high marketing costs which in turn makes the small profit margins of small farm growers (Prasad, 2008).

3.10 Warehousing Facility

Warehousing infrastructure needs to be improved more in the state. Lack of proper infrastructure like cold storage, transportation, post-harvesting facilities destroy about 30-40 per cent of agricultural commodities, like wheat, fruits, and vegetables which leads to price volatility of these crops particularly potato and onion in the state. However, Uttar Pradesh has shown improvements in providing cold storage infrastructure but it is not sufficient to fulfill the requirements. Besides, it is a fact that the agricultural products are basically perishable in nature and lack of rural infrastructure like power, roads and transportations, marketing infrastructure and inadequate processing and post-harvest technologies force the farmers to sell their produce below the cost of its production. Therefore, the development of cold storage along with road and marketing facilities are precondition to the proper growth of agriculture in the state. Food Corporation of India (FCI), State Warehousing Corporation (SWC) and Central Warehousing Corporation (CWC) are main agencies which are involved in storing huge quantity of food-grains of state.

It has been observed that marketing efficiency depends upon the storage capacity of the agricultural produced. Therefore, storage infrastructure is very important for better growth of agriculture and allied sectors. Table 3.10 highlights that the agency wise number and capacity of storage units during 1985-86 to 2010-11 in Uttar Pradesh. It is found that the number of Food Corporation of India (FCI) was 47 (19.10 per cent) and capacity was 16.16 lakh million tonnes (45.0 per cent) in 1985-86 in the state. The number of FCI has become 118 (38.9 per cent) and capacity becomes 28.05 lakh (40.7 per cent) in 2010-11. With regards to the number of U.P. State Warehousing Corporation (UPSWC) was 144 (58.5 per cent) and capacity was 12.52 lakh million tonnes i.e. (22.4per cent) in 1985-86. The number of UPSWC has become 140 (46.2 per cent) and capacity becomes 31.56 lakh million tonnes (45.8 per cent) in 2010-11 in Uttar Pradesh. The number of Central Warehousing Corporation (CWC) was 55 (22.4 per cent) and capacity was 7.2 lakh million tonnes (20.1 per cent) in 1985-86. The number of CWC has become 45 (14.9 per cent) and capacity becomes 9.3 lakh million tonnes (13.6 per cent) in 2010-11 in the state. The total number of storage agencies in Uttar Pradesh was 246 and total storage capacity was 35.92 lakh million tonnes in 1985-86 and the total number of storage agencies has become 303 and total storage capacities of all agencies has become 68.97 lakh million

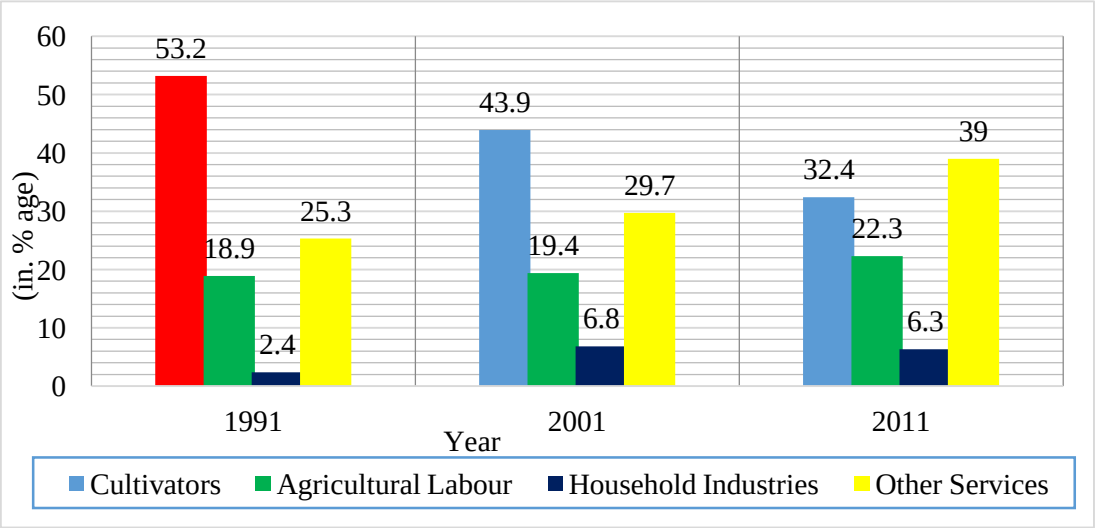
tonnes in 2010-11 in the state. But it is a fact that the agencies are not sufficient to provide huge storage capacity. In fact, the situation of small and marginal farmers are very miserable in term of accessing marketing facilities which either affects farmers in such a way that they are compelled to sell their products on lower prices or leave farming business in the state of Uttar Pradesh.

3.11 Agricultural Labour

Agricultural labour is constantly increasing in Uttar Pradesh. They belong to the economically depressed and socially backward sectors of the rural economy that have always remained neglected. Their social and economic conditions are deteriorating day by day. They have been struggling from low income and low wages. There are many factors responsible for growing agricultural labour in the state. According to Dr. Mukherjee, "Every circumstance which has weakened the position of the small landholders has increased the number of agricultural labour, viz., the loss of common rights in the rural economy, the diseases of collective enterprise, the subdivision of holdings, the multiplication of rent receivers, free mortgaging and transfer of land followed by a decline in cottage industries". However, there are many causes of growth of agricultural labours such as (i) The growth rate of the population in the state is very high and growth of indebtedness due to low productivity of the land as well as transfer of land from the small owners to the creditors. It results in farmers becoming agricultural labourers, (ii) searching for subsidiary occupations and unequal distribution of money in rural economy, creating agricultural labourers, (iii) the growth of landlordism and decreasing of domestic industries and handicrafts resulting people to become agricultural labourers in Uttar Pradesh, (iv) Disintegration of the village communities and peasantry in rural areas of the state.

The classification of workers in Uttar Pradesh is presented in table 3.11 and Figure 3.07. It is found that the percentage of cultivators was 53.2 per cent in 1991 and decreased to 32 per cent in 2011 at state level. On the other hand, the percentage of the agricultural labour was 18.9 per cent in 1991 and increased to 22.3 per cent in 2011 at state level. Regarding household industries workers, it grew at the rate of 2.4 per cent in 1991 that increased to 6.3 per cent in 2011. In the case of other services workers, it grew at the rate of 25.3 per cent in 1991 which increased to 39 per cent in 2011 at state level.

Figure-3.07 Classification of Workers in Uttar Pradesh during 1991 to 2011



Source: Various reports of Statistical Abstract Uttar Pradesh, Lucknow

The gender wise classification of workers has been shown in table 3.12 in Uttar Pradesh during 1991 to 2011. It is found that the percentage of male and female cultivators was decreased from 53.9 per cent and 48.1 per cent in 1991 to 31.1 per cent and 22.2 percent respectively in 2011 at state level. On the other hand, the percentage of male and female agricultural labours was 16.6 per cent and 35.8 per cent in 1991 that become 27.6 per cent and 38.4 per cent in 2011. Similarly, the percentage of male and female household industries workers was 2.2 per cent and 3.5 per cent in 1991 and increased to 4.7 per cent and 9.6 per cent respectively in 2011. Further, the percentage of male and female of other service workers was 27.1 per cent and 12.4 per cent in 1991 and increased to 36.4 per cent and 29.6 per cent in 2011 at state level. Table 3.13 shows the status of workers in Uttar Pradesh. It is observed that the percentage of self-employed workers was 71.6 per cent in 1993-94 which decreased to 66.28 per cent in 2009-10. On the other hand, the percentage of regular wage workers was 8.6 per cent in 1993-94 that increased to 9.7 per cent in 2009-10. The casual labour grew at the rate of 19.6 per cent in 1993-94 which increased to 24.0 per cent in 2009-10 at state level. It is obvious that the casualization of the labour is increasing in the state of Uttar Pradesh.

The Government has taken several steps to improve the condition of agricultural labourers at state level. Some of the steps are such as (i) The Government has launched minimum wage act in 1948 to empower the legislation to fix the minimum wages for the agricultural labourers, (ii) Several programmes have been

adopted such as Antodya and NERGA to improve the conditions of poor agricultural labourers, (iii) The insurance scheme has been introduced to cover all landless agricultural labourers, (iv) In 1976, the Government passed the Bonded Labour Abolition Act to improve the livelihood and uplift from the poverty line in the state of Uttar Pradesh, (v) Some rural employment programmes was launched in 1980 to organize labour for intensive works on a scale. Many programmes have been operating such as projects road building, minor irrigation, drainage, water conservation, (vi) The Government has been making effort to establish cottage industries in the rural areas of the state, (vii) The government has been improving the administrative power and creating job opportunities in rural areas, (viii) Regional rural banks have been establishing in the villages. The branches of these banks are providing facilities to agricultural labourers to start tiny business, (ix) the maximum limit of agricultural land holdings to be cultivated by a single farmer has been fixed. The excess land of this limit is distributed among the landless labourers at state level.

3.12 Constraints of Agricultural Sector

There are several constraints in the agricultural sector in Uttar Pradesh. It is visible that the past efforts towards the agriculture sector were very casual. There were no concerted and integrated efforts to raise the agricultural growth. The state is full of natural resource in term of soil, water, and climate, but the performance of the agriculture sector is far from satisfactory level. There are many constraints in the development of agricultural sector some of which have been given below;

The most and very critical constraint is low investment in the area of agriculture. The per capita plan outlay in the state is lowest among all the states (Shankar, 2001). It has been observed that the public investment in agriculture in different five-year plan has declined at state level. In this condition, the state cannot increase the growth of agriculture sector. Unfortunately, a major percentage of the public investment in agriculture is digested by subsidies on irrigation, fertilizers, power, seed, and credit. These subsidies either reduced the public investment or increase the excess and wasteful use of the resources. Therefore, the foremost priority of the government should be to mobilize resources for investment in those areas that attract private sector participation and promote agriculture growth at state level.

Agricultural land for cultivation in the state remained constraint during last two decades. The vertical utilization of the land was also at a snail's pace. Besides

providing the food requirements of the growing population, the pressure on agricultural land also comes from industry and housing. The small land holding and land tenancy laws are decreasing investment and increasing inefficiencies in agriculture sector. The growing concerns are (i) decreasing land holding size, (ii) increasing fragments of land, and (iii) increasing number of small and marginal farmers. The land tenancy laws restrain private investment in the state. Although, the previous efforts towards land reforms increased private investment in agriculture, that witnessed better agricultural performance. The reforms in the state were carried out in following sequence (i) abolition of Zamindari and intermediary systems, (ii) protection of tenant rights and regulation of rents, (iii) consolidation of landholdings, (iv) ceiling on landholding, and (v) distribution of surplus land among marginal farmers and landless labourers. The government has to take steps to revive the concept of consortium of small and marginal farmers to efficiently utilize agricultural land for augmenting income and accelerating agricultural growth at state level.

The state has been facing institutional constraints since many years. The improved quality seeds, low seed replacement rate and non-availability of seeds are the most vital constraints in rising agricultural productivity and production. There is need to concern the balanced approach for seed production, storage, and marketing of principal crops. The infrastructure facilities for seed production, storage, transportation, and marketing are inadequate in term of both quality and quantity in the state. The seed testing facilities, human resources, and required skills are lacking and need to improve.

The agriculture sector suffers from financial assistance at state level. As reveals earlier, the investment in agriculture has been declined. The government has established co-operative banks, commercial banks, regional rural banks and national banks for agricultural rural development for providing credit facilities to agricultural farmers. But, the lending performance of the banks is much below than the desired level. The credit-deposit ratio in the state is low. Commercial banks, RRBs and NABARD are associated with them are not advancing the required credit to the farmers. On the other hand, institutional constraints are also responsible for agricultural diversification i.e. in favour of high-value crops and agro-processing system which are also capital-intensive in the state. A strong credit sector can

facilitate promotion of agricultural diversification towards high-value crops as well as agro-processing.

Along with this the state also suffers from drought and irrigation facility. The use of the water efficiency in the surface irrigation system is very low at state level. The main reason behind it is extensive seepage, uneven and unreliable distribution of water over the entire canal command area and inadequate maintenance and modernization of outdated irrigation structure. There is inefficient use of water and low-cost recovery in irrigation areas. These constraints are responsible for undeveloped irrigation facilities in the state of Uttar Pradesh.

The rural road is not well developed at state level. Road density per lakh population in the state is 142 km, which is very low as compared to the national level i.e. 246 km. This density is much lower than Maharashtra (303 km) and followed by Kerala (462 km). The total length of rural roads is 1.84 lakh km in the state. The status of the village connectivity in the state is 50 per cent, which is below the all-India average of 56 per cent and far below that of Gujarat 85 per cent, Tamilnadu 69 per cent and Kerala 100 per cent. The poor rural network restricts inputs delivery systems and marketing of inputs. Lack of good road connectivity is an obstacle for achieving higher agricultural growth and diversification of agricultural towards high-value crops, live stocks and agro-processing at state level.

Natural resources are very important for growing agriculture sector in the state. However, proper utilization of the natural resources not only protects agriculture sector but also human beings. Degradation of soil and water resources is a serious problem for agriculture sector of the state. The several important problems are such as (i) Land degradation, (ii) Soil alkalinity, (iii) Waterlogging (iv) Declining water table, and (v) Nutrient mining. However, it has been observed that there are many causes of land degradation like faulty land use, wrong management of cropping pattern, devastation by frequent fires, shifting cultivation, unscientific mining, overgrazing and degradation of the forest cover and non-involvement of the local people. The floods and droughts in different part of the state made improper use of the land. Soil degradation caused by erosion, salinization, and alkalization has become very common all over the world. Around more than 2.5 lakh hectares of the world's best land is affected only because of salinization and waterlogging problems every year.

To reduce the salinization problems, the Central Soil Salinity Research Institute (CSSRI) was established in 1969 (Mridula Singh 2006).

Water-logging is very prominent problems at state level. It is a very big challenge for the development of agriculture. In fact it is estimated that total 8.5 million hectare water-logged area in the country, about one-fourth, is confined to Uttar Pradesh. The problems of water-logging arise because of seepage from the canals, heavy rainfall in low lying areas, constructions of roads and embankments. The excessive use of groundwater has adversely affected the groundwater table. This problem is more prominent in the western and central region of the state. The main reason of decreasing water table is due to highly subsidized electricity to extract groundwater, scarcity of canal water, and expansion of high water requirement crops like rice and sugarcane. The energy cost of water extraction is increasing due to adverse effects of the declining water table. Implementation of water saving devices, like micro-irrigation system, diversification of agriculture towards low water requirements crops and withdrawal of subsidies on power may control the fall in the water table. Nutrient mining is also a major constraint in agricultural production in Uttar Pradesh. The nutrient of soil is becoming deficient with respect to nitrogenous and other macronutrients, like phosphorous and potash. The status of macronutrients (N, P, and K) is deteriorating in all regions of the state.

The state has huge potential for value addition of agricultural commodities through agro-processing. Following constraints have been identified in regarding of agro-processing sector to enlarge its scope at state level such as lack of cooling chambers and cooling chains, non-availability of appropriate varieties for processing, supply-driven processing units in the past have become unviable due to lack of suitable backward and forward linkages, inadequate investment funds, rudimentary knowledge of post-harvest management techniques among farmers and traders, weak research and educational in post-harvest technologies.

The extension of the research and development is an important factor for growing state economy. However, the share of all India public investment in agricultural research in the state has sharply declined. The major constraint in agricultural research system is the lack of resources of public funds for research. The larger share of agricultural gross domestic product should be allocated for enhancing the research. It is also important to ensure that the optimum use of required research

resources is made through improved management of research institutions. Effective mechanisms for research priority setting need to be evolved in the state. The Uttar Pradesh Council of Agricultural Research (UPCAR), Agricultural Universities, Colleges, ICAR institutions and Indian Institute of Management will have to play crucial role. There should be greater networking and sharing of information with national and international institutions in the state. The mechanism of Local Research Station (ZRS) and Krishi Vigyan Kendras (KVKs) are essential to link with location-specific research with extension agents and farmers have not performed satisfactorily.

3.13 Agricultural Policy

The appropriate policies initiatives are required for the development of agriculture in the State of Uttar Pradesh. Therefore, the state government launched many policies during 1990s. The aim of the government behind these policies was to support the agro-processing sector for diversification agriculture, value addition of important agricultural products, larger participation of the industry in agriculture and better management of the input sector. The state government launched Industrial Policy (1994) and Agro-Industrial Policy (1995) for reducing regulatory barriers to entry and operation of private sector, simplification and decentralization of producers, providing a package of investment incentives and creation of funds for improved access to investment capital. The major enabling provisions of Industrial Policy and Agro-Industrial policy were in the form of land ceiling limits relaxed for purchase of land for industrial use, purchase procedure decentralized and simplified, sale tax replaced by simpler tax regime, single window system established for rapid clearance of application from entrepreneurs, trade tax concessions, state equity fund augmented for promotion of agro-industries, provision for a separate agri-business venture capital fund and privatization of uneconomical public sector enterprises. The state government relaxed in Essential Commodities Act (1955). This Act was the major obstacle in the growth of private trade of agricultural commodities. All the restrictions on foodgrain movement have been removed. Similarly, Uttar Pradesh Cold Storage Act (1975) has been finished. The wheat trade completely, delicensed in 1995 at state level.

The industrial policy 1998 brought changes in industries but removes the attention to improve agriculture sector. This policy focused on improving agricultural growth through promotion of agricultural trade and setting up food and agro-based

process industries, resulted in decline in agriculture sector. The state government implemented the State Water Policy (SWP) in 1999. This policy was a part of the National Water Policy in 1987. The State Water Policy was a reform in the area of irrigation sector involving institutional structures, legislation, and management aspects. The purpose of the policy was to ensure self-sufficiency in water resource development through improved water management and community participation. The initiatives need supports in terms of irrigation and drainage investments in physical infrastructure rehabilitation, modernization, and development. On the other hand, the government has taken various measures to reform the seed sector with the important objectives of supplying good quality seeds to the farmers. The important reforms are such as; seed perspective plan, seed replacement rate, and seed Act. Further, a ten years seed perspective plan has been prepared to take-care of the growing demands for seeds particularly of hybrids, oilseeds, and pulses. Due to the low seed replacement, the performance of high yielding varieties is deteriorating. The government has decided to increase the seed replacement rate and seed infrastructure through the macro-mode of assistance. Several changes have been made in the seed act to make it more effective and encourage the private sector participation in seed production and marketing at the state and national level.

Uttar Pradesh is one of the first states who launched the 'Agricultural Policy' in 1999, even before the 'National Agricultural Policy' announced in 2000. The main objective of the policy was to encourage scientific agriculture, to achieve an annual growth rate of 5.1 per cent, maintain ecological balance, develop appropriate eco-friendly farming systems, diversify existing agricultural towards high value crops, develop appropriate infrastructure facilities, employment generation, poverty reduction and to ensure food security through adopting better farming system at state level. Further, National Agriculture policy was implemented in 2000 to improve the condition of the agriculture, increasing employment, eradication of the poverty and ensuring food security among poor section of the people. Due to declining the growth of the public investment on agriculture sector, private sector came to invest in agricultural sector. For this, two major policy measures adopted allowing foreign direct investment (FDI) in agricultural growth and development and amendment in the agriculture produce marketing committees for opening door of the contract farming and setting up multi-stock holders committee.

Agricultural policy (2005) improved the agricultural growth and development. This policy focused in seven key areas to grow the agriculture sector. Due to declining of public investment, private sectors investment have been promoted to invest in agro-based and food processing industries for increasing investment in agriculture sector. The recent years, the increasing growth of the agriculture sector is seen due to growth in its sub-sectors, dairy, horticulture, fisheries, vegetables, sugar, and animal meats. It resulted in making Uttar Pradesh a leading producer of agriculture products (wheat, rice, and sugarcane) and exporting state at national level. However, in recent year, the growth of the agriculture foodgrains production is an issue of concern at state level.

Agriculture Department of Uttar Pradesh has announced Agriculture Policy in 2013 to achieve the multidimensional potential of agricultural development at state level. The aim of policy was to encourage private sector participation in agricultural research, development, extension, input management and distribution and agricultural marketing. The main objectives of the policy was to achieve a growth rate of 5.1 per cent in the agriculture sector, to develop and popularize appropriate eco-friendly farming systems which would improve the soil health as well as farm income, to develop and conserve natural resources for maintaining ecological balance, to increase the income of farmers through agricultural diversification towards high value activities, while retaining the core-competence in area of food and nutritional security and to develop infrastructure facilities in sectors of seeds, fertilizers, pesticides, agriculture implements, extension services, food processing and marketing by promoting private sector involvement across the agricultural supply chain in the state of Uttar Pradesh. Hence, the agricultural policies are encouraging private sector in the state.

3.14 Conclusion

There are various institutional, technological and infrastructural reforms that have been adopted for the agriculture development and growth of this sector in the state since 1947. Above analysis shows the path of agriculture development from different angles in the state. We have observed that no. of marginal and small farmers sharply increasing during 1950-51 to 2010-11. After that, we also observed that the area and production of cereal crops in the state also increased between the same period while the area and production of pulses goes down tremendously in the state.

There is a diversification from traditional crops to commercial crops due to private participation through contract and corporate farming in the state. Agriculture cultivators have also been decreasing in the state during the study period and migrating to other sectors for the betterment of their welfare. Agriculture credit may be one of the reasons of migration in the state of Uttar Pradesh. Credit plays an important role in increasing agriculture productivity but, the flow of credit by formal sources is still not sufficient for small and marginal farmers in the state. Therefore, the small and marginal farmers became agricultural workers from cultivators. Hence, farming system plays a crucial role in the agriculture development in the state.

In the early years of independence farming system was dominated by peasant farming in the state. Which was not in a position to increase production and productivity in state, so multiple models of farming was recommended by Kumarappa committee in 1956 in the form of estate farming, state farming, and collective farming. Thereafter, most successful farming became cooperative farming in the state as it reduces the institutional credit requirements and cooperation among the farmers. But in the post-reform period, reduced public investment in agriculture in the state leaves the little incentive to cooperative farming in the state. No doubt cooperative farming and green revolution increased the agriculture production in the state but problems of agriculture credit, infrastructure, marketing still exist in the state of Uttar Pradesh. So, the government of the state also adopted the policy of the government of India. Agriculture policy, 2000 of Government of India allows the private players in the agriculture sector for the development of the sector. In the state private players also came into existence after this policy initiative through contract farming and corporate farming. Contract and corporate farming may be helpful in solving the problems of small and marginal farmers in the state if the government makes a good policy in this direction. Therefore, the model of contract and corporate farming may play a vital role in the development of agriculture sector in the state.

The growth and development of the agriculture sector is slow in Uttar Pradesh. There is a need to adopt multi-prone strategies and integrated approach through improved institutional arrangements and better infrastructure to boost sustainable agricultural development at state level. The future agricultural development efforts must have a focus on innovations which will improve productivity of land as well as farm labour. On the other hand, strong steps are needed to be taken to improve land

market, seed, credit, investment, soil health, irrigation facility, marketing, watershed development, agro-processing, climatic variability and research and technological development in the state. It is essential to raise the growth of commercial crops such as vegetables, fruits, livestock produce, poultry and rural entrepreneurship in the rural areas at state level.

APPENDIX

Table: 3.00 Growth Rate of Agriculture and Allied Sector during Plan Period

Sr. No.	Plan	Agriculture & Allied Sector		Overall Economy	
		Uttar Pradesh	India	Uttar Pradesh	India
1	First Plan (1951-56)	1.86	2.71	2.12	3.60
2	Second Plan (1956-61)	1.48	3.15	1.75	3.95
3	Third Plan (1961-66)	-0.09	-0.73	1.58	2.32
4	Three Annual Plan (1966-69)	0.62	4.16	0.32	3.69
5	Fourth Plan (1969-74)	0.94	2.57	2.23	3.25
6	Fifth Plan (1974-79)	5.23	3.28	5.70	5.30
7	Sixth Plan (1981-85)	2.54	2.52	4.11	4.10
8	Seventh Plan (1985-90)	2.69	3.47	5.70	5.80
9	Two Annual Plan (1990-92)	5.42	1.01	3.14	2.47
10	Eighth Plan (1992-97)	2.70	3.90	3.20	6.80
11	Ninth Plan (1997-02)	0.80	1.90	2.00	5.60
12	Tenth Plan (2002-07)	2.10	1.10	5.30	7.70
13	Eleventh Plan(2007-12)	5.7	3.2	10.00	7.94

Source: Planning Commission, Uttar Pradesh

Table: 3.01 Land Use Pattern in Uttar Pradesh during 1950-51 to 2010-11

(Area in thousand hect.)

Year/Category	Forest	Non-agriculture use	Barren Land	Pastures and other Graze Land	Misc. Trees etc	Cultivable Waste	Fallow Land	Current Fallow	Net Sown Area
1950-51	3194 (10.92)	1852 (6.33)	2887 (9.87)	- (0.00)	1415 (4.84)	2311 (7.90)	290 (0.99)	1078 (3.68)	16231 (55.48)
1960-61	3710 (12.62)	1930 (6.57)	2574 (8.76)	48 (0.16)	854 (2.91)	1605 (5.46)	1213 (4.13)	154 (0.52)	17290 (58.82)
1970-71	4953 (16.62)	2034 (6.82)	1418 (4.76)	77 (0.26)	1060 (3.56)	1345 (4.51)	545 (1.83)	869 (2.92)	17305 (58.06)
1980-81	5129 (17.25)	2280 (7.67)	1141 (3.84)	296 (1.00)	639 (2.15)	1148 (3.86)	716 (2.41)	1170 (3.93)	17221 (57.91)
1990-91	5162 (17.33)	2447 (8.21)	1035 (3.47)	303 (1.02)	545 (1.83)	1034 (3.47)	- (0.00)	- (0.00)	16430 (55.15)
2000-01	1689 (6.98)	2436 (10.07)	617 (2.55)	70 (0.29)	340 (1.40)	534 (2.21)	641 (2.65)	1047 (4.33)	16825 (69.52)
2010-11	1658 (6.86)	2835 (11.73)	486 (2.01)	65 (0.27)	354 (1.46)	426 (1.76)	538 (2.23)	1215 (5.03)	16593 (68.65)

Source: Directorate of Economics and Statistics, Government of Uttar Pradesh

Table: 3.02 Percentage of Operational Holdings and Area by Size Groups in Uttar Pradesh during 1970-71 to 2010-11

Year/Category	Marginal Holdings		Small Holdings		Semi-medium Holdings		Medium Holdings		Large Holdings	
	Holding	Area	Holding	Area	Holding	Area	Holding	Area	Holding	Area
1970-71	66.8	21.1	17.2	20.8	10.6	24.9	4.7	23.2	0.7	9.9
1980-81	70.6	25.7	16.3	22.6	9	24.6	3.7	21	0.4	6.1
1990-91	73.8	31.4	15.6	24.4	7.7	23.4	2.7	16.9	0.2	3.9
2000-01	76.9	37	14.2	24.3	6.6	21.7	2.1	14.3	0.2	2.7
2010-11	79.5	40.7	13	24	5.72	20.6	1.7	12.5	0.1	2.2

Source: Directorate of Economics and Statistics, Government of Uttar Pradesh

Table: 3.03 Average Size of Land Holdings in Uttar Pradesh during 1970-71 to 2010-11

Land holding/ Year	1970-71	1980-81	1990-91	2000-01	2010-11
Marginal holdings	0.50	0.37	0.38	0.40	0.39
Small holdings	1.40	1.40	1.41	1.41	1.40
Semi medium holdings	2.75	2.73	2.73	2.74	2.72
Medium holdings	5.75	5.70	5.55	5.57	5.52
Large holdings	16.08	15.41	15.35	15.09	15.01
All holdings	1.16	1.01	0.90	0.83	0.76

Source: Directorate of Economics and Statistics, Government of Uttar Pradesh

Table: 3.04 Trends in Growth Rate of Area, Production, and Productivity of major Foodgrain Crops and Non-Foodgrain crops in Uttar Pradesh during 1984-85 to 2013-14

Crops	Area	Production	Productivity
Wheat	0.50	2.13	1.62
Rice	0.29	1.85	1.56
Bajara	0.21	2.87	2.65
Jawar	-4.73	-3.80	0.98
Maize	-1.78	-0.76	1.04
Barley	-4.87	-3.16	1.80
Tur or Arhar	-2.03	-3.51	-1.51
Gram	-3.56	-3.13	0.47
Rapeseed and Mustard	-2.00	-0.20	1.85
Coarse Cereals	-2.42	-0.73	1.73
Pulses	-2.12	-2.17	-0.06
Cereals	-0.03	1.76	1.78
Foodgrains	-0.35	1.49	1.84
Oilseeds	-2.15	-0.71	1.48
Groundnut	-1.87	-1.67	0.21
Soyabeen	-7.64	-8.31	-0.73
Sunflower	-0.87	2.33	3.16
Sugarcane	1.04	1.53	0.49
Cotton**	-7.74	-8.62	-0.96
Potato***	1.98	2.88	0.89

*Source: Directorate of Economics and Statistics, Government of Uttar Pradesh, ** shows the compound growth rate of cotton during 1984-85 to 2009-10, *** indicates that the compound growth rate during 1996-97 to 2011-12*

Table: 3.05 Phase Wise Trends in Growth Rate of Area, Production, and Productivity of Major Foodgrain Crops and Non-Foodgrain Crops in Uttar Pradesh during 1984-85 to 2013-14

Crops	Phase I			Phase II			Phase III		
	1984-85 to 1993-94			1994-95 to 2003-04			2004-05 to 2013-14		
	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
Wheat	0.81	3.15	2.33	0.28	1.44	1.16	1.03	3.42	2.36
Rice	0.00	4.22	4.21	0.45	1.21	0.76	0.74	4.12	3.36
Total Coarse Cereals	-2.55	-0.35	2.26	-3.65	-2.95	0.73	-0.95	2.08	3.06
Total Pulses	3.56	3.11	-0.43	-4.30	-3.83	0.49	-1.74	-0.61	1.14
Total Cereals	-0.10	2.99	3.09	-0.27	0.98	1.25	0.69	3.51	2.80
Total Foodgrains	0.51	3.00	2.47	-0.93	0.64	1.59	0.37	3.31	2.93
Total Oilseeds	-1.35	4.21	5.63	-4.96	-4.94	0.02	-0.47	-1.39	-0.93
Sugarcane	2.16	4.73	2.52	0.76	-0.39	-1.14	0.63	0.78	0.15
Potato*	-	-	-	-	-	-	2.88	3.51	0.62

*Source: Directorate of Economics and Statistics, Government of Uttar Pradesh, *, reveals the compound annual growth rate of Potato during 2002-03 to 2011-12 periods*

Table: 3.06 Trends in Growth Rate of Productivity of Foodgrain Crops and Non-Foodgrain Crops in Uttar Pradesh during 1950-51 to 2010-11

Crops	1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11
Rice	5.19	7.53	8.16	10.53	18.53	19.77	21.22
Wheat	8.21	10.21	13.01	16.50	21.71	27.71	31.11
Jawar	6.86	5.53	6.62	5.99	9.36	9.48	10.30
Bazra	6.44	3.97	7.87	7.37	11.15	14.50	16.61
Maize	7.81	24.56	17.10	16.69	13.06	7.21	15.04
Gram	5.96	7.17	7.43	8.69	8.79	8.44	9.22
Rapeseeds and Mustard	3.69	4.85	5.96	5.40	9.73	10.00	11.85
Linseed	4.15	2.11	2.63	2.49	3.93	3.60	4.44
Other Pulses	8.24	9.99	9.26	9.08	9.35	8.46	7.93
Sugarcane	291.04	410.21	406.42	470.90	558.10	549.19	567.72
Potatoes	78.08	70.37	92.00	156.66	190.29	213.14	241.49
Groundnut	11.54	8.32	6.50	7.01	7.42	8.35	9.93
Till(pure)	1.67	2.89	3.46	3.43	6.97	11.21	1.98
Total Pulses	27.68	22.82	24.42	23.09	18.42	13.53	8.24
Total Oil Seeds	5.24	5.65	5.45	5.27	8.35	8.25	8.36
Total Foodgrains	6.89	7.90	10.00	12.19	17.39	23.04	23.91

Source: Directorate of Economics and Statistics, Government of Uttar Pradesh

Table: 3.07 Percentage of Net Irrigated Area by Different Sources in Uttar Pradesh during 1950-51 to 2010-11

Year	Canal	Tubewells and Wells	Tankes and Lakes	Other sources	Percentage of Net irrigated area to Net Sown Area
1950-51	38.17	45.07	-	16.76	29.80
1960-61	39.50	47.33	8.31	4.86	30.50
1970-71	34.60	55.88	5.14	4.37	41.70
1980-81	33.62	61.35	1.76	3.27	54.90
1990-91	29.95	66.17	0.98	2.90	61.60
2000-01	22.17	75.63	0.54	1.66	73.70
2010-11	18.89	80.06	0.76	0.29	81.00

Source: Directorate of Economics and Statistics, Government of Uttar Pradesh

Table: 3.08 Utilization of Chemical Fertilizers in Uttar Pradesh during 1950-51 to 2010-11

(In million tonnes)

Year	Nitrogen	Phosphate	Potash	Total
1950-51	20000 (97.5)	500 (2.4)	-	20500 (100)
1960-61	281000 (99.2)	2000 (0.7)	-	283000 (100)
1970-71	291000 (70.8)	75000 (18.2)	45000 (10.9)	411000 (100)
1980-81	860642 (74.8)	209338 (18.1)	80613 (7.0)	1150593 (100)
1990-91	1691883 (75.3)	455488 (20.2)	98348 (4.3)	2245719 (100)
2000-01	2206497 (74.5)	662083 (22.3)	93249 (3.1)	2961829 (100)
2010-11	3476864 (68.3)	1253453 (24.6)	358092 (7.0)	5088409 (100)

Source: Directorate of Agriculture and Statistics U.P., and Parentheses indicates percentage share in total

Table: 3.09 Percentage of Institutional Credit Taken from Different Agencies for Agricultural Purpose in Uttar Pradesh during 1996-97 to 2006-07

Year	Primary Agriculture Credit Society (PACS)	Primary Land Development Bank(PLDB)	Commercial Banks Branches(CBB)	Regional Rural Banks (RRB)
1996-97	55.10	9.80	28.70	6.20
2001-02	62.80	23.00	10.70	5.40
2006-07	28.30	5.60	24.30	45.60

Source: Agricultural Census, Uttar Pradesh (www. Agricoop.nic.in)

Table: 3.10 Agency Wise Number and Capacity of Storage Units in Uttar Pradesh during 1985-86 to 2010-11

(Capacity in Million Tonnes)

Year	Food Corporation of India (FCI)		U.P. State Warehousing Corporation (UPSWC)		Central Warehousing Corporation (CWC)		Total	
	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
1985-86	47 (19.1)	1616070 (45.0)	144 (58.5)	1252535 (34.9)	55 (22.4)	722093 (20.1)	246 (100)	3592698 (100)
1990-91	73 (25.6)	1585540 (41.2)	151 (53.0)	1318552 (34.2)	61 (21.4)	948406 (24.6)	285 (100)	3852498 (100)
1995-96	74 (32.9)	151580 (6.5)	100 (44.4)	1299000 (55.4)	51 (22.7)	894000 (38.1)	225 (100)	2344580 (100)
2000-01	74 (35.4)	2797000 (92.4)	154 (73.7)	2145000 (70.8)	55 (26.3)	882886 (29.2)	209 (100)	3027886 (100)
2005-06	76 (27.3)	1914826 (33.9)	156 (56.1)	2866000 (50.7)	46 (16.5)	871412 (15.4)	278 (100)	5652238 (100)
2010-11	118 (38.9)	2805089 (40.7)	140 (46.2)	3156552 (45.8)	45 (14.9)	936314 (13.6)	303 (100)	6897955 (100)

Source: Food Corporation of India/Central/State Warehousing Corporation U.P.

Table: 3.11 Classifications of the Workers in Uttar Pradesh during 1991-2011

Year	Cultivators	Agricultural Labor	Household Industries	Other Services
1991	53.2	18.9	2.4	25.3
2001	43.9	19.4	6.8	29.7
2011	32.4	22.3	6.3	39.0

Source: Various reports of Statistical Abstract Uttar Pradesh, Lucknow

Table: 3.12 Gender Wise Classifications of Workers in Uttar Pradesh during 1991-2011

Year	Cultivators		Agricultural Labor		Household Industries		Other Services	
	Male	Female	Male	Female	Male	Female	Male	Female
1991	53.90	48.10	16.60	35.80	2.20	3.50	27.10	12.40
2001	42.90	34.30	20.10	41.20	4.30	8.3	32.5	16.16
2011	31.10	22.20	27.60	38.40	4.70	9.60	36.40	29.60

Source: Various Reports of Statistical Abstract, Uttar Pradesh, Lucknow

Table: 3.13 Type of Workers in Uttar Pradesh during 1993-2010

Year	Self-employed	Regular Wage	Casual Labour	All
1993-94	71.60	8.60	19.60	100
2004-05	74.11	9.00	16.80	100
2009-10	66.28	9.70	24.00	100

Source: State Planning Commission, Government of U.P

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Chapter-IV

AGRICULTURAL CORPORATE COMPANIES IN INDIA

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AGRICULTURAL CORPORATE COMPANIES IN INDIA

According to Population Census 2011, the population of India has increased to 121 crore with a decadal growth rate of 17.64 per cent. The increased population will definitely aggravate problem of food security. It is a well-known fact that an overwhelming majority of the farmers in India are marginal and small. So increase in population creates a pressure on land which is fixed, leading to decrease the per capita agriculture land. Hence, operated holdings will not be viable in the sense of production and profit because marginal and small farmers do not have much resources to adopt new and innovative methods for agriculture production. Fragmented land holdings have also meant that too many hands are employed to produce too little. 'Hidden/Disguised unemployment' is quite evident in the agricultural sector, as most of the land under cultivation happens to be of the single crop variety due to lack of irrigation facilities.

National Agriculture Policy of 2000 launched the private sector participation in the agriculture sector in India through contract farming and land leasing arrangements (Corporate Farming) to allow accelerated technology transfer, capital inflow and assured market for crop production, especially of oilseeds, cotton and horticultural crops, and seed production. In 2016, an expert committee of the NITI Aayog released a Draft Model Act that suggests making it easier and more beneficial for agricultural landowners and tenants to enter into legal, voluntary, mutually beneficial agreements. The Draft Model Act to formalise leasing of land - if and when adopted - will be a detailed implementation of a policy to ease restrictions on farmland rentals. The Draft Model Act makes it possible for all the estimated 25 million farmers renting agricultural land, including sharecroppers, to qualify for bank loans, crop insurance, and other government benefits. It should also give landowners the confidence to legally let out land by making it easy for them to get their land back once the agreed rental period ends. This will be beneficial for landowners, renters, the land itself, and agricultural productivity.

Further, the Government has made its intent clear while announcing big investments in agriculture in 2016-17 budgets. One thing that can really galvanise the sector is enabling larger land holdings and incentivising the farmer and private sector

to take land on long-term lease and make the requisite investments in terms of capital and technology. The private sector is better placed to improve yield through research, modern irrigation methods, introduction of high yielding varieties and appropriate crop rotations to increase soil productivity. Enhanced productivity and cost efficiency will reflect in increased farm incomes.

Leasing out land to a better organised private farming company can have decisive impact both on productivity and the income of the lessor. Landowners can not only earn regular rental from their leased out land but seek employment with the lessee cultivator, which can earn him/her regular wages as well. Alongside this income multiplier, the potential impact of private sector intervention on the overall agronomic environment too can be of immense value. Private management can not just dramatically transform the way the factors of production- land, labour, capital and technology are employed in the sector. It can also leave a powerful 'demonstration effect' even on other farmers. These farmers, in large numbers, can gain from best practices to increase their yield per hectare as well as become a partner in such private initiatives. Another equal powerful consequence is private sector involvement in agriculture. Sustained investment in post-harvest management, and processing by corporates which can create incremental employment opportunities to take care of the 'hidden unemployment' in rural areas (Mittal, 2016).

There are many cases of corporate farming in India as land ceiling laws have been either manipulated by some corporates in the past or have been liberalised by some provincial governments as part of the new economic regime and in a bid to attract domestic corporate and foreign investment into agricultural sector (Singh, 2006). There are various companies doing contract and lease farming in India as well as in the state of Uttar Pradesh. This chapter explains profiles of top most corporate farming companies in India as well in Uttar Pradesh state in particular.

4.1 Corporate Farming Companies in India:

Jamnagar Farms Private Limited

This is a subsidiary of Reliance Industries (Mukesh Ambani Group). This came into existence in 2003 at Mumbai. Initially, Jamnagar Farms has set up a 1,700 acres agri-forestry and agri-horticulture farm near to the refinery. This farm uses the recycled wastewater from the refinery for irrigation purposes. In 2005, farm size expands up to 7,500 acres from 1,700 acres. The farm was originally set up as an

environmental protection measure near its refinery. Now, it is being seen as a profitable venture in itself. The company has invested Rs. 10 crore on the farm during the 2003-06 and plans to have such farms in other states like Andhra Pradesh, Maharashtra and Karnataka. The projects are expected to take seven years for breakeven and give 30 per cent return after that. It has also been allotted 625 acres of government-owned panchayat and common land for its Rs. 5000 crore agribusiness project in the state of Punjab out of which 300 acres are prime agricultural land. Some of this land (150 acres) is on a 30-year lease and the rest is bought by the company. It is undertaking export-oriented corporate farming. The company is also planning to sell the farm produces in domestic market through Reliance's retail outlets (Singh, 2006). Apart from mango which will constitute the bulk of the produce, 29 other products have been identified for the purpose. Jamnagar Farms owns Asia's biggest mango orchard spreading over 450 acres. (Bose, 2006)

The company has planted 103 varieties of mango at the orchard. Apart from major Indian varieties such as Kesar, Alphonso, Ratna, Sindhu, Neelam and Amrapali, they also have foreign ones such as Tomy Atkins and Kent from Florida, U.S. and Lily, Keit and Maya from Israel. Five of the 37 varieties are being produced for the first time in the country. The company is targeting a production of 400 tonne plus in the year 2005 and 1,835 tonne by 2010 and 3,562 tonne by 2016 (Ray, 2005).

Big India Farms (BIF) Pvt. Ltd.

Big India Farms (BIF) aims to play a key role in food supply and food security for India. Agriculture in India is highly divided, without economies of scale and is often far behind in using the latest technologies related to inputs like seeds, nutrition, harvesting. However, latest technology is required for highest gains in farming. Because of minimal/non-existent water harvesting, there is heavy dependence on monsoons every year, which creates large fluctuations in the crop supplies year-to-year. In addition, about 25 per cent of India's food production is wasted during logistics and storage. Therefore, there is a serious need to increase food production through better-organized farming practices, and reduce wastage through better supply chain practices. Company also have experience with cold storages and will move further on that front in the coming years, after we execute our planned roadmap for increasing the farmland under management.

Big India Farms Private Limited is a Private Company incorporated at Registrar of Companies, Delhi on May 2007. This is a natural farming company in India with end to end expertise in natural farming including forest/plantation development, agriculture and supply of agricultural products, like millets, food grains, pulses, fruits, vegetables, honey, eggs, poultry, and medicinal herbs. Currently, company manages about 1700 acres farmland, which includes various stages of natural farm development to farming and selling the produce at best possible prices. All company land is in M.P. state, due to favourable regulations for farmland ownership and organized farming. It also helps operational efficiency. The company has farmland in 3 regions in M.P. state: Sohagpur (near Bhopal), Umaria/Mandla (near Jabalpur) and Chhindwara (near Nagpur). In seasonal crops, company grows millets, toor dal and mustard. In fruits, they grow various varieties of guava, mango, jackfruit, lemon, moringa, karonda, papaya, and other local exotic berries. In addition, they also protect roughly 5000 fully grown teak, subabul, palash trees on land. They also have beehives in the natural farms, in addition to a large poultry division and silkworm production.

As company have a long-term approach to natural farming, they have been building private canals, water harvesting, stop dams and solar power at the farms. In addition, they have also started building facilities for rural school and other amenities where they operate. Company is also building a consumer network that relishes and stays healthy with their natural grown products, and a modern food supply chain that will include modern food processing technology and cold storage capabilities. Hence, the vision of company is to bring pristine, unadulterated and most healthy food products directly to the consumers.

The company has also expertise in farmland development and will be the manager of the purchased land under a simple annual land management agreement. Many professionals across industries have already bought such land and given back to the company for farm management. Any Individual Investor/Farm owner can invest in land along with company current farms, where they will create and manage the natural farms. They manage and operate the farm under a specific farming agreement. The company has 1700 acres of farmland under management today with 900 acres more in pipeline. Over the next 5 years, company aim to have 10,000 acres of farms under management and they are adding new farm owners. Another way to participate

in BIF is that if someone has 100 acre plus farmland and willing to give it to company for long-term for natural food farming then company can have a discussion. Depending on the state laws and company's ability to create the farm at the location of owner of the farmland, company shall enter into a binding contract for creation, management, and income sharing from the natural farm over long term, typically 15-30 years. In every case, company will operate under tightly defined contractual agreements, where company manages farmland for long-term (typically 15 years), makes the necessary investments and takes the risks of growing organic food products, and shares the income/returns coming from farm in a pre-defined ratio.

The company manages land through its own full-time team. They do not sub-contract or sub-lease the land. Each zone has one manager, who manages the leased or owned infrastructure and the projects. Company hires people from the nearest villages to execute the instructions. They avoid using earth harming equipment like tractor, JCBs and tools, except for water and path works. For seeds and stems, they have supply agreements with very knowledgeable partners, apart from their own production. They own water supply equipment and solar power set up.

Ajeet Seeds Pvt. Ltd.

Ajeet Seeds Pvt. Ltd. is a Company with excellence and earnestly dedicated to agriculture farming and geared up for genetic research using crop biotechnology for the prosperity of the country and its farming community. Ajeet Seeds Pvt. Ltd. established in 1986 when the Green Revolution was progressing and they actively participated and shared its role in this. This company is formed by Shri Padmakar Mulay, the son of a farmer and industrialist, keeping in mind to provide best quality seeds at affordable price to the farming community. With the humble beginning, the Company started production and marketing of public bred hybrids and varieties. Simultaneously a 'Research Wing' was established under the leadership of veteran agri-scientist with vast experience Prof. Dr. Madhukar Thombre. The company is among the top leading companies in Hybrid Seed Production of Cotton in India. The company produces wide range of quality seeds at different geographical locations across India such as Gujarat, Rajasthan, Maharashtra, Tamilnadu, Andhra Pradesh, Telangana and Karnataka. The company is associated with Organizers; Farmers for more than 29 years and their relationships with them have day by day developed and become one of the most reliable companies among growers. Company has more than

50,000 growers all over India. They are having different locations for different crops and as per suitable climatic conditions; they are producing various crops such as Hybrid Cotton, Cereals, pulses, oilseeds and vegetable's. Some of the farmers are associated with company for more than 25 years in production business. The company is proud to be in service of field crop as well as vegetable growers and to help to meet the food, feed and fiber demands of Indian population. The company has strong hybrid development programme in Cotton, Rice, Maize, Pearl Millet, Sorghum, Wheat and Sunflower among field crops; Hot Pepper, Okra, Tomato and Gourds in vegetable crops. The company also intensifying research in crops such as Cauliflower, Cabbage, Watermelon, Sweet Pepper, Cucumber etc. The On-farm research infrastructure at company constitutes of 600 acres of land, 10 satellite research farms, 35 multi-location testing centers spread over varied agro-climatic zones of India. Present focus for product development is intended for the Indian as well as overseas markets. This helps the breeders in developing and identifying high yielding products resistant to biotic and abiotic stresses that are suitable to diverse agro-climatic zones.

Ion Exchange Enviro Farms Limited (IIEFL), Pune

This is a subsidiary of the Ion Exchange India which was set up in 1995. It has 12 farms with four in Tamilnadu, seven in Maharashtra and one in Goa. A total of 1500 acres land is made up by about 650 acres in Tamilnadu, 750 acres in Maharashtra and 100 acres in Goa. The land put to CIS (Commonwealth of Independence States) was bought from farmers and was cultivable wasteland. Each farm is in a compact zone in each state and mostly in Konkan region. The land was bought at the rate of Rs. 25,000-30,000 per acre. The CIS has provided 80:20 sharing of profits from plantations. There were about 800 participants in the CIS with the largest and the only one with 150 acres and the smallest with 0.5 acres which was the minimum needed as per the scheme. There is a formal agreement with shareholders which is renewed every 5 years. The company is only managing the farms on behalf of the owners. Now, certified organic production for domestic and export markets are undertaken in these farms. The farms have been leveled and provided with drip and lift irrigation implemented by Excel and Netafim. All these farms are now totally organic and certified by EcoCert since 1997. The certification cost for all the farms is Rs. 7 lakh per annum. The farms were bought in the name of the directors of the company as agriculturist, who were so, to begin with, and some employees of the

company who were also agriculturists to avoid the Land Ceilings Act. The other shareholders in the scheme to whom the land was to be transferred were made agriculturists by buying 100 acres of wasteland in M.P as it was already permitted there. This land was bought by the company in the name of investors. The titles of the farms bought in Maharashtra were transferred to these so-called agriculturists. In Tamilnadu and Goa, there is no condition of only agriculturists being eligible to purchase land. Though the share price varies across farms and farmers in Maharashtra, it was Rs. 1, 30,000 per acre per share of which Rs. 30,000 was spent on land development and registration besides maintenance of the land. The gestation period has just got over and now the 80:20 sharing will take place. However, the land appreciation has already taken place for the investors. The company also gives gifts of farm or any other organic produce to the investors. Mainly, horticultural crops are grown on IEEFL farms besides some intercrops. The organic bananas were sold to the National Dairy Development Board (NDDB) during 1998-2003 for processing into banana puree for export which were of the order of 400 Million Tonnes (MT). These were advance orders with 50 per cent advance payment and a premium of 30 per cent on market price for conventional bananas in Jalgaon market in Maharashtra. Besides, a commission of Rs. 1 per kg was paid as transport cost for delivery to the NDDB factory at Goregaon in Mumbai. The NDDB factory was also certified organic as part of IEEFL's 'chain of custody' with the cost of certification being born by the NDDB. Other than selling to the NDDB, the organic produce was sold in the local market as the company was not involved in exports or domestic marketing of organic produce. Even now, there are no direct exports by the company. The supplies to NDDB have been stopped now due to crash of international prices for banana puree. The CIS still continues though no returns have been given to the investors so far. There is a farm manager for each farm and one assistant for 50 acres each. The labour supply comes from those who sold land to the company and work as casual labour. The manager and the assistant, besides a watchman, stay on the farm. The farm managers of the company have been trained in organic farming by experts. The present supply chain manager is a former employee of Excel Industries. Since its own farms were in wasteland, it got certification in first year itself. It also provides consultancy for organic farms at the rate of 15 per cent of project cost except land and infrastructure or including them in some cases. It has provided such services to 12 farms in India

already and one in Oman. So far as corporate farming is concerned, the cost of production is very high due to the high overheads. Here, the company is continuing as its only managing the farms in the name of shareholders who are landowners (Singh, 2006).

FieldFresh Foods Private Limited

FieldFresh Pvt. Ltd. is a joint venture between Bharti Enterprises and Del Monte Pacific Limited. This company was incorporated on 6 September 2004. It acquired 300 acres of land from the Government of Punjab for its model R & D farm called the 'FieldFresh Agri Centre of Excellence' near Ludhiana. The primary focus is on crop and varietal trials, progressive farming techniques, and identification and adoption of appropriate technologies. The farm includes 42 acres of state-of-the-art protected cultivation including poly-houses, glass and greenhouses, and net houses. All FieldFresh farms are Hazard Analysis and Critical Control Points (HACCP), EurepGap, British Retail Consortium (BRC) and AVA accredited. It has leased in 4000 acres land and is using those farmer owner-cultivators as labour on these leased farms. Distribution of fresh fruits and vegetables is done to the European Union, Eastern Europe, South East Asia, Middle East and the CIS countries. It has already sent the first consignment of vegetables to the U.K. included okra, bitter gourd and chilli. The project claims that the marginal lease farmer livelihoods have improved compared to owners as the project pays minimum wages (Rs. 80 per day). Thus, a farmer whose land is leased in by the company gets Rs. 15,000 per acre lease rent and if two of his family members work on these leased out farms as labour. They earn Rs. 57,600 annually. Thus, a two-acre farmer can earn about Rs. 90,000 (30000 rent plus 60,000 wages) annually compared with what he gets from his farm (Rs. 50,000) as gross output (without any cost deductions) if he goes for wheat and paddy crop cycle which is very common in Punjab. The company is also working with other agribusiness firms like Raj Tech Agro Plantations, Jaipur and Satluj Organics, New Delhi for leased land production of fruits and vegetables. In 2005, Raj Tech had leased-in 200 acres land from 17 farmers near Chomu at the rate of Rs. 7000 per acre and was paying Rs. 5000 per month to supervising farmers. The company gets 17 per cent of the profits made by FieldFresh on the sales of the supplies made (Singh, 2006).

Nijjer Agro Foods Limited

This is a public limited company, incorporated in 1990 with an investment of Rs. 20 crore in the state of Punjab. Nijjer Agro Foods Ltd. was promoted by Wassan Singh Nijjer, Satbir Nijjer and Navdeep Nijjer. The company is an innovative and flexible company that produces quality fruit and vegetable ingredients for food processing industry across the globe. The company harvests and manufactures its own produce to process ketchup chilli sauce. It is producer and exporters of chilli products including red chilli puree, chilli sauce, and chilli powder. The company employs about 250 regular staff and more than 600 casual workers. It has an agreement with Nestle for the supply of tomato sauce. It is processed at the company's premises and packed and sent to Nestle. The tomato processing activity was started in sauce 1991 with a capacity of 330 tonnes per year. The main products of the company are tomato paste, chilli paste, garlic paste and ginger paste. In 2006 company also has taken 4,000 acres land on lease for the production of fruits and vegetables in Amritsar (Singh, 2006).

Sutlej Agriculture Private Limited

Sutlej Agriculture Private Limited is a Private incorporated on 07 November 1996 in Punjab. It is a non-government company and is registered at Registrar of Companies, Delhi. Company has acquired 5,000 acres land at three places of Punjab (Fatehgarh Sahib, Sangrur and Jalandhar districts). Company Lease-in land at the rate Rs. 17,000 per acre for 2.5 years. The company deals mainly in vegetables production for FieldFresh. The leaser farmer provides all farm machines and operator, minimum 25 acres with valid 10 H.P. tubewells connection required in one place. Company also provides local leasee farmers (minimum intermediate pass) employment as managers for Rs. 6, 000 per month. Company has land leased in a local large farmer's name without any written agreement. Company pays Rs. 85 per day for men/women. Working hours at the farm for workers is 8A.M.-5P.M. (Singh, 2006).

Monsanto India Limited (MIL)

MIL existed in India since 1975. With a team of 352 dedicated members, the company operates in key businesses of high-yielding hybrid maize seeds, marketed as brand DEKALB, and crop protection herbicide brand roundup. The Monsanto Farm AgVisory Services (MFAS) supports these businesses to provide farmers with advisory offerings on better agronomic practices to help improve their crop yields and quality. Company is focused on improving crop productivity through its advanced research in maize cultivation, access to a wide library of global maize germplasm, breeding technology and techniques, new high-yielding hybrid seeds, best-in-class manufacturing facilities, extensive agronomic activities and on-farm technology development. Rooted in trust and committed to sustainable agriculture, company work closely with farmers through various partnerships and associations to nurture their dreams for a better life. Company's partnerships extend across NGOs, State Governments and Agricultural Universities.

Sun Agrifresh Industries Pvt. Ltd.

This company came into existence on 16 March 2007. Formerly, company was known by the name Sun Infratech Pvt. Ltd. This has emerged as a competitive player in agribusiness in India. It has more than 4500 acres of land under cultivation all over the country. With a plethora of expertise in various fields, the company is proficiently spreading its wings into every business that is close to nature. Few of its success stories can be seen in the areas of organic farming, contract farming, cultivation of cash-rich crops and medicinal plants, retail of organic and conventional foods, dairy farming, nursery plantations and landscaping, agricultural consultancy. It also provides consultancy services in the above mentioned agricultural practices, through its 'Consultancy Wing", which consists of eminent scientists who are experts in their respective fields. The company has a multidisciplinary team of agriculturists, horticulturists and scientists who are constantly striving to "Build trust with affluence". Company also has a chain of retail stores that redefine the concept of convenience shopping. Owing to the company's robust agricultural presence in the country, the products available in the "Sun Foods" range are sourced from company-operated farms and associates thus ensuring premium quality at reasonable prices. Apart from the "Sun Foods" brand, a wide range of quality products from leading brands will be made available to cater to all daily needs of customers under one roof.

A complete integration between the company's farms and retail outlets ensures exclusion of middle-men from the supply chain, hence products are offered to customers at affordable rates without compromising on quality. Sun Mart stores are modeled on a concept that is a combination of Modern and Conventional retail platforms. These stores pack the comfort and warmth of a Kirana Store and the convenience and range of a modern retail outlet. It has many current agricultural projects: **1.Organic Farming:** Various types of vegetables, fruits, cash-rich crops, flowers, medicinal plants, cereals and pulses are being cultivated, without the use of artificial pesticides and fertilizers. **2. Contract Farming:** The Company has signed an agreement with Sriram DCM Group for cultivation of high-quality mustard seeds, as part of the "Haryali" project. **3. Medicinal Plant Cultivation:** The Company is cultivating Aloe Vera plants for the production of Aloe Vera juice which will soon be available in the market, as part of the range of products offered by the company's retail wing. **4. Sun Poplar Farming Project:** Sun Agrifresh has set up a sustainable timber plantation project which aims at reforestation of large blocks of land. Along with reversing land degradation, the plantation is also playing a small role in reducing the greenhouse effect. **5. Dairy Farming:** Sun Agrifresh has a dairy farm in Uttar Pradesh, which houses close to 500 exotic, high milk yielding cows. The daily production of milk is more than 12000 liters. **6. Jatropha Cultivation:** Sun Agrifresh is into plantation of Jatropha curcas, a biodiesel plant in 2200 acres land in three districts of Chhattisgarh. This project is being implemented under joint venture Company of Indian Oil Corporation Ltd. and, Chhattisgarh Renewable Energy Development Agency (CREDA), Chhattisgarh. The seeds of Jatropha contain 27-40 per cent oil that can be processed to produce a high-quality biodiesel fuel, usable in a standard diesel engine.

Genera Agri Corp Limited

Genera Agri Corp is a corporate farming company in India with farm business model that entails enrolling the farmlands on lease basis and support the farmers with technical and managerial inputs for successfully running farming as a business enterprise. Genera Agri Corp Ltd. was incorporated in the year 1992. The company has approximately 4000 acres of land which spread across Andhra Pradesh, Tamilnadu and Maharashtra.

Genera's unique strength in this business is the extensive backward linkages it has established with the farmer community and has enabled to build a competitive and efficient procurement system. Company has developed immense capabilities in farming operations and has technically competent and committed team of Scientists, Agronomists, Agribusiness Specialist Economists and Management Graduates.

Company has developed in-house agricultural production practices, innovative farming techniques identifies and adopts appropriate technologies. Genera has initiated with their core strengths of technology and R & D to maximize returns to farmers as well as to the company. Company believes that experienced and professionally qualified members, equipped with the latest infrastructure facilities will undertake full-time research that will lead to better crop cultivation. It has also been their endeavour to continuously upgrade and improve their cultivation technique for better output.

It produces more than 40 varieties of fruits and vegetables which provide company with a natural hedge against dependence on any particular crop. Company has commenced dealing into organic coffee beans and kasturi turmeric in the fiscal year 2011. Company believes that there is market potential for various cash crops like cashew, spices. Company also propose to set up horticulture corridor by establishing pack houses, cold storages and ripening chambers, which will enable us to market our products in an organized manner across India under the brand name. Company keep identifying such crops which will enable to have a foothold in the market and thus providing significant opportunity to expand. Company also proposes to venture into marketing of apples, Nagpur oranges and further expand their grapes garden cultivation through contract farming in the near future.

Company also intend to focus on brand building of their existing exclusive retail outlet brand "Genera Fresh" by setting up new outlets in new geographic areas having good potential growth. Presently, company’s retail outlets are primarily located in the city of Hyderabad which company intends to expand in other metros as well as Tier-1 and Tier-2 cities of Andhra Pradesh, Maharashtra and Karnataka in a phased manner.

In order to expand their operation globally, they have promoted wholly owned subsidiary in U.A.E. by the name "Genera Agri Global Ltd." to create marketing platform in Middle East for export business. Due to industrialization and

infrastructure development, conversion of agriculture land to non-agriculture land has bearing impact in the availability of fertile agriculture land and eventually, agricultural labours are migrating into non-agricultural activity. Company intends to acquire 1, 00,000 acres of agri lease lands in African countries like Tanzania, Ghana, Mozambique, Malawi and Madagascar. Further, through this subsidiary, company is negotiating to acquire 10,000 acres of agri lease lands in Tanzania to meet the increasing demand of food and fuel crops in the African and European markets. As the availability of agricultural land is decreasing to commercial land and whereas huge untapped fertile agriculture land bank is available at a reasonable rental rate at Africa where company can implement farm mechanization cultivation and produce large quantities of food grains because it is not possible in India since the land extents are small.

Hosachiguru

Ashok Jayanthi, Sriram Chitlur and Srinath Setty are engineers who left their jobs to work in the agriculture space. Together, they have formed Hosachiguru- an agricultural asset management company based in Bengaluru in the year 2012. All three had inherited farmland from their families. Even though, as working professionals, they couldn't dedicate a lot of time to farming, they still managed to do so on the weekends. Seeing them balance farming so well with their professional lives, people started asking them for advice and tips on how to manage their agricultural land. This is how they decided to start a company to help others invest in agriculture. They were joined by Hemanth P., who has a background in investment and wealth management. The company started with identifying arable parcels of land and enabled various investors to invest in these pieces of land. They typically tend to be busy executives like corporate managers, doctors, lawyers, auditors and businessmen looking for alternate opportunities to responsibly grow their wealth and generate passive income. These 'next generation farmers' lease back the land to the company team, who turns it into sandalwood farms with short-term complimentary crops like pomegranate and drumstick.

The company's first project involved managing 50 acres of land. Company manages about 400 acres of land and has already received Letter of Intent for more than 500 acres of land, which they will add to their portfolio in the coming financial year. Company also have 125 acres of land under cultivation in Anantapur district,

Andhra Pradesh–one of the driest region in India–and are consulting with another 250 acres of farms. Their second business vertical has also matured and now agri-operations management comprises 75 per cent of company's portfolio while the rest is occupied by agri-business investment. Company also facilitates capacity building by providing training and teaching technology modules to its farmers. "Their farming approach, employing rainwater harvesting and other techniques have actually enhanced the soil quality and water table levels in the region. By employing local farmers, company has created sustainable livelihoods for nearly 100 people. Today, company manages agricultural assets worth over USD 7 million in horticulture, timberland, protected cultivation, and nursery.

The company aims to build a strong supply chain to market its produce to the organised retail space by investing in a packing, grading and a cold storage unit. The fragmented market is unable to supply to such stores and gain from market rates because they cannot guarantee a regular flow of produce from small patches of land.

The company is responsible for the design of farms, procuring saplings and monitoring the overall operations of the farm. The firm works towards promoting structured investment plans in commercial farming and practices "precision farming." Company's gains come from the final harvest. Thus, the investor is given a certain guarantee from the company. Company receives a profit only if the investor earns. Investors benefit from the company's systematic portfolio management, transparent investment structure, deep expertise in precision farming and commitment to achieving environmental and community sustainability. Customers enjoy a substantial passive tax-free income of 15-20 per cent per annum returns on average. In fact, all returns from company to its customers are tax-free.

The company follows a simple three-step process in its agri-investment model. First, it procures land for its investors. The land is chosen on the basis of water availability, soil conditions, and the budget of the investor. If a client already owns land, company takes on the management of that land. It then designs and develops the land depending on the crops selected for cultivation. It prepares the soil for farming, sets up a drip irrigation system or bore well, hires labourers to work on the farm, obtains an electricity line for the farm, and so on. It plants the seeds, prepares a roadmap for the owner and the supervisor, and also educates them on the practices to

be followed. The client also has the choice of continuing with the operations and maintenance services provided by the company.

The company's farming practices are careful and precise. It adopts cutting-edge techniques to ensure maximum productivity. It employs the use of precision farming- a method that helps to grow more crops by using fewer resources and reducing production costs. For those with smaller budgets, the company cultivates short-term horticultural crops like banana, melon, ginger, papaya, etc. for who have more time and money to invest in farmland, company plants timber- teak, sandalwood, Melia Dubia, etc. Company also consults experts from various fields. It has set up sound irrigation practices with inputs from Ayyappa Masagi - the Water Warrior of India. Also, H.S. Anatha Padmanabha, a renowned scientist, guides the company on sandalwood cultivation.

The company operates close to Bengaluru due to easy accessibility and logistics. It plans to expand slowly to other rural belts in Karnataka. However, legal hurdles prevent those who don't own ancestral agricultural land from buying it in the state. To counter this problem, company also owns and works on land in Anantapur district of Andhra Pradesh, where there are no such laws in place. Here, the company has employed the services of locals to ensure the farms are maintained well.

For long-term crops, it takes a smaller share. Though the company doesn't completely practice organic farming, it intends to get there in the future. As the land bought from farmers is usually contaminated by the prolonged use of various pesticides, the company works towards neutralising the soil and restoring its quality (Garcia, 2016).

4.2 Corporate Farming Companies in Uttar Pradesh

Sun Shine Agri Farms Private Limited

The entrepreneurs behind Sun Shine Agri Farms Pvt. Ltd. are Colonel Subhash Deswal (Retd.) and Lal Krishna Yadav. They had pursued other vocations before turning to agriculture in 1998. Colonel Deswal served in the Indian Army for 21 years and Yadav, a postgraduate in chemistry, trifled in small business ventures. But, coming from agricultural families, both have farming in their blood. Since neither owned any significant property, they decided to get into lease farming. For five years, they experimented and like all other small and marginal farmers lost

heavily. With the help of some forward-looking agricultural scientists, who advised them to master a single crop, they were able to strategize. The strategy was to focus on carrots. Two years later this resulted in the introduction of sensible mechanization, which led to the production of carrot of the best possible quality in the region. In about two seasons their product found its own market. They have started lease farming in Sikandrabad of Bulandshahr district. Now, Sikandrabad is known as the carrot capital of north India.

The company cultivating approximately 963 hectares of land held by around 105 large and medium farmers, who are into lease farming, the experiment produces an average of 25,000 tonnes of carrot a year. Cold storage facilities are set up and maintained well in different locations close to the land under cultivation. According to company, the agribusiness institution that has brought together the farmers, Sikandrabad supplies carrots around the year to markets in different parts of India, including Bangalore and Hyderabad in the south. Now, they are supplying Sunshine carrot to a variety of wholesalers, industrial processors and retailers such as Mother Diary and Fun tops as also to some suppliers of Reliance retail outlets. The stability and growth achieved by this medium scale enterprise attracted many big agribusiness players and corporates to Sunshine Farms. Among them were Global AgriSystem, which is part of the Katra group involved in making strategic investments and carrying out businesses in diverse fields, and the Aditya Birla group, which runs the more retail outlets in different parts of the country. While Global AgriSystem had a joint venture with Sunshine to replicate the Sikandrabad model in at least four centers in India, the Aditya Birla group had a collaboration to ensure systematic production of a number of agricultural products for the group. Both partnerships were shortlived. "The Aditya Birla group had a corporate style of functioning, with their executives setting up computerised operations from farms and even sending reports from the fields. But ironically, the corporate office used to function only from 10 A.M. to 5 P.M., and such time specification was not suited for agriculture, which during periods like harvesting is a 24x7 operation. Naturally, company approaches did not match," Deswal said. Global AgriSystem did bring in investment to take the Sikandrabad model to other places. But, Deswal says this too did not achieve the Global AgriSystem did bring in investment to take the Sikandrabad model to other places. But Deswal says this too did not achieve the desired goals on account of operational

factors. Global AgriSystem withdrew step by step from production and marketing. Since 2011, the entire operations have been once again carried out by the original Sunshine team. However, as per the agreement signed as part of the joint venture, the ownership of the biggest carrot cold storage built by Sunshine Farms now vests with Global AgriSystem. "It is a fair deal and company have leased out that storage from Global AgriSystem now. Though the joint venture is not operational company are coordinating and functioning well," Deswal said. However, the fact remains that corporate-driven joint ventures and funding in the agriculture sector holdout the prospect of changing the hands of agricultural property rights. From their own experience in setting up a "trust-based contract farming system" with small and marginal farmers to associating with corporate agribusiness entities, Deswal and Yadav are clear that unless corporates are able to really understand the dynamics of Indian agriculture, they would not be able to go far. "It is one thing to visualize something sitting in air conditioned conference rooms and totally another to really understand how much of one product would grow in an acre in a particular region." The duo as well as associate farmers say that it was the conservation technology innovations and infrastructure improvement that they created in the form of laser land leveling and raised bed planting that took them a long way in building up the Sikandrabad model (Ramakrishnan, 2013).

Leeward Golden Mushroom Producers Company Limited

This company has been started farming operation in 2016 in the Pilibhit district of Uttar Pradesh. Company has been registered with the Registrar of Companies under the company registration act in the name of Leeward Golden Mushroom Producers Company Limited and this has five directors and five members. This company has been formed under an ambitious project of the central government known as PODF (Producers' Organization Development and Upliftment Corpus Fund). The district of Pilibhit had been assigned the target of forming one company under this project. The inception of this project in Pilibhit is expected to bring about a preening change in the lifestyle of small and marginal farmers. NABARD (National Bank for Agriculture and Rural Development) has focused its priority to promote the production and marketing of Mushroom in district Pilibhit at the initial stage of the project. NABARD would provide interest-free financial assistance to the company to the tune of 5.06 lakh for a period of three years. Moreover, cultivators would also

undergo training G.B. Pant Agriculture University in Pantnagar (Uttarakhand). The Pilibhit district is Mushroom cultivation does not require any typical or unaffordable infrastructure as well as the inputs. The wood logs, thatches and mud which are needed for the structuring of production houses for mushroom, are easily available with village people. The availability of straw and the cow dung used for making the beds for mushroom cultivation is also in abundance in villages (Agarwal, 2016).

Hi-Tech Agriculture & Consultation

This firm is established by Ram Saran Verma**.** This firm is about 40 km. away from Lucknow, the capital of the state U.P., on Lucknow-Faizabad national highway in the village Daulatpur, Block-Harakh, District–Barabanki. He has owner of nearly 6 acre cultivated land gained from his father. On this land, he started traditional farming of rice, wheat, potato, mentha etc during the start of his career. But it was not beneficial at initial stage. From here utmost desire to make the farming beneficial pinched him and he began to search new crop and technique beneficial to farming. In this sequence, he came across with different papers-magazines, fairs/gosthies, trainings, exhibitions, met with many farmers and their farms. He interacted and evaluated them and in 1995 started with banana and tomato as a new crop and mentha and potato with advanced scientific technique.

Now about 20 year of time has elapsed. Now, the company has 100 acres of land of small and marginal farmers on which banana farming is going on. Company has taken land on lease from the farmers. Company gives rent to the lease out land farmers at the rate Rs. 5000 per bigha. The Hi-tech farming adopting advanced techniques on hybrid tomato, tissue culture banana, rotation crop of potato-mentha green manuring, bio-fertilizers irrigation management, crop management, management of tillering, weed control, marketing and human resource development and the company have reached on one crore cost-benefit ratio per year. Besides this, company are in the contact of more than 50,000 visiting farmers, officers, officials, visitors, media persons, scientists, political dignitaries by honouring them, by interacting with them for beneficial farming and side by side creating 50000 man-days and correlating with 100000 farmers, out of which about 20000 farmers are doing their farming in the company model.

The company has also generated employment in the village and migration has been stopped due to corporate farming. Company has been providing employment to

50-100 people's daily on the farm. Company gives Rs. 250-300 for labourer per day. Farmers and farm labours are engaged regularly at the rate 20-200 mandate/day in crop rotation production model. In village for this work, 15-20 thousand mandates are engaged per year. Since 1995 total mandates are 1, 79,000 is a solution of unemployment of rural youth. To provide an employment farming model is a boon in rural areas through agriculture. The company is engaged with these activities and continuing since 1995-96. Table 4.00 gives the detail of employment during 1995-96 to 203-14. In the year 1995-96, the company provides employment to 40 persons and it increased to 400 persons in 2013-14.

Table 4.01 gives the detail of cost of banana production per acre in 2015. Table shows that the cost of banana production in one acre was Rs. 1 lakh in the year 2015. Similarly, table 4.02 gives the idea of production and net profit of banana in one acre. Production was 400 quintal in one acre in the year 2015 and net profit in one acre was recorded at Rs. 3 lakh.

4.3 Conclusion

It shows that the corporate farming is emerging in Indian agriculture. The multinational companies, domestic farming organizations are investing in agriculture. The agriculture is being treated by the companies as industrial sector. Because, the scale of operations of agriculture huge amount of capital. Commercialization of agriculture is the reasons for the industrialization of agriculture. The large scale operation of agriculture is giving economies of scale in Indian agriculture. The new agriculture policy has also encouraged the private parties to invest in agriculture by relaxing the land ceiling act in some states. Uttar Pradesh is one of the states going to corporate farming. Hence, there is need to analyse the pros and cons of corporate farming in India.

Table: 4.00 Details of Employment during 1995-96 to 2013-14

No.	Year	No. of Employed Person	Generation of Mandays/Year
1.	1995-96	40	3500
2.	1996-97	45	4000
3.	1997-98	50	4300
4.	1998-99	55	5000
5.	1999-00	65	5500
6.	2000-01	70	6000
7.	2001-02	80	7500
8.	2002-03	100	10,000
9.	2003-04	120	12,000
10.	2004-05	150	15,000
11.	2005-06	180	25,000
12.	2006-07	200	32,000
13.	2007-08	350	50,000
14.	2008-14	400	120000

Source: http://www.vermaagri.com/employment-generation

Table: 4.01 Cost of Banana Production per acre in the Year 2015

Particular	Expenses (in Rs.)
Land Preparation	4,000.00
Seeds	17000.00
Fertilizer	15000.00
Irrigation	14000.00
Crop Protection	2000.00
Bamboo	10,000.00
Labour Charge	30000.00
Other	8000.00
Total	**1,00,000.00**

Source: http://www.vermaagri.com

Table: 4.02 Production and Net Profit of Banana in per acre in the Year 2015

Production	400 quintal
Sales	Rs. 4,00,000
Expenses	Rs. 1,00,000
Net profit	Rs. 3,00,000

Source: http://www.vermaagri.com

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Chapter-V

SOCIO-ECONOMIC PROFILE OF THE STUDY AREA IN UTTAR PRADESH

Chapter-V

SOCIO-ECONOMIC PROFILE OF THE STUDY AREA IN UTTAR PRADESH

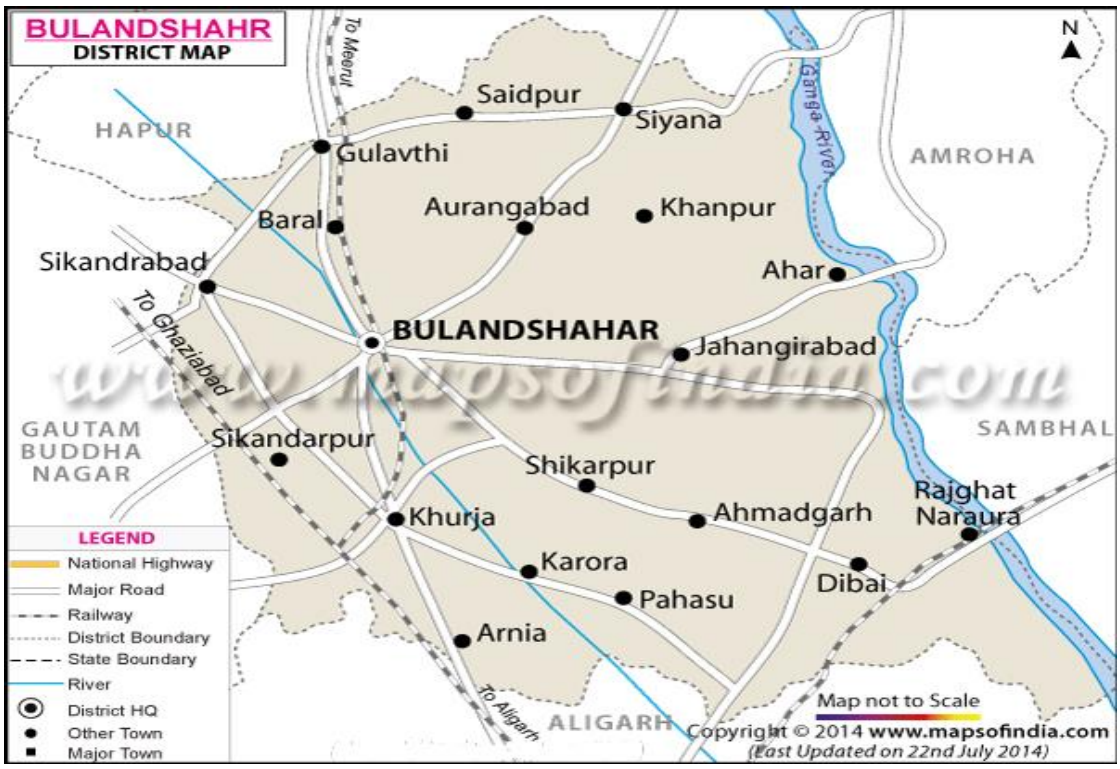
The Uttar Pradesh is one of the largest state and it is geographically situated in Northern part of India. It is the largest population-wise and fourth largest area-wise in India. Majority of the population of the state lives in villages and directly depends on the agriculture and allied sector for its livelihood. The state has been divided into 18 divisions and these divisions consist of 75 districts. Two districts have been selected from two divisions of the state for the current study. One of the two districts is Bulandshahr which come under Meerut division and another is Barabanki which comes under the Faizabad division of the state. The corporate farming is being adopted in these two districts of the state which is in its preliminary stage of advancement as compared to other places like Gujarat, Punjab, and Maharashtra in the country. This chapter presents the socio-economic profile of the study area in terms of population, population density, literacy rate, land use pattern, operational land holdings, occupational workers, crop pattern, agricultural production, agricultural credit, irrigation, industries, and financial institutions in both the districts.

5.1 Profile of Bulandshahr District

The District of Bulandshahr is located between Ganga and Yamuna rivers in the state of Uttar Pradesh. This is situated between 28.4^{0} South and 28.0^{0} North latitude and between 77.0^{0} and 78.0^{0} longitudes. The District is about 84 Km. in length and 62 Km. in width. The district is 237.44 meters above sea level. The district is bounded by Aligarh in the south, Gautambudh Nagar in west and Ghaziabad in the north. The district of Bulandshahr has been divided into seven tehsils namely Sikandrabad, Bulandsahar, Syana, Khurja, Shikarpur, Dibai, and Anupshahr. These tehsils are further divided into 16 blocks namely Bulandshahr, Gulaothi, Lakhaowati, Shikarpur, Khurja, Pahasu, Arniya, Sikandrabad, Anupshahr, Dibai, Danpur, Syana, B.B. Nagar, Jahagirabad, Uncha Gaon, and Agauta. Total numbers of villages in the district are 1242 in which 1174 inhabited and 68 uninhabited. I have selected Sikandrabad tehsil as sample unit for the purpose of the study.

Bulandshahr is an important agricultural district. It has undergone a green revolution. The main crops are like wheat, sugarcane, maize, and potato are grown here in abundance. The state government has declared fruit belt in Syana area of the district. Mango orchards are located in the area. White revolution in the form of milk production is also an important activity in the district. Sikandrabad area has emerged as the hub for carrot production in recent years and also known as carrot capital of North India. Production of carrot through the corporate farming has been going on by the Sun Shine Farm Pvt. Ltd.

Map- 5.00 (i) Bulandshahr District



Population

The district Bulandshahr has about 35 lakh people, out of which 18.5 lakh (53 per cent) are male and 16.5 lakh (47 per cent) are female. Child (aged under 6 years) population of Bulandshahr district is 16 per cent, out of which 54 per cent are boys and 46 per cent are girls (Table 5.01). Around 79 per cent of the whole population is from general caste, 21 per cent are from schedule caste. There are about 5.9 lakh households in the district and an average 6 persons live in every family. Table 5.02 shows that the majority of the population, nearly 75 per cent (about 26.3 lakh) lives in rural areas and 25 per cent (about 8.7 lakh) population lives in urban areas of

the Bulandshahr district. The rural population density of Bulandshahr district is 607 and urban population density is 4999 persons per km^2.The Hindu contribute 77 per cent of the total population and are the largest religious community in the district followed by Muslims which contribute 22 per cent of the total population. Female Sex ratios per 1000 male in Hindus are 887while in Muslims 929. As of 2011 census, there are 896 females per 1000 male in the district. Sex ratio in general caste is 899, in schedule caste 886 and in schedule tribe 678 (Table 5.04). The sex ratio in rural areas is lower in comparison to the urban areas.

Literacy Ratio

A person aged 7 years and above who can both read and write with understanding of any language is taken as literate. A person who can only read but cannot write is illiterate. The literacy rate of the population is the percentage of literates in the age-group seven years and above. Table 5.06 shows around 20.3 lakh people in the district are literate, among them about 12.5 lakh are male and about 7.8 lakh are female. Literacy rate (children under 6 are excluded) of Bulandshahr is 69 per cent. The literacy rate of male is 81 per cent and the female literacy rate is 56 per cent in the district. The literacy rate of SC is 64.2 per cent in the district. Literacy rate of SC male and female is 77.8 per cent and 48.9 per cent respectively. In case of the rural area, the literacy rate of total SC population is 64 per cent in which rural male literacy rate is 78.2 per cent while rural female literacy rate is 47.9 per cent. Similarly, in urban areas, the literacy rate to total SC population is 65.4 per cent in which SC male and female literacy rate are 75.5 per cent and 54 per cent respectively. The overall female literacy rate of female is low in comparison to male literacy rate in the district.

Workers

Work is defined as participation in any economically productive activity with or without compensation, wages or profit. Such participation may be physical or mental in nature. Work involves not only actual work but also includes effective supervision and direction of work. It even includes part-time help or unpaid work on the farm, family enterprise or in any other economic activity. All persons engaged in 'work' as defined above are workers. The reference period for determining a person as worker and non-worker is one year preceding the date of enumeration. Workers

are classified as main workers, marginal workers, and non-worker. Main workers are those who have worked for major part of the reference period (i.e. six months or more during the last one year preceding the date of enumeration) in any economically productive activity. Marginal workers are defined as the person who worked for 3 months or less but less than six months of the reference period (i.e. in the last one year preceding the date of enumeration) in any economic activity. And non-workers are those who have not worked at all in any economically productive activity during the reference period (i.e. last one-year preceding the date of enumeration) (Population Census 2011, GOI).

Table 5.07 shows percentage of the gender wise work participation rate in Bulandshahr district. Female work participation rate is very low in the Bulandshahr district. In the district, 34 per cent population engaged in either main or marginal work. 49 per cent male and 17 per cent female population are working population. Rural male work participation rate is same as in the urban male work participation rate (48 per cent) while the women work participation rate in urban area is very less in comparison to rural area in the district. In the district, 83.3 per cent of the total male population is main (full time) workers and 16.7 per cent are marginal (part-time) workers. For women, 49.7 per cent of the total female population is main workers and 50.3 per cent are marginal workers.

Industrial Classification of Workers

The workers are classified into four categories namely cultivators, agricultural labourers, household industry workers and other workers. Cultivators are those who work on another person's land for wages in cash or kind of share is regarded as an agricultural labourer. She/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. The 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 should consist of members of the household. The industry should not be run on the scale of a registered factory which would qualify or has to be registered under the Indian Factories Act and should be engaged in manufacturing, processing, servicing and repairs of goods. The activity relates to production, processing, servicing, repairing or

making and selling of goods. It does not include professions such as a pleader, Doctor, Musician, Dancer, Waterman, Astrologer, Dhobi, Barber, etc. or merely trader or business man, even if such professions, trade or services are run at home by members of the household. And other person includes those who have been engaged in some economic activity during the last year of reference period but not as a cultivator or agricultural labourer or worker in household industry. For example all government servants, municipal employees, teachers, factory workers and plantation workers those engaged in trade, commerce, business, transport, banking, mining, construction, political or social work, priests, entertainment artists, etc. Cultivators constitute 28.3 per cent of total industrial workers in which 30.9 per cent male and 20.1 per cent females share simultaneously in Bulandshahr district. These figures reflect that agriculture farming system is still dominant in the district.

Agricultural labourers account for 20.6 per cent of total industrial workers in Bulandshahr. The proportion of male and female agriculture labourers are 19.3 per cent and 24.6 per cent respectively. This proportion shows that female agricultural labourers have a higher share in comparison to male agricultural labourers in the district. But females are receiving low wages in comparison to male labourers in the district. It is also clear that majority of the females are involved in the agricultural activities in the district but don't get the rights in the agricultural land holdings in Bulandshahr district. Similarly total household industry workers dominated by females. Females constituted 12.6 per cent share while males share is only 3.5 per cent in household industry work. In the district the share of other workers category shows that 45.5 per cent workers involve in the economically productive activities in which the share of the male worker is 46.6 per cent and the share of females is 42.7 per cent (table 5.08). Hence out of all the industrial categories of workers, the majority of the workers belong to the other worker's category i.e. the services; businesses etc. provided most of the jobs in the district.

Livestock

Livestock is an important source of income generating in the rural areas. Livestock is domesticated animals raised in an agricultural setting to produce commodities such as food, fiber, and labour. The study area is known for its mixed farming pattern with animal husbandry as an important subsidiary industry. Animal husbandry is a component of modern agriculture that has been practiced in many

cultures since humanity's transition to farming from hunter-gatherer lifestyles. The scheduled castes also rear milch animal as their main livelihood activity. According to the livestock census of 2013 total population of animals in the district was 16, 96,151. The population of buffaloes has maximum number (12, 43,648) in total livestock population in the district. Besides this district also has 3,135 sheep, 1, 99,186 goats and 19,179 pigs (table 5.09).

Land Use Pattern

Agricultural land use means land under net sown area, fallow land and cultivable land excluding permanent fallow land. The cultivable area is known as agricultural land. Cropping pattern means the proportion of area under different crops at a point of time or year; it is a dynamic concept because it changes over space and time. The study of agricultural land use pattern is necessary to feed the human requirement, to study and solving land use problems and for optimum use of land to take optimum benefit without any harm to the land. For a better understanding of agricultural land use pattern in any region, the observer should have a deep knowledge of the general land utilization pattern of the region.

Table 5.10 shows land use pattern in Bulandshahr district in the year 2013. There is a decline in almost all categories (except, another uncultivated land excluding fallow land and area under grooves and bushes) from 1990-91 to 2000-01. The total forest area of the Bulandshahr district decreased from 8192 hectares in 1990-91 to 7675 hectares in 2000-01 but has registered slight increase +120 hectares (7795 hectares) in 2010-11.

Similarly area not available for cultivation i.e. barren and uncultivable land and land put to non-agricultural uses decreased from 52015 hectares in 1990-91 to 42220 in 2000-01 and slightly increased in 2011-12 (47207 hectares). But on the contrary, the area under other uncultivated land excluding fallow land increased from 16176 to 17208 during the period 1990-91 to 2000-01 but it registered a drastic decrease of 62 per cent and stand at 6535 hectares only (2000-01 to 2010-11) because of the rapid decline of pasture land, bushes, and barren uncultivable wasteland. Due to the adoption of new agricultural technology in Bulandshahr district there has been a major decline in the fallow land from 16472 hectares in 1990-91 to 3181 hectares in 2010-11. The net sown area was 3, 45,976 hectares in 1990-91 and decreased to 2, 83,208

hectares in 2000-01. Similarly, the area sown more than once was 2, 50,507 hectares in 1990-91 and decline to 1, 97,538 hectares in 2000-01 in the Bulandshahr district.

Cropping Pattern

Although the cropping activity goes on throughout the year in the district there are two distinct seasons i.e. Kharif season and Rabi season. Kharif season related to south-west monsoon, if it is good the crop response will be good on the other hand if the monsoon is unfavorable the crop response will be poor. The crops grown in Bulandshahr district in the Kharif season are rice, maize, jowar, bajara, arhar and moong. In case of inadequate rainfall farmers use the irrigation facilities which are quite satisfactory to meet the water shortages. While the rabi season is marked with the onset of winter, the temperature starts coming down in this season. Irrigation plays a very important role in this season. Almost every crop requires water at some point of time. Where pulses require least, vegetable needs the most.

Size of Land Holdings

Size of land holding is the main determinant of the farmer's welfare in the rural areas. Table 5.00 shows category of farmers in Uttar Pradesh. According to the agriculture census of Uttar Pradesh, the farmers are categorized on the bases of different landholding size.

Table: 5.00 Classifications of Framers

S.N.	Landholding size	Category of farmer
1.	Below 1 hectare	Marginal farmer
2.	1.0 to 2.0 hectare	Small farmer
3.	2.0 to 4.0 hectare	Semi-medium farmer
4.	4.0 to 10.0 hectare	Medium farmer
5.	Above 10 hectare	Large farmer

Source: Bulandshahr Sankhyakiya Patrika

Table 5.11 reveals the distribution of cultivators according to size of land holdings during the year 2010-11. The Bulandshahr district consists of 72 per cent cultivators with marginal land holdings and they cultivate 97.96 thousand hectares (32.4 per cent) of the total area. On the other hand, 16.6 per cent farmers belong to small land holdings and they cultivate 25 per cent of the area in the district. These

figures clearly reveal that the small and marginal land holdings (88.6 per cent) covered by these two categories and cultivate 57.4 per cent area in the district. In the district, large land holding covers only 1.4 per cent area which is very less in comparison to other size of land holding. Hence, small and marginal farmers have dominance in the Bulandshahr district.

Sources of Irrigation

The process of providing water to the crops is called irrigation. There are four major sources of irrigation. They are (a) canals, (b) wells, and tube-wells (c) Tanks and (d) other sources. Irrigated area refers to an area irrigated by all these sources. Irrigated area divided into two categories namely, net irrigated are and gross irrigated area. The net irrigated area is that area which is irrigated through any sources once in a year for a particular crop while the gross irrigated area is the area in which crops are irrigated at more than once in a particular year. It is counted as many times as the number of times areas are irrigated in a year.

Table 5.12 gives the detail of sources of irrigation in Bulandshahr district in the year 2012. The net irrigated area in the district was 3, 00,399 hectares in 2011-12 which was 100 per cent of net sown. Irrigation facilities are well developed in the Bulandshahr district. Wells and Tube wells are the major sources of irrigation in the district which covers 2,74,233 hectare land (about 92 per cent) of the total net irrigated area. Canals rank second best source of irrigation in the district and constituted 26,117 hectares (8.69 per cent) of the total net irrigated area. In the same way, gross irrigated area in the district was 5, 20,609 hectares (173.3 percent) of the total net irrigated area in 2011-12 in the Bulandshahr district.

Industries

There is a good potential in the industrial sector in the district. Khurja is a well-known industrial area of the district. Khurja is famous for its pottery industry. As per District Industry Centre (DIC) 505 big and small ceramic units are working in Khurja. The main raw material (clay) comes from Gujarat and Rajasthan. There were 246 registered factories during 2005-06 out of which only around 48 per cent are in working condition. The total number of registered units by the DIC is 10,609 out of which around 48 per cent only are in working condition. They mainly produce milk products, manufacture hand pumps, engineering goods and transformers. Besides this,

there are near about 650 units producing pottery. Sikandrabad is also an industrial estate situated 17 km. away from the Bulandshahr on the Delhi road. The main industries located here are related to manufacturing cement-pipes, ceramics, carpet, and paint, etc. Another significant activity is handlooms in which a large number of rural families are engaged in manufacturing. These products have a local market as well as in the neighboring districts.

In Bulandshahr district during 2011-12, number of registered industries according to 1948 industrial act was 385. While number of small industrial units in the district was 24 with a total employment of 452 persons during the period 2014-15 (table 5.13).

Education Facilities

Education plays an important role in the development of socio-economic conditions of the peoples in the society. It also enhances the living standard of the peoples. Education is commonly divided into different stages such as primary schools, upper primary schools, higher secondary schools, degree colleges and university. Table 5.14 shows number of educational institutions in Bulandshahr district. According to district statistics, the number of primary schools is 2870 and number of upper primary schools are 1126 in the district Bulandshahr in 2014-15. Similarly, 350 higher secondary schools are providing education in the district. At the higher level, there are 18 degree colleges and 14 postgraduate colleges in the district. For technical education, there are 2 industrial training institutes and 1 polytechnic institute are present.

Financial Institutions

Credit is the most important factor for the economic growth and development for the economy of any state. Credit also play an important role in improving agricultural production, productivity and eliminate the poor conditions of the farmers. Farmers are receiving credit through institutional sources (Commercial and Cooperative Banks) and private sources (Fellow farmers and money lenders). The Bulandsahar district consists nationalized banks, regional banks, cooperative banks, and cooperative agricultural and village development banks. The number of nationalized banks in the district was 206 and no. of RRBs, Cooperative banks,

cooperative agricultural and village development banks were 11, 28 and 7 respectively in 2013-14 (table 5.15).

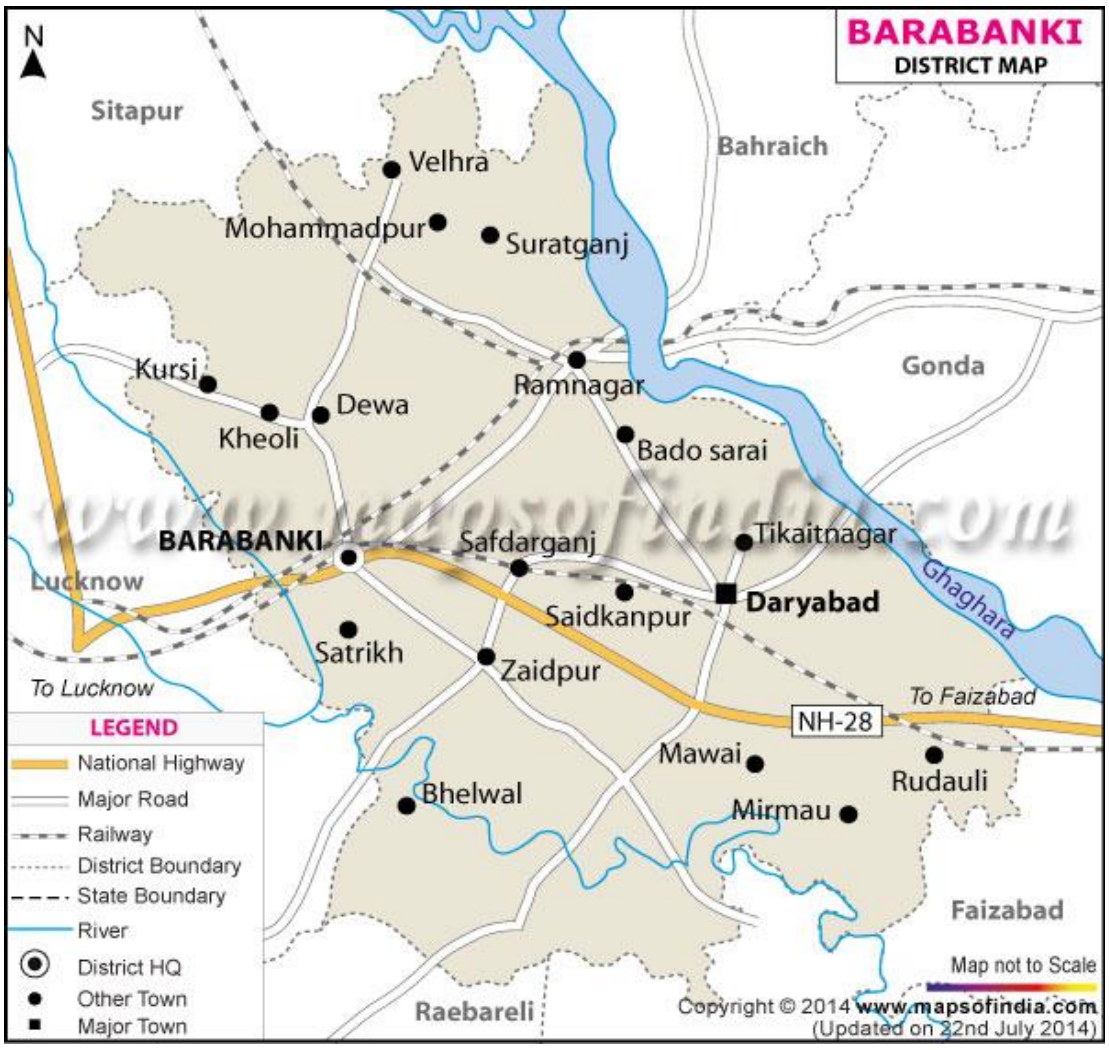
5.2 Profile of Barabanki District

The district Barabanki is situated about 29 Km. in the East direction of Lucknow, the Capital of Uttar Pradesh. This district is one of the four districts of Faizabad division located in the heart of Awadh region and it lies between 27°19' and 26°30' North latitude and 80°05' and 81°51' East longitude. District Barabanki is surrounded by district Faizabad in the East, district Gonda and Bahraich in the North-East, district Sitapur in the North-West, district Lucknow in the West, district Raebareli in the South and district Sultanpur in the South-East.

The main occupation of the district is agriculture. Main crops of the district are rice, wheat, pulses and other food grains and sugarcane. Barabanki is well fed by three Rivers, viz. Ghaghra, Gomti and Kalyani and their tributaries almost all year round, except some of them which dry in summers. The upper part of the district is sandy while the lower part is clayey. Besides it has some handicraft and small-scale industries too. Barabanki is also famous for weaving since the presence of Nawabs. The river Ghaghra forms the North-Eastern boundary separating Barabanki from Bahraich and Gonda.

The District consists of seven sub-division (Tehsil) namely Fatehpur, Ramnagar, Nawabganj, Haidergarh, Ram sanehi ghat, Rudauli and Sirauligauspur and fifteen Blocks viz. Nindura, Fatehpur, Suratganj, Ramnagar, Deva, Banki, Harakh, Masauli, Sidhaur, Triediganj, Haidergarh, Dariyabad, Banicodar, Puredalai, and Sirauligauspur. There are 139 Nayay Panchayat and 2091 revenue villages. The district falls under Indo-Gangetic plains of Uttar Pradesh physiographically is considered under the eastern plain zone of the state. The District is famous for the town area Deva where the grave of Soofi Sant Haji Waris Ali Shah is situated.

Map- 5.00 (ii) Barabanki District



Demographic Conditions

Table 5.16 shows demographic features of Barabanki district. According to the 2011 census Barabanki district has a population of 26, 73,581. Around 89.86 per cent population lives in the rural areas of the district. Only 10.14 per cent people live in the urban area which indicates that the majority of peoples involved in agriculture-related activities in the district. The religion-wise percentage of the population in the district is for Hindus 77.51 per cent, Muslims 45.04 per cent, Sikhs 0.12 per cent, Jain 0.11 per cent, Buddhists 0.09 per cent, and Christians 0.08 per cent, others not specified 0.05. The percentage of SC population is 26.51 per cent while ST population is 0.02 per cent in the district. The district has a population density of 741 inhabitants per sq. km. The literacy rate in the district is 61.7 per cent. The sex ratio of the district was 910 in 2011

Land Use Pattern

The land use pattern in any district shows that how much land is used in the agriculture production and non-agricultural production activities. Table 5.17 clearly shows that 66 per cent area is cultivated in the Barabanki district. Area under cultivable waste was 2.0 per cent and area under current fallow was only 8.1 percent in the year 2014. Similarly, land under open forest and miscellaneous plantation was only 1.5 per cent and 2.1 per cent respectively. Land in non-agriculture use was 14.47 per cent which is a threat fact to cultivable land because due to industrial and other developments most of the fertile land is going for this use.

Industrial Classification of Workers

Table 5.18 explained the situation of cultivators in Barabanki district. Cultivators constitute 46.20 per cent of total workers in the district. Agricultural labourers account for 27.10 per cent of total workers in Barabanki. Their proportion is almost same at 24.82 per cent at the state level. The proportion of cultivators among females is less than of males but in case of agricultural labourers their proportion is distinctly higher. However as compared to the state average the proportion of female labourers is lower in the district.

Operational Holdings

The operational land holdings in the economy are categorized as marginal, small, semi-medium, medium and large. The table 5.19 shows the number and area of different land holdings in Barabanki district. It is found that the total land area is 268.36 thousand hectares in Barabanki district of Uttar Pradesh. Table reflects that 370.41 thousand (83.8 per cent) cultivators belongs to marginal landholders and covers 130.93 thousand hectares (48.78 per cent) area in the district. In the same way, 50.51 thousand (11.4 per cent) cultivators belong to small size landholders and covers 68.85 thousand hectare (25.65) area in the Barabanki district. Similarly, Semi-medium, Medium and Large holdings cover 45.23 thousand hectares, 20.9 thousand hectares and 3.26 thousand hectares of land respectively. Hence in Barabanki district most of the number and area of holdings are covered by the small and marginal landholders while large land holders have minimum number and area in the district.

Cropping Pattern

In Barabanki district subsistence agriculture is practiced. Farmers rotate up to five crops round the year. The dominant crops are cereals mainly paddy and wheat covering 34.4 per cent and 31.3 per cent respectively of the gross cropped area. Overall in Barabanki cereal crops occupy 68.4 per cent and pulses occupy 10.1 per cent area respectively. Total foodgrains area in the district is 78.5 per cent. The area under sugarcane is quite less, i.e. 3.6 per cent. Potato covers 2.8 per cent area which is more than Uttar Pradesh at 2.0 per cent. Wheat, rice and maize are chief crops of the district. Opium, menthol oil, sugarcane, fruits (mango and banana), vegetables (potato and tomato), flowers (Gladiolus) and spices etc. are chief cash crops of the district. The district also exports mangoes and vegetables. The district is also leading the country in menthol farming. Barabanki menthol cultivation is spread over 20,000 acres. Livestock-based farming system is also found in the district. Broiler farming is also done in the district. Beekeeping is also practiced in the Dewa block of the district. Fish cultivation is also prevalent in the district.

Irrigation Resources

Irrigation is a landmark in the growth of agricultural activities. Table 5.20 reveals sources of irrigation in Barabanki district. The net irrigated area in the district was 2, 34,183 hectares in 2011-12 which was 90.6 per cent of net sown. Irrigation facilities are well developed in the Barabanki district. Wells and tube wells are the major sources of irrigation in the district which covers 1,53,742 hectare land (about 70 per cent) of the total net irrigated area. Canals is the second best source of irrigation in the district and constituted 80,441 hectares (34.35 per cent) of the total net irrigated area. In the same way, gross irrigated area in the district was 4, 60,981 hectares (196.8 per cent) of the total net irrigated area in 2011-12.

Educational Institutes in the District

Educational institution plays an important role in the development of socio-economic conditions of the peoples in the society. It also enhances the living standard of the peoples. Education is commonly divided into different stages such as primary schools, upper primary schools, higher secondary schools, degree colleges and university. Table 5.21 shows the number of educational institutions in the Barabanki district in 2014-15. According to district statistics the number of primary schools was

2870 and number of upper primary schools was 1126 in Barabanki in 2014-15. Similarly, 350 higher secondary schools was providing education in the district. At the higher level there were 18 degree colleges and 14 postgraduate colleges in the district. For technical education there were 2 industrial training institutes and 1 polytechnic institute was present in 2014-15.

Financial Institutions

Table 5.22 shows the number of nationalized banks, regional banks, cooperative banks, and cooperative agricultural and village development banks. The number of nationalized banks in the district was 124 and no. of RRBs, Cooperative banks, cooperative agricultural and village development banks were 86, 21 and 6 respectively in 2014-15. There were 35 other banks also exist in the district.

Industries

Role of the industry is important for urbanization process and population growth. For this reason socio-economic and cultural change took place in urban areas. Industries also play a vital role in raising the standard of living and improve economic development by generating the employment in the urban areas. Barabanki being a predominantly agriculture district but manufacturers have occupied a significant place in its occupational pattern. Presently in Barabanki 4216 workers are engaged in various industrial units in the city. There are 68 industrial units. Out of these units 59 units come under the small-scale industries such as calendaring industry, cane crushing, ice factories, atta mill, pulse splitting and oil pressing. On the other hand there are also large-scale industries such as India Polyfibers Limited which is engaged in manufacturing of polyester, staple fiber, polyester, and tie with technology from Du Pont, U.S.A. In the district industries like U.P. State Spinning Mill, U.P. State Sugar Corp. Ltd, Hally industries Pvt. Ltd. manufacture and supply all types of medium and high-quality superior welding electrodes for the Indian Railway.

Among the chief cottage industries of the city is the handloom. Pile carpet weaving, brassware, shoemaking, pottery, ban and rope making, fireworks industry etc. Handloom industry takes precedence next to agriculture. The leather industry is another flourishing industry where about 1500 persons are engaged in its various processes, flaying, crude tanning and shoemaking.

Hence the district has the potential for industrial development in a modest way. It is connected to important trading centers like Lucknow, Gorakhpur, Basti, Faizabad etc. by a network of both the Northern Railway and the North-Eastern railway as well as by national and state highways and local roads. With the rapid development of power facilities the district is likely to be industrially developed in the near future.

5.3 Conclusion

Bulandshahr and Barabanki districts are agriculture dominant economy. Around 90 per cent small and marginal farmers are engaged in agricultural activities. There is less participation of rural peoples in other sectors of the economy like manufacturing and service sector. As a result, agriculture is the main source of income for the rural area peoples. In both the districts rural literacy rate of female is less than the male literacy rate. In urban areas literacy rate is higher than the rural areas literacy rate. The literacy rate of SC females in urban is also high in comparison to the rural SC females. It means that the gender discrimination prevailed in Bulandshahr and Barabanki districts of the State.

Cultivators constitute 28.3 per cent of total industrial workers in Bulandshahr district while in Barabanki cultivators constitute 46.20 per cent share of total workers in the district. This reveals that both of the districts have agriculture dominance. The proportion of cultivators among females is less than of males but in case of agricultural labourers their proportion is distinctly higher in both the districts. Both the district has a good industrial base and also has various type of financial institution to provide credit in the development of the districts.

Further, small and marginal land holdings are dominant in both the districts. Small and marginal land holdings hindered the farmers to achieve the required goal. These small and marginal holdings are in scattered form which leads to inefficiency in using new technology on the land. As a result, farmers facing various problems in agriculture sector like low level of production and productivity, lack of financial assistance and lack of market facility.

Now entry of the companies in the agriculture sector in both the district provides a ray of hope to the small and marginal farmers. The companies taking the land on lease from the farmers and give them rent and work on the corporate farm as a labour. This type of farming is going on, in both the district. In Bulandshahr district

Sun Shine Agri Farms Pvt. Ltd Company produces carrot at large scale. Approximately, 1000 acres of land have been acquired by the company in the district. Similarly, in Barabanki district Hi-tech Agriculture & Consultation Company is doing agriculture. This company produces banana and providing employment in the district. The entry of companies in agriculture sector can very beneficial to the small and marginal farmers in both the districts. Socio-economic conditions of the farmers could be improved. Hence, these two districts are selected for the study purposefully.

APPENDIX

Table: 5.01 Demographic Features of Bulandshahr District

Description	2011
Actual Population	34,99,171
Male	18,45,260
Female	16,53,911
Population Growth	20.12%
Area Sq. Km	4,512
Density/km^2	776
Sex Ratio (Per 1000)	896
Child Sex Ratio (0-6 Age)	854
Average Literacy	68.88
Male Literacy	80.93
Female Literacy	55.57
Child Proportion (0-6 Age)	15.71%
Boys Proportion (0-6 Age)	16.07%
Girls Proportion (0-6 Age)	15.31%

Source: Census of India, 2011

Table: 5.02 Percentage Distribution of Rural and Urban Population in Bulandshahr District

District	**2011**	
	Rural	Urban
Bulandshahr	74.77	24.23

Source: Census of India, 2011

Table: 5.03 Gender Wise Percentage Distribution of Population in Bulandshahr District

District	Area	2011	
		Male	Female
Bulandshahr	Total	52.83	47.17
	Rural	52.88	47.12
	Urban	53.00	47.00

Source: Census of India, 2011

Table: 5.04 Sex Ratio of Bulandshahr District

District	Area	Sex Ratio	
		2001	2011
Bulandshahr	Total	879	892
	Rural	875	889
	Urban	895	902

Source: Census of India, 2011

Table: 5.05 Percentage of SC Population in Bulandshahr District

District	Area	2001	2011
Bulandshahr	Total	20.3	20.1
	Rural	22.48	22.22
	Urban	13.56	13.88

Source: Census of India, 2011

Table: 5.06 Gender Wise Literacy Rate in Bulandshahr District

District		2011		
		Male	Female	Total
Bulandshahr	Total	82.52	56.60	70.23
	Rural	83.69	54.84	70.40
	Urban	79.02	61.78	70.80

Source: Census of India, 2011

Table: 5.07 Gender Wise Work Participation Rate in Bulandshahr District

(Main + Marginal)

District	Area	2011		
		Male	**Female**	**Total**
Bulandshahr	Total	49.00	14.86	33.11
	Rural	50.06	17.92	35.14
	Urban	45.88	6.05	27.18

Source: Census of India, 2011

Table: 5.08 Gender Wise Percentage Shares of Cultivators and Agricultural Labourers in Total Worker in Bulandshahr District

District	Area	Cultivators			Agricultural Labourers		
		Male	Femal	Total	Male	Femal	Total
Bulandshahr	Total	34.04	33.06	33.8	22.9	31.47	24.7
	Rural	42.16	35.50	40.5	26.9	33.19	28.4
	Urban	7.95	12.26	8.40	9.91	16.73	10.6

Source: Census of India, 2011

Table: 5.09 Number of Livestock in Bulandshahr Districts (2013)

Type of Animal	Numbers
Crossbreed	1,38446
Exotic	86109
Indigenous	224555
Buffaloes	1243648
Sheep	3135
Goats	199186
Pigs	19179
Another animal	6448
Total Livestock	1696151

Source: Live stock Census U.P., 2013

Table: 5.10 Land Use Pattern in Bulandshahr District (2013)

S.N.	Land use classes	Area (in hectare)	Percentage
1	**Total forest area**	7795	2.14
2	**Area not available for cultivation**	47207	12.93
A	Barren and uncultivable land	5340	1.46
B	Land put to non- agriculture use	41867	11.47
3	**Other uncultivated land (excluding fallow land)**	5090	1.39
A	Pasture	928	0.25
B	Area under grooves and bushes	212	0.06
C	Barren cultivable wasteland	3950	1.08
3	**Fallow land**	4476	1.23
A	Present fallow land	2937	0.80
B	Other fallow land	1539	0.42
4	**Net sown area**	300406	82.30
	Total Reported area	364974	100
5	**Area sown more than once**	220210	60.33
6	**Net irrigated area**	300399	99.99
7	**Gross irrigated area**	520609	173.3

Source: District Statistical Office of Bulandshahr, 2013

Table: 5.11 Distribution of Cultivators according to Size of Land Holdings in Bulandshahr (2011-12)

(No. in thousand and area in thousand hect)

Landholding	Number	Percentage	Area	Percentage
Marginal	234.12	72.0	97.96	32.4
Small	53.96	16.6	75.56	25.0
Semi medium	27.91	8.6	76.86	25.5
Medium	8.72	2.7	47.37	15.7
Large	0.31	0.09	4.16	1.4
All	325.02	100	301.90	100

Source: Statistical Abstract 2013, U.P.

Table: 5.12 Sources of Irrigation in Bulandshahr (2011-12)
(Area in hect and Percentage)

Sources	Area
Canals	26117 (8.69)
Tubewells and wells	274233 (91.28)
Tanks and lakes	0 (0.00)
Other sources	49 (0.16)
Total	300399 (100)

Source: Statistical Abstract 2013, U.P.

Table: 5.13 Number of Industries in Bulandshahr

No. of Registered industries according to 1948 industrial act (in 2011-12)	385
Small industrial units (in 2014-15)	24

Source: Bulandshahr District Sankhyakiya Patrika, 2015

Table: 5.14 Number of Educational Institutions in Bulandshahr (2014-15)

Institutes	Number
Primary schools	2870
Upper primary schools	1126
Higher secondary schools	350
Optional education Centers	17
Degree colleges	18
Postgraduate colleges	14
University	0
Industrial training institute	2
Polytechnic	1
Engineering college	0
Medical college	0

Source: Bulandshahr District Sankhyakiya Patrika, 2015

Table: 5.15 Number of Financial Institutions in Bulandshahr (2014-15)

Financial institution	**Numbers**
Nationalized banks	206
Other	26
RRBs	11
Cooperative banks	28
Cooperative agriculture and village development banks	7

Source: Bulandshahr District Sankhyakiya Patrika, 2015

Table: 5.16 Demographic Features of Barabanki District

Urban Population	330247
Percentage	10.14
Rural Population	2927736
Percentage	89.86
Total Population	3257983
S.C. Population in Percentage	26.51
S.T. Population in Percentage	0.02
Population Density	741 per sq. km.
Literacy Rate in Percentage	61.7
Sex Ratio	910

Source: Population Census, 2011

Table: 5.17 Land use Pattern in Barabanki (2013-14)

Sr. No.	Area in pattern	Area (in hect.)	Area (in percentage)
1	Total Reported Area	388587	100
2	Cultivable Waste	7815	2.01
3	Current Fallow	29401	7.56
4	Other Fallow	13105	3.37
5	Forest	5913	1.52
6	Pasture	1574	0.40
7	Land in Non-Agriculture Use	60146	15.48
8	Land under Miss. Plantation	8053	2.07
9	Barren and Uncultivable Wasteland	3722	0.96
10	Net Area Sown	258858	66.62
11	Area Sown more than once	276498	71.15
12	Net Irrigated Area	234183	90.4
13	Gross Irrigated Area	460981	178.08

Source: Barabanki Sankhyakiya Patrika, 2015

Table: 5.18 Gender Wise Percentage of Cultivators and Agricultural Labourers in Total Worker in the District Barabanki

District	Cultivators			Agricultural Labourers		
	Male	Female	Total	Male	Female	Total
Barabanki	48.98	34.16	46.20	25.14	35.63	27.10
Uttar Pradesh	42.65	36.05	41.06	20.12	39.65	24.82

Source: Statistical Abstract 2013, U.P. Planning Department

Table: 5.19 Distribution of Cultivators according to Size of Land Holdings in Barabanki (2011-12)

(No. in thousand & area in thousand hect)

Landholding	Number	Percentage	Area in Hect.	Percentage
Marginal	370.41	83.8	130.93	48.78
Small	50.51	11.4	68.85	25.65
Semi medium	16.84	3.80	45.23	16.85
Medium	3.73	0.84	20.09	7.49
Large	0.18	0.04	3.26	1.21
All	442	100	268.36	100

Source: Statistical Abstract 2013, U.P. Planning Department

Table: 5.20 Sources of Irrigation in Barabanki (2013-14)

(Area in hect and Percentage)

Sources	Area
Canals	72694 (30.58)
Tubewells and wells	164737 (69.31)
Tanks and lakes	234 (0.098)
Other sources	0 (0.00)
Total	237665 (100)

Source: Barabanki Sankhyakiya Patrika, 2015

Table: 5.21 Number of Educational Institutes in Barabanki (2014-15)

Institutes	Number
Primary Schools	2171
Upper Primary Schools	846
Higher Secondary Schools	233
Optional Education Centers	234
Degree Colleges	19
Postgraduate Colleges	3
University	1
Industrial Training Institute	3
Polytechnic	1
Engineering College	6
Medical College	3

Source: Barabanki District Sankhyakiya Patrika, 2015

Table: 5.22 Financial Institutions in Barabanki (2014-15)

Financial institution	**Numbers**
Nationalized Banks	124
Other	35
RRBs	86
Cooperative Banks	21
Cooperative Agriculture and Village Development Banks	6

Source: Barabanki District Sankhyakiya Patrika, 2015

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Chapter-VI

IMPACT OF CORPORATE FARMING

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IMPACT OF CORPORATE FARMING

This chapter is an outcome of the field survey data conducted for the study of the impact of corporate farming on farmers in Uttar Pradesh. The impact of corporate farming is analysed and examined in terms of socio-economic development of leased out farmers. The social development is a process of transformation of the society with the change in social participation, social equality, social justice and social emancipation. On the other hand, the economic development includes the variables like production, income, employment, wages, savings, education and consumption of the leased out farmers. The impact of corporate farming is analysed by collecting 225 samples of lease-out land farmers from the two districts of Uttar Pradesh during 2016-17. The results of the field survey are presented systematically on issue base like socio-economic development of the farmers who are involved in corporate farming in the state.

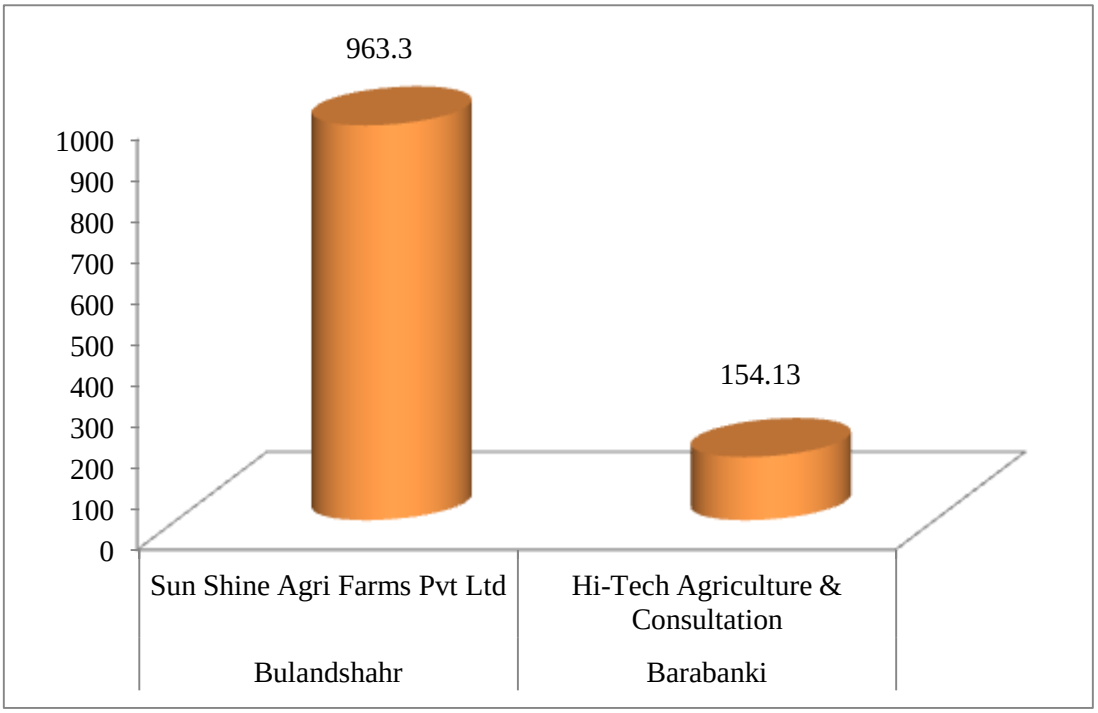
We have taken two districts Bulandshahr and Barabanki from Uttar Pradesh. From these two districts, we have taken three tehsil in which corporate farming is going on. We have used purposive sampling for sample selection. We have found 225 farmers engaged in corporate farming. Hence, sample size is 225 lease-out land farmers from both the districts. Sample of 105 farmers have been taken from Bulandshahr district and sample of 120 from Barabanki district respectively.

In Bulandshahr district we have found Sikandrabad tehsil in which Sun-shine Farms Pvt Ltd is doing large-scale farming. This company has taken land from four villages of Sikandrabad tehsil like 32 farmers from Chanderu, 34 farmers from Sikandrabad, 35 farmers from Dariyapur and 4 farmers from Margupur. Similarly, in Barabanki district we have found two tehsil in which Hi-Tech Agriculture & Consultation Company is doing corporate farming. This company also had taken lease-in land from four village of Harakh tehsil and Sirauli Gauspur tehsil. In Harakh tehsil two villages have selected 35 farmers from Daulatpur and 29 farmers from Birauli village. On the other hand, from Sirauli Gauspur tehsil, 30 farmers are taken from Saidanpur village and 26 farmers from Tesuva Salemchak village. We have taken only those households who have been leased out land to the company in the villages of both districts of Uttar Pradesh. the primary data is processed and the results are presented in table and graphs.

Table 6.00 and figure 6.00 reveals district wise lease-in land by the companies in Uttar Pradesh during 2016-17. It is found that 963.3 hectares land is acquired by Sun Shine Agri Farms Pvt. Ltd in Bulandshahr district whereas 154.13 hectare land is acquired by Hi-Tech Agriculture & Consultation in Barabanki district.

Figure- 6.00 District Wise Lease-in Land by the Companies in Uttar Pradesh

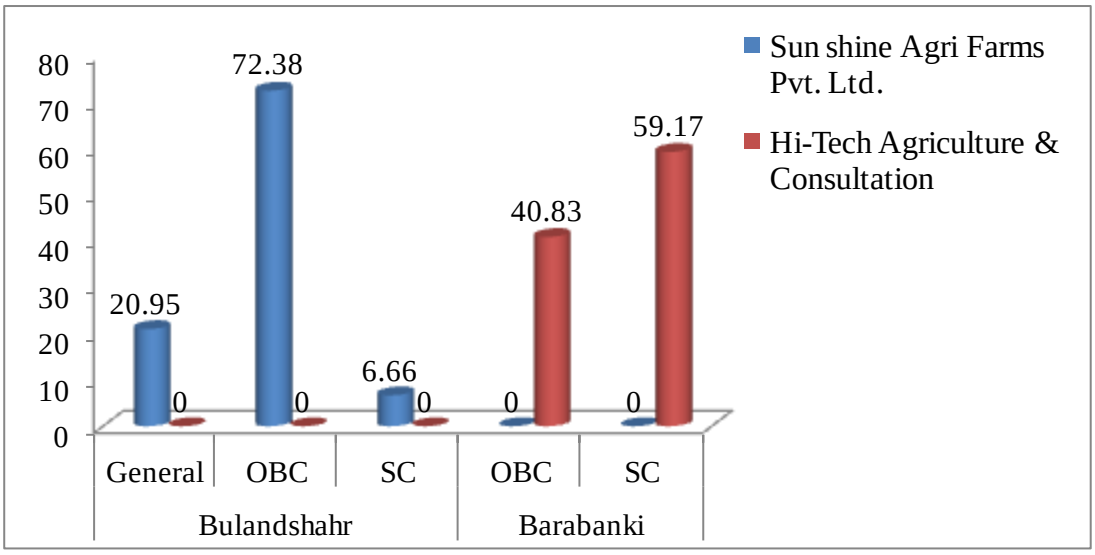
(Land in hectare)



Source: Field Survey Data

Table 6.01 and figure 6.01 shows that category wise number of lease out land farmers involved in corporate farming in both the districts during 2016-17. The figures are shown in percentage and absolute numbers in the brackets. It is found that around 20.95 per cent (22) general farmers, 72.38 per cent (76) OBC farmers, and 6.66 per cent (7) SC category farmers involved in the corporate farming in Bulandshahr district of Uttar Pradesh. Similarly, 40.83 per cent (49) of OBC and 59.17 per cent (71) of SC category farmers are participating in corporate farming in Barabanki district. It is observed that there is widespread variation in term of lease-out land among the social groups in both the districts of Uttar Pradesh.

Figure- 6.01 Category Wise Percentage of Lease out Land Farmers Involved in Uttar Pradesh



Source: Field Survey Data

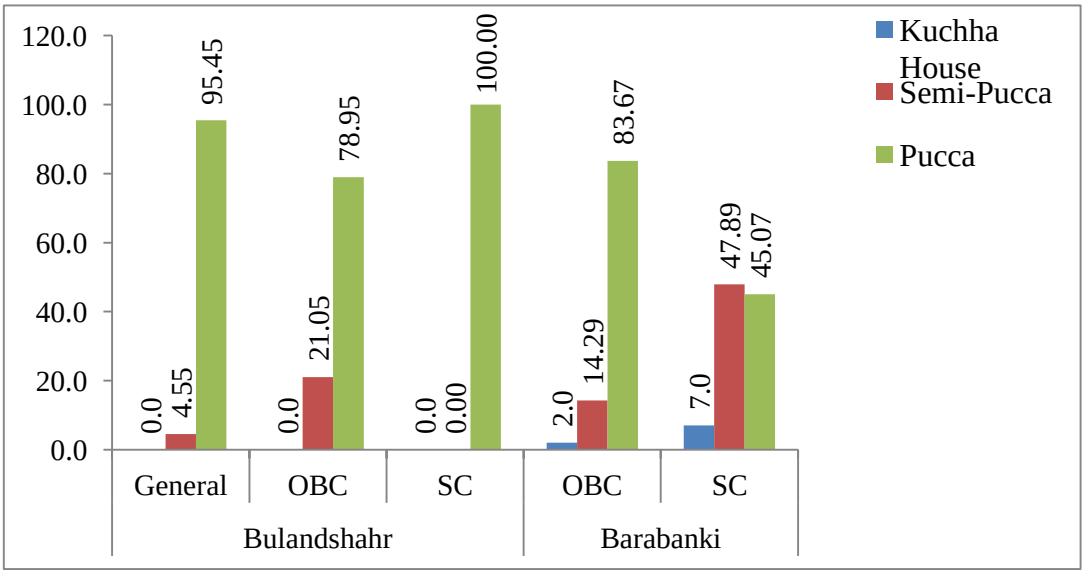
The present chapter is divided into two sections for convenient analysis of the empirical data collected from the field area of Uttar Pradesh. The first sections explains the social development of the lease-out farmers. The social standard of living is analysed in terms of the basic facilities such as house type, sanitation, source of the drinking water, electricity, source of the cooking food, vehicle, television, value of livestock and other durable assets. The second section explains the impact of corporate farming on the economic development of lease out farmers in the state of Uttar Pradesh.

6.1 Social Development Indicators

The social development of the lease out farmers is analysed in this section. Figure 6.02 shows the category wise house type facility of leased out farmers in the year 2016-17 in the villages of Bulandshahr district and Barabanki district of Uttar Pradesh. The figures are shown in percentage and absolute in the brackets. The bar diagram shows that 0.00 per cent (0), 4.55 per cent (1), 95.45 per cent (21) of general farmers are living in kuchha, semi-pucca and pucca house respectively, whereas 0.00 per cent (0), 21.05 per cent (16), 78.95 per cent (60) of OBC farmers are living in kuchha, semi-pucca and pucca house in Bulandshahr district. Similarly, 0.00 per cent (0), 0.00 per cent (0) and 100.00 per cent (7) of SC farmers are living in kuchha, semi-pucca and pucca house in Bulandshahr district. On the other hand, around 2.0 per cent (1), 14.29 per cent (7) and 83.67 per cent (41) of OBC farmers are living in

kuchha, semi-pucca and pucca house while 7.00 per cent (5), 47.89 per cent (34) and 45.07 per cent (32) of SC farmers are living in kuchha, semi-pucca and pucca house in Barabanki district. It is observed that Bulandshahr district farmers are living in better condition compared to Barabanki district farmers.

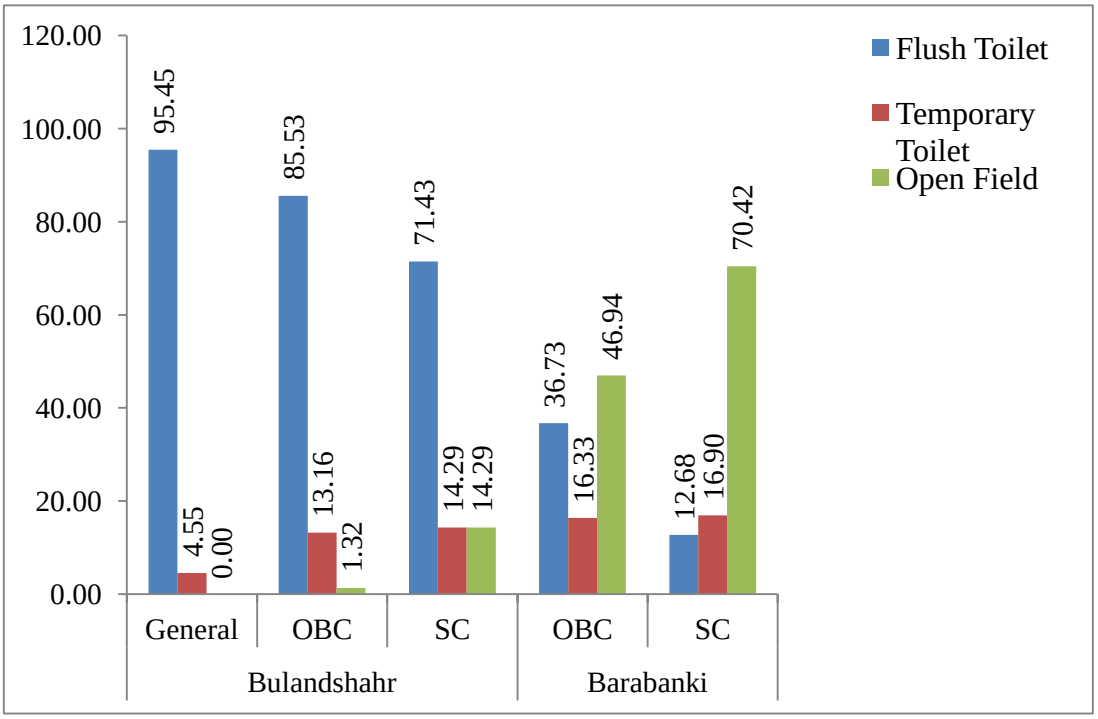
Figure- 6.02 District Wise Status of House Type Facility



Source: Field Survey Data

The sanitation facility is very vital for all the categories of farmers, particularly for women. Sanitation facility of the farmers in the districts is given in figure 6.03. The figures are shown in percentage and absolute in the brackets. The bar diagram highlights three types of sanitation facility prevailing such as flush toilets, temporary and open field toilets in both the districts. It is found that 95.45 per cent (21) of general farmers, 85.53 per cent (65) of OBC farmers, and 71.43 per cent (5) of SC farmers have flush toilet facility while 4.55 per cent (1) of general farmers, 13.16 per cent (10) of OBC farmers, and 14.29 per cent (1) of SC farmers have temporary toilet facility in Bulandshahr district. Similarly, 0.00 per cent (0) of general farmers, 1.32 per cent (1) of OBC farmers, and 14.29 per cent (1) of SC farmers have open filed for sanitation facility in Bulandshahr district. On the other hand, the percentage of OBC farmers have flush, temporary and open field toilet facility at 36.73 per cent (18), 16.33 per cent (8), and 46. 94 per cent (23) respectively while 12.68 per cent (9), 16.90 per cent (12), 70.42 per cent (50) of SC farmers have flush toilet, temporary, and open filed toilet facility in the district of Barabanki. It is observed that Barabanki district is backward in terms of having sanitation facility in comparison to Bulandshahr district.

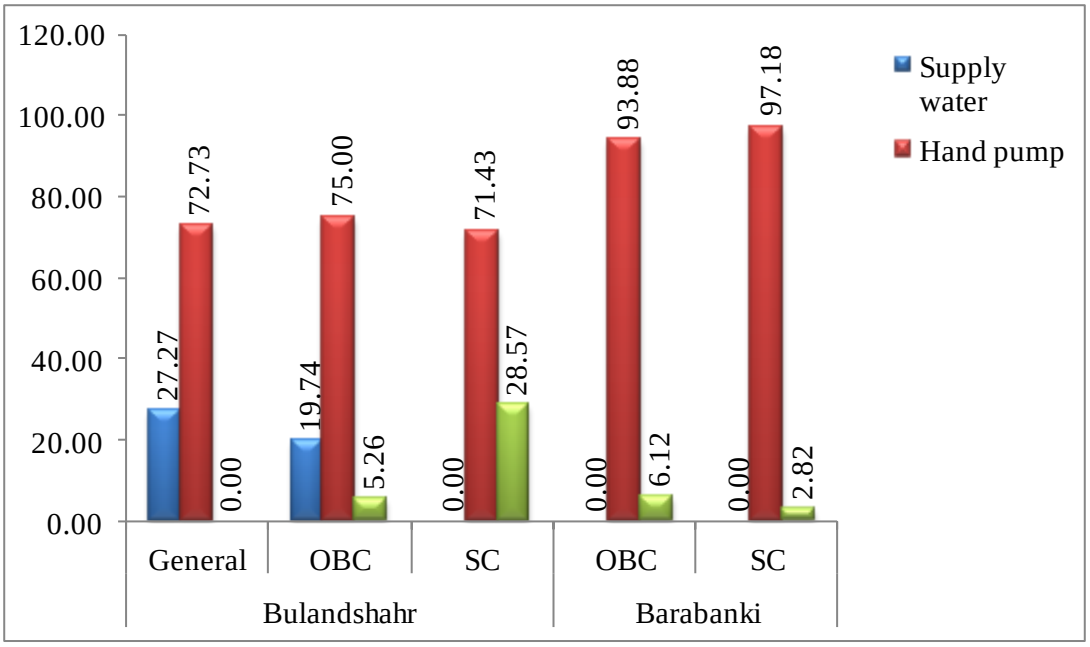
Figure- 6.03 District Wise Status of the Sanitation Facility



Source: Field Survey Data

Another important component of farmer's life is the drinking water. It shows the social improvement of the farmers. Figure 6.04 shows category wise status of the drinking facility in both the districts. The figures are presenting in percentage and absolute number in brackets. The bar diagram reveals that 27.27 per cent (6) of general category farmers, 19.74 per cent (15) of OBC category farmers and 0.00 per cent (0) of SC category framers use supply water for drinking purpose in Bulandshahr district but it is negligible in OBC and SC category farmers in Barabanki district. Similarly, around 72.73 per cent (16) of general category farmers, 75.00 per cent (57) of OBC category farmers, and 71.43 per cent (5) of SC category farmers have hand pump for drinking water in Bulandshahr district while 93.88 per cent (46) of OBC category farmers and 97.18 per cent (69) of SC category farmers have hand pump for drinking purpose in Barabanki district. On the other hand, 5.26 per cent (4) of OBC and 28.57 per cent (2) of SC category farmers have other facility drinking purpose in Bulandshahr district while around 6.12 per cent (3) of OBC and 2.82 per cent (2) of SC category farmers have other facility for drinking purpose in Barabanki district. It is observed that the farmers of Bulandshahr district have better drinking water facility as compared to Barabanki district.

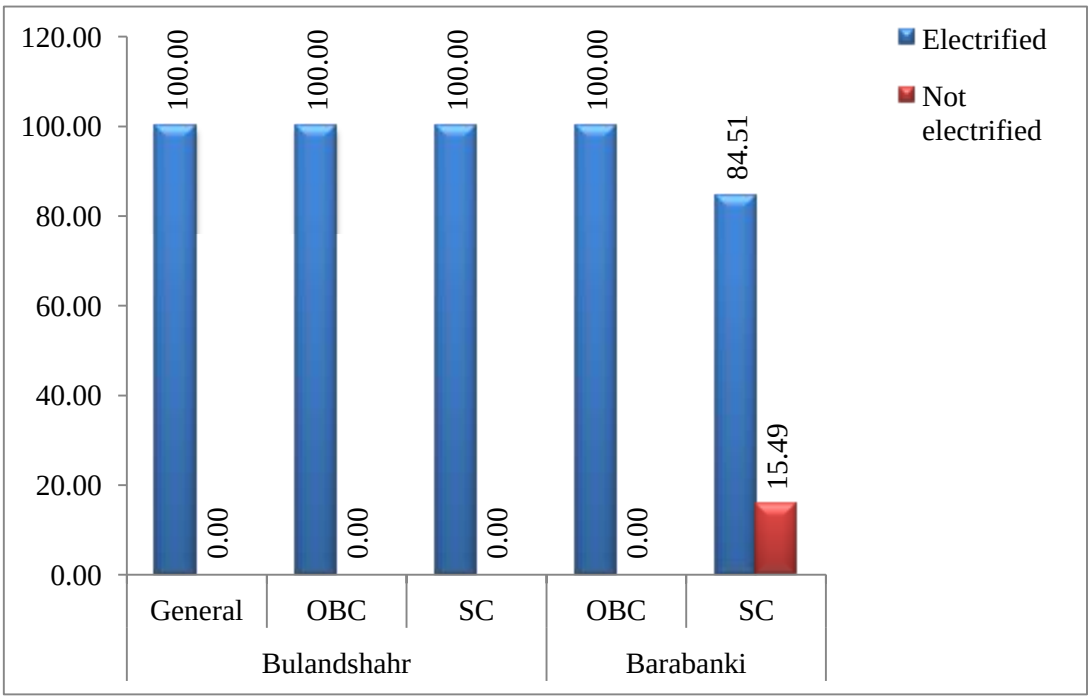
Figure- 6.04 District Wise Status of the Drinking Water



Source: Field Survey Data

Electricity is important factor to remove the darkness of farmers and brings happiness in the life of farmers. It is also very important component to improve the socio-economic conditions of farmers in the villages of both districts of Uttar Pradesh. The percentage of social groups having electricity facility is analysed in the figure 6.05. The figure is presenting in the percentage and absolute numbers in the brackets. Figure 6.05 show that every social group has electric facility in Bulandshahr district. On the other hand, 84.51 per cent of household has been found electric facility and 15.49 per cent of SC framers have not getting the facility of electricity in the district of Barabanki. Hence, Bulandshahr district farmers have the electric facility while in the Barabanki district, 15.49 per cent SC category farmers are not getting electric facility during the study.

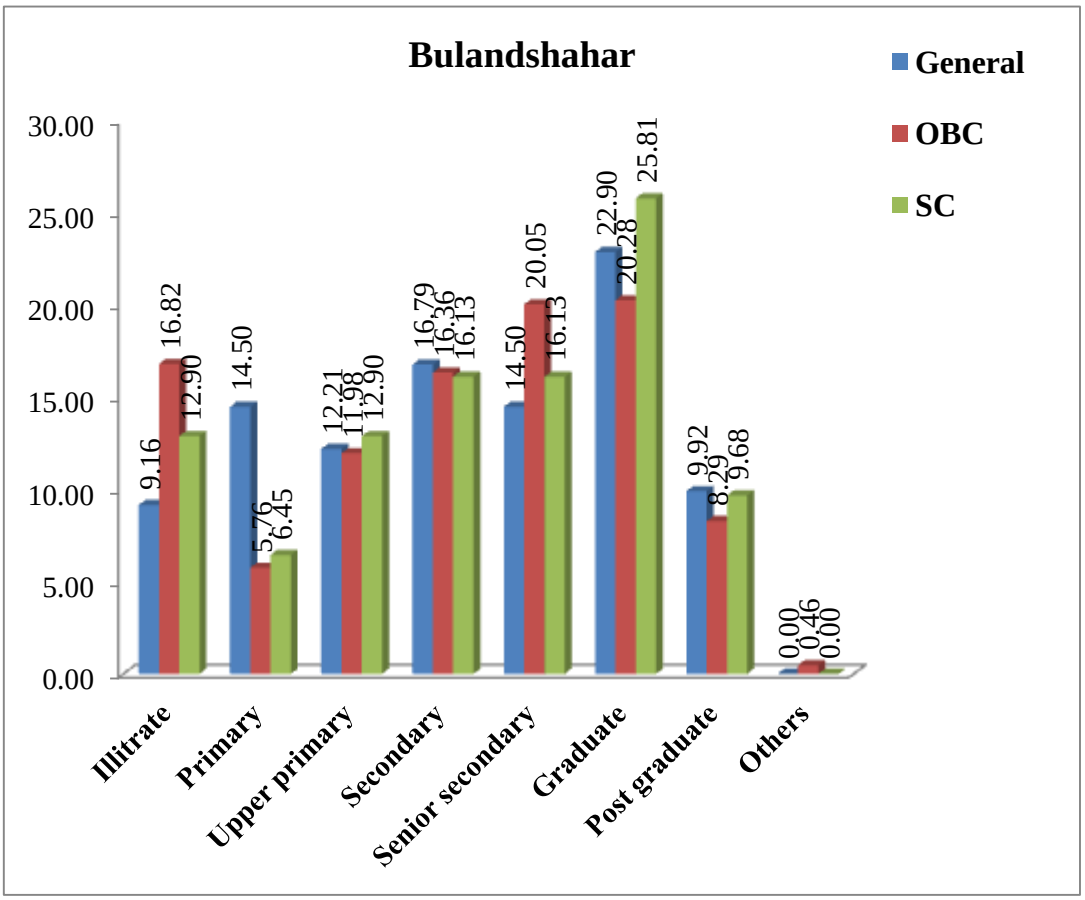
Figure- 6.05 District Wise Percentage of Electrified Household



Source: Field Survey Data

Figure 6.06 (i) shows category wise educational status of farmers in Bulandshahr district of Uttar Pradesh. It is found that the 9.16 per cent of general category farmers are illiterate, 14.50 per cent are primary, 12.21 per cent are upper primary, 16.79 per cent are secondary, 14.50 per cent are senior secondary, 22.90 per cent are graduate and 9.92 per cent family members are postgraduates simaltaneously while 16.82 per cent of OBC farmers are illiterate, 5.76 per cent are primary, 11.98 per cent are upper primary, 16.36 per cent are secondary, 20.28 per cent are senior secondary, 20.28 per cent graduate and 8.29 per cent post graduate members in the Bulandshahr district. Similarly, the percentage of education level of SC category households has found at 12.90 per cent illiterate, 6.45 per cent primary, 12.90 per cent upper primary, 16.13 per cent secondary, 16.13 per cent senior secondary, 25.81 per cent graduate and 9.68 per cent post graduate respectively. It is clear from the above analysis that the percentage of illiterate persons was maximum in OBC category and minimum in general category. SC category household have maximum post graduate among the social categories because sample size of SC category households was very minimum of 7 households corporate farming in Bulandshahr district.

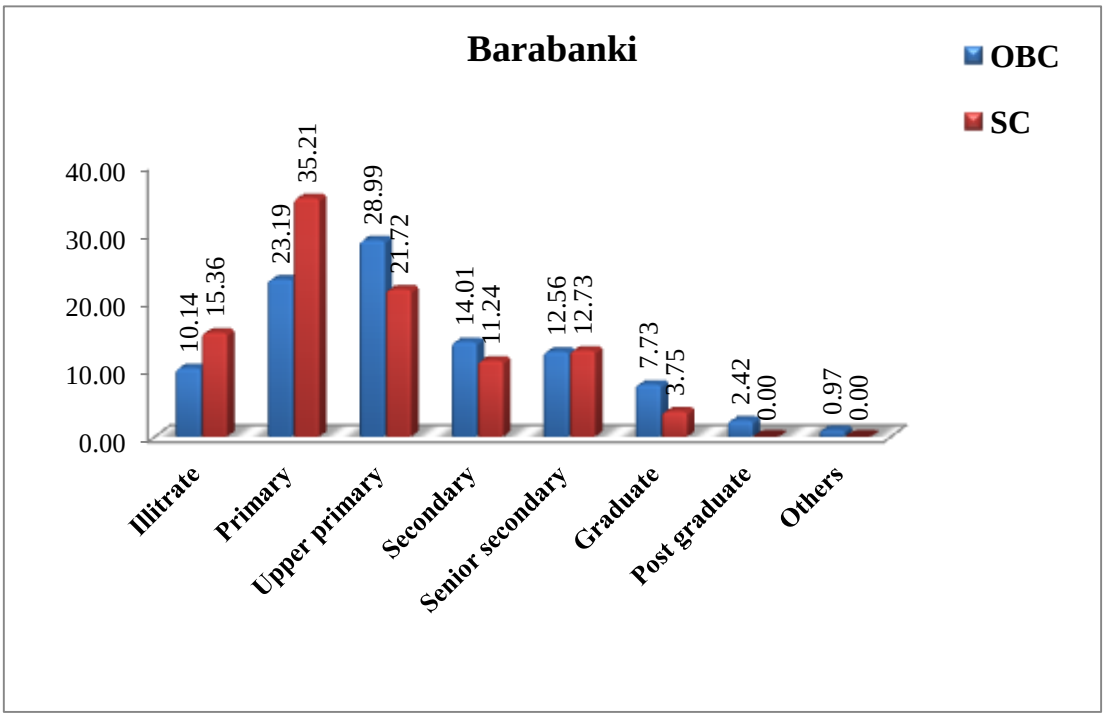
Figure- 6.06 (i) Educational Status of Sample Farmers in Bulandshahr District



Source: Field Survey Data

Figure 6.06 (ii) shows category wise educational status of sample household farmers in Barabanki district of Uttar Pradesh. It is found that in OBC category , 10.14 per cent illiterate, 23.19 are per cent primary, 28.99 per cent upper primary, 14.01 per cent secondary, 12.56 per cent senior secondary, 7.73 per cent graduate 2.42 per cent post graduate and 0.97 per cent others members were found in the district of Bulandshahr district. Similarly, the percentage of education level for SC category households has found 15.36 per cent as illiterate, 35.21 per cent as primary, and 21.72 per cent upper primary, 11.24 per cent secondary, 12.73 per cent senior secondary and 3.75 per cent graduate respectively. It is clear from the above analysis that the percentage of illiterate persons was maximum in SC category. It is also evident from above analysis the percentage of graduate and post graduate member is very less in Barabanki district.

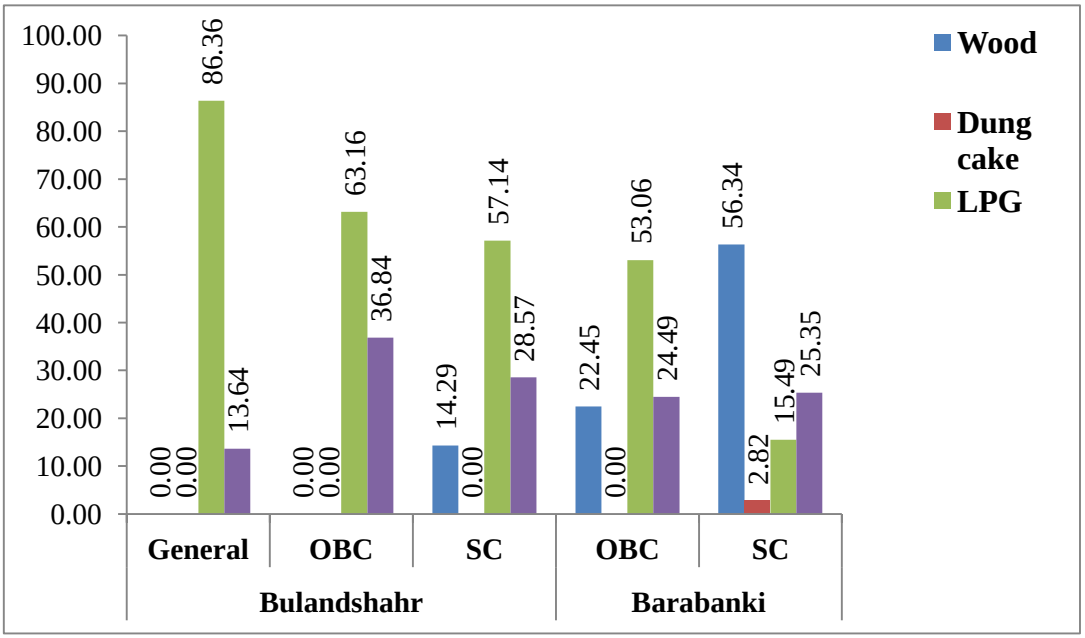
Figure- 6.06 (ii) Educational Status of Sample Farmers in Barabanki District



Source: Field Survey Data

Figure 6.07 reveals percentage of sources of cooking food among social groups in both the districts of Uttar Pradesh. The main source of cooking food in Bulandshahr district has been found LPG which occupies 67.62 per cent (19) in general category farmers while other sources occupy 31.34 per cent (3) in general category farmers. Similarly, 63.16 per cent (48) of OBC category farmers used LPG and 36.84 per cent (28) of OBC farmers used other sources of cooking food in Bulandshahr district. The 14.29 per cent of SC farmers used wood and 57.14 per cent (4) of SC farmers used LPG and around 28.57 per cent (2) of SC farmers used other sources of cooking food in Bulandshahr district. On the other hand, nearly 22.45 per cent (11), 53.06 per cent (26) and 24.49 per cent (12) of OBC farmers used wood, LPG and other sources of cooking food in Barabanki district respectively. Around 56.34 per cent (40), 2.82 per cent (2), 15.49 per cent (11) and 25.35 per cent (18) of SC farmers used wood, dung cake, LPG and other sources of cooking food in the district of Barabanki respectively. It is observed that Bulandshahr has better sources of cooking food facility compared to Barabanki district.

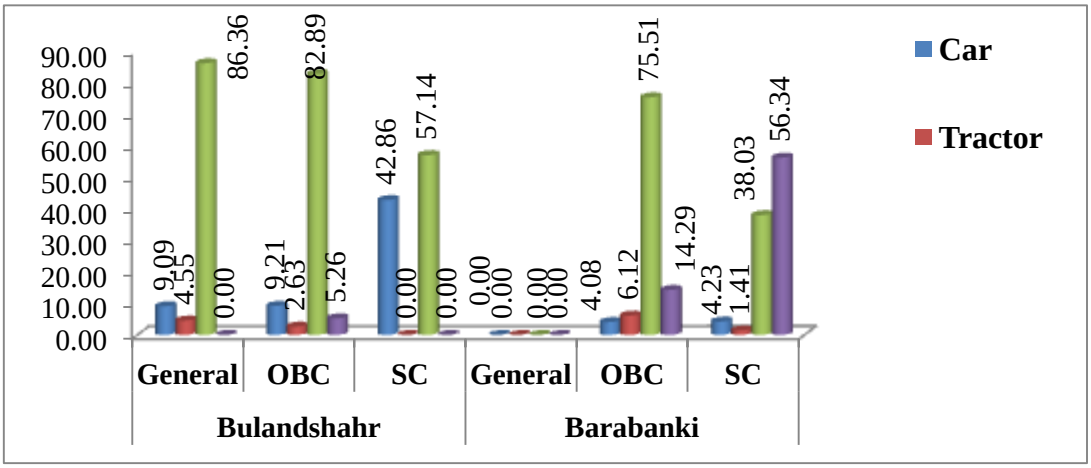
Figure- 6.07 District Wise Percentage of Source of Cooking Food



Source: Field Survey Data

The figure 6.08 explains social category wise percentage of farmers who have vehicle facility in both the districts. The figures are presenting in the percentage as well as absolute numbers in brackets. The bar diagram shows that 9.09 per cent (2) of general, 9.21 per cent (7) of OBC farmers and 42.86 per cent (3) of SC farmers have cars while 4.55 per cent (1) of general, 2.63 per cent (2) of OBC farmers have tractor in Bulandshahr district. Similarly, 86.36 per cent (19) of general, 82.89 per cent (63) of OBC and 57.14 per cent (4) of SC farmers have motorcycle while 5.26 per cent (4) of OBC farmers have cycles in the district of Bulandshahr. On the other hand, only 4.08 per cent (2) of OBC farmers, 4.23 per cent (3) of SC farmers have cars while 6.12 per cent (3) of OBC and 1.41 per cent (1) of SC farmers have tractor in Barabanki district. Similarly, 75.51 per cent (37) of OBC and 38.03 per cent (27) of SC farmers have motorcycle whereas 14.29 per cent (7) of OBC farmers and 56.34 per cent (40) of SC farmers have cycle facility in the district of Barabanki. It is clear that there is a widespread variation in terms of having vehicles facility among social groups of the farmers in both the district of Uttar Pradesh. The most useful vehicle for the lease out farmers is the motorcycle in both the districts of Uttar Pradesh.

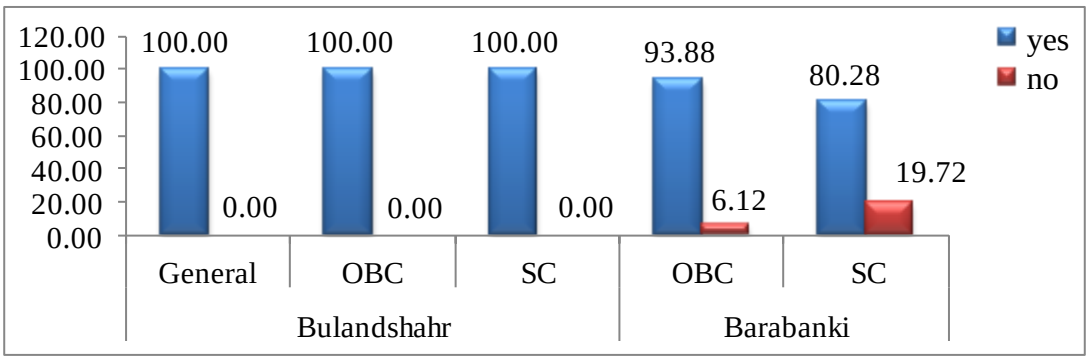
Figure- 6.08 District Wise Use of Vehicles



Source: Field Survey Data

Television is a good source of entertainment. The entertainment is very necessary for good health in India. Figure 6.09 reveals category wise percentage of farmers who have television facility in both the districts. The bar diagram reveals that 100 per cent of farmers of all social groups have television facility in Bulandshahr district while in Barabanki district it is as 85.83 per cent among social groups and 14.17 per cent of social groups farmers have no television facility in their houses.

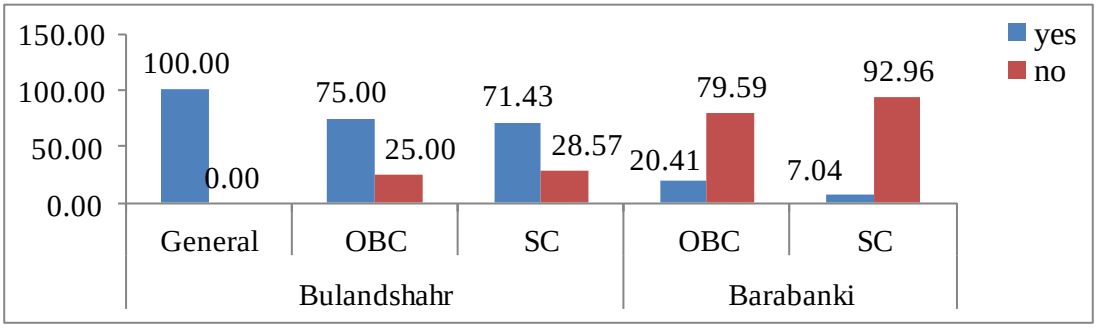
Figure- 6.09 District Wise Use of Television as an Entertainment



Source: Field Survey Data

Durable goods are the social status of the households in U.P. Figure 6.10 shows the percentage of farmers who has refrigerator/washing machine in their houses in both the district of Uttar Pradesh. It is found that 80 per cent of social group farmers have the facility of refrigerator/washing machine while 20 per cent farmers have no refrigerator/washing machine in Bulandshahr district. On the other hand, in Barabanki district only 12.5 per cent of farmers have refrigerator/washing machine while 87.5 per cent farmers have no refrigerator/washing machine.

Figure- 6.10 District Wise Use of Refrigerator/Washing Machine



Source: Field Survey Data

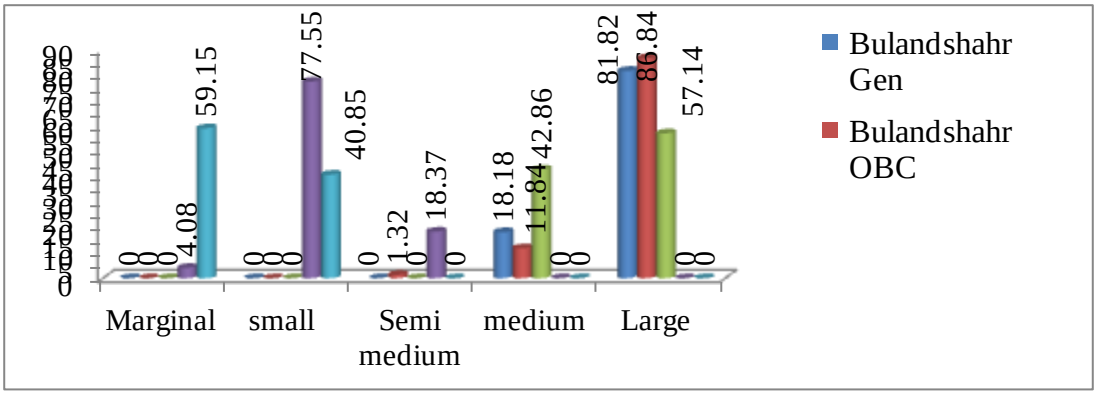
6.2 Economic Development

The economic development is explained in the terms of income, land, employment, wage, production, consumption, expenditure, poverty, education, total revenue, total cost, and profit of the small and marginal farmers. The empirical results are presented here with proper justification.

6.2.1 Pattern of Land Holdings of Farmers

The pattern of land holdings of farmers is shown in figure 6.11. Figure shows the district and social category wise percentage of pattern of land holdings in both districts. In Bulandshahr district, most of the farmers are large farmers. The bar diagram indicates that large size holdings include 81.82 per cent of general category farmers, 86.84 per cent of OBC and 57.14 per cent of SC category farmers in the Bulandshahr district. Similarly, in medium size holding, 18.18 per cent of general, 11.84 per cent of OBC farmers and 42.85 per cent of SC farmers have leased-out their land to company in the Bulandshahr district. On the other hand, Barabanki district most of the farmers belongs to small and marginal land holding category. In marginal land holdings, 4.08 per cent of farmers are OBCs and 59.15 per cent of farmers are SCs respectively. Similarly, in small land holdings, 77.55 per cent belongs to OBC and 40.85 per cent belongs to SC category. Only, 1.32 per cent of OBC category farmers are found semi-medium farmers who leased out their land to the company in the Barabanki district of Uttar Pradesh. Hence, it is found that the corporate farming companies involve small, marginal, semi-medium, medium and large farmers in the study area. In Bulandshahr district, company is not interested to lease-in land from small and marginal farmers, the company is biased in lease-in of land while in Barabanki district the company has taken only land from small and marginal farmers. This is happened because land size is varied in both the districts.

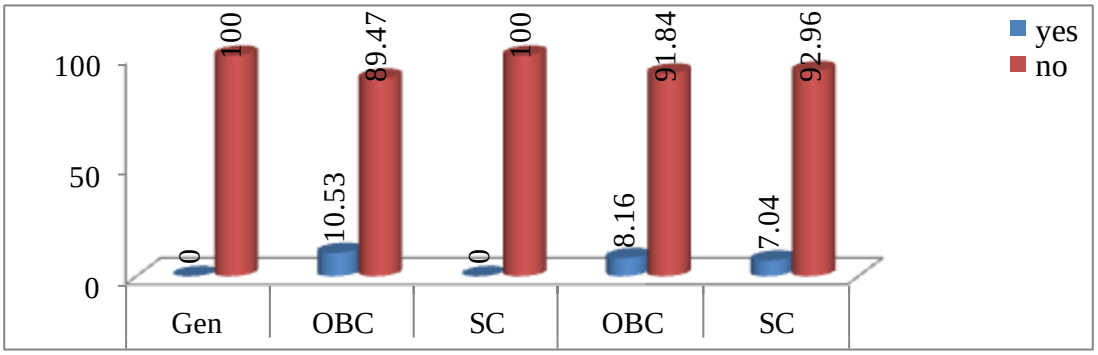
Figure- 6.11 Social Category Wise Pattern of Land Holdings



Source: Field Survey Data

Figure 6.12 shows social category wise percentage of sold out land of the farmers in both the district of Uttar Pradesh. The bar diagram reveals that around 10.53 per cent of OBC farmers sold their land due to poor financial conditions and for business purposes in the Bulandshahr district. Similarly, 8.16 per cent of OBC farmers and 7.04 per cent of SC farmers have sold out some land to the company respectively in the Barabanki district of Uttar Pradesh. The main reason for selling their land is poor financial conditions of farmers in the district.

Figure- 6.12 District Wise Sold out Land by Households

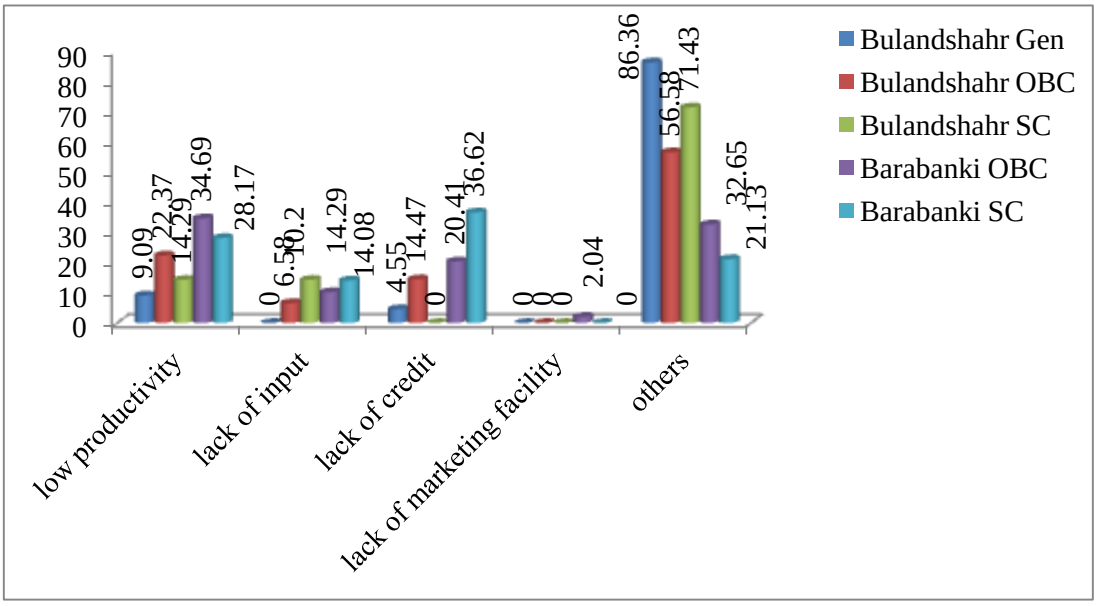


Source: Field Survey Data

Figure 6.13 shows social category wise reasons to participate in the corporate farming in both the district of Uttar Pradesh. It is found that 9.09 per cent of the general category farmers have lease out their land due to low productivity, 4.55 per cent of farmers told lack of credit and 86.36 per cent of farmers told other reasons in Bulandshahr district. In the same way, 22.37 per cent OBC category farmer's said the reasons of low productivity, lack of input by 6.58 per cent, lack of credit 14.47 per cent of farmers and 56.58 per cent give other reasons to participate in the corporate farming. SC farmers gave the reason low productivity by 14.29 per cent farmers, lack

of input by 14.29 per cent farmers and 71.43 per cent of farmers gave other, as the main reasons for involvement in corporate farming in Bulandshahr district. We have also found the similar reasons for participation in the corporate farming in the Barabanki district. The OBC farmers gave the following reasons: low productivity by 34.69 per cent farmers, lack of input by 14.29 per cent of farmers, lack of credit by 20.41 per cent of farmers, lack of marketing facility by 2.04 per cent farmers and 32.65 per cent of farmers to participate in the lease farming. Similarly, SC farmers have given the reasons of low productivity by 28.17 per cent of farmers, lack of input by 14.08 per cent of farmers, lack of credit by 36.62 per cent of farmers, and 21.13 per cent farmers to participate in lease farming in the Barabanki district. Hence, it is evident from the above analysis that the main reasons for participating in lease farming is business and services of landholders in Bulandshahr district of Uttar Pradesh. While in the Barabanki district, the main reasons are lack of credit and low productivity.

Figure- 6.13 Category Wise Main Reason to Participate in Lease Farming



Source: Field Survey Data

6.2.2 Dummy Regression Model for Impact of Socio-Economic Indicators on Rent

A model with a dummy dependent variable (also known as a qualitative dependent variable) is one in which the dependent variable, as influenced by the

explanatory variables, is qualitative in nature. ... Such "prior decisions" become dependent dummies in the regression model (Wikipedia).

In general, the explanatory variables in any regression analysis are assumed to be quantitative in nature. For example, the variables like temperature, distance, age etc. are quantitative in the sense that they are recorded on a well defined scale. In many applications, the variables can-not be defined on a well defined scale and they are qualitative in nature. For example, the variables like sex (male or female), colour (black or white), employment status (employed or unemployed) are defined on a nominal scale. Such variables do not have any natural scale of measurement. Such variables usually indicate the presence or absence of a "quality" or an attribute like employed or unemployed, graduate or non-graduate, smokers or non- smokers, yes or no, acceptance or rejection. So they are defined on a nominal scale. Such variables can be quantified by artificially constructing the variables that take the values, e.g., 1 and 0 where "1" indicates usually the presence of attribute and "0" indicates usually the absence of attribute. For example, "1" indicates that the person is male and "0" indicates that the person is female. Similarly, "1" may indicate that the person is employed and then "0" indicates that the person is unemployed.

Model:

Rent on lease out land = (Education, Caste, Land size)

$$\mathbf{Y_i = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3}$$

Where:

β_0= intercept (Constant Coefficient)

$\beta_1, \beta_2, \beta_3$, and β_4 = slope coefficients

D_1 = Education

D_2= Caste

D_3= Land size

The rent on leased out land is being influenced by some socio-economic factors. The companies are paying rent in different way for the different farmers. It based on education level of farmers, caste and land size of the farmers. Here dummy regression model is used to estimate the effect of the three variables on rent.

Table: 6.14 Results of Multiple Dummy Regression Model for Rent on Lease Out Land

Variable	Coefficient	Standard Error	t- value	P-value	
Constant	87726.36	15977.84	5.49	0.000	**R^2 = 0.3083**
Education2	-6687.79	15808.44	-0.42	0673	
Case2	69230.73	13020.71	5.32	0.000	**Adj. R^2 = 0.2989**
Land size3	412674.1	48985.14	8.42	0.000	
Dependent Variable = Rent on Lease out Land					

Source- Estimated From Primary Data

In this model we tried to find out the discrimination of rent on lease out land with the help of education, caste and land size. Table 6.14 shows the dummy results of the yearly rent on leased out land. The rent is the dependent variable. Education, land size and caste are independent variables. These independent variables are explaining the dependent variable. There are three categories of education where 1 represents illiterate farmers, 2 represents higher secondary level of education and 3 represent the above higher secondary level of education. Dummy D_2 represent caste that is divided in to three categories 1 for General, 2 for OBC and 3 for SC. D_3 represent land holding size and categorized into three as, 0 for small and marginal land holding, 1 for semi-medium and medium land holding and 2 for large holding. The model is statistically significant at a 1 per cent level of significance and the probability value is 0.000. The caste and land size are significant in this model but education is not significant and it is not affecting rent because companies fixed the amount (per bigha rent) for lease to all farmers which want to give their land to the company in both the districts. But the caste and land holding size of the sample farmers is affecting the rent on leased out land in both the districts of Uttar Pradesh. It is found that General and OBC farmers are getting more rent because they have more land in comparison to SC farmers. It is also found that SC category farmers are also getting employment opportunities in the villages itself and they don't need to migrate for work from village to other village and cities in one hand and they also become landless labour after giving their land to the company on the other hand. The value of R-square also fit in the model.

6.2.3 Livestock

Agricultural activity is combined with animal husbandry and the farmers keep some milch and work animals. Table 6.15 shows social category wise different types of livestock owned by the farmers in the state during 2016-17. The table is presenting in both absolute numbers and percentage in bracket. The table shows that 57.14 per cent of buffalos are kept by the general farmers. In the same way, 67.14 per cent and 83.33 per cent of buffalos are used as cattle by the OBC and SC farmers respectively in the Bulandshahr district. Similarly, in Barabanki district the buffalos are the first preference for farmers as cattle. Hence, table clearly indicates that the majority of the farmers have cows and Buffalos, but Goat/Sheep, and Cock/Hen are kept by few farmers in the villages of both districts. It has also been noted that Bulandshahr district has highest number of all types of livestock as compared to Barabanki district.

Table 6.16 shows social category wise, total value of all type of livestock in both the districts of Uttar Pradesh. In Bulandshahr district, total value of all type of livestock of General, OBC and SC farmers were Rs. 2211600, Rs. 8802500 and Rs. 335000 respectively. Similarly, in Barabanki district the total value of all type of livestock were Rs. 3764500 for OBC and Rs. 4009000 for SC farmers respectively.

The issues of lease agreement and land boundary are very important to the small and marginal farmers in corporate farming. Table 6.17 shows the percentage of type of lease agreement between farmers and company. In both the district we have found that there is no written agreement between companies and farmers. Lease farming is still not a legal in the state of Uttar Pradesh. This is the main reason in the state that MNCs are not involved in the corporate farming yet. But both of the cases we have found that the lease farming in the state is started with the support of village farmers. On the basis of the relation and mutual understanding between company owners and farmers in the study areas these large-scale farming is running in the villages. In both the districts 100 per cent of farmers accepted the un-written agreement with the company. Table 6.18 shows that the company will return the land to the farmers after completion of lease period of agreement.

6.3 Impact of Corporate Farming on Agricultural Expenditure, Production, Productivity and Income

The impact of corporate farming is explained in terms of expenditure, production, productivity, and income. It has been shown in the tables 6.19, 6.20, 6.21

and 6.22 respectively. This analysis is comparative in two period of time. They are (1) before leased out time, (2) after leased out time. The impact of farming is assessed before lease out land and after lease out land. In the table, 6.19 the change of expenditure has been analysed before lease out period and after lease out period. In Bulandshahr district before lease the cost of wheat and rice of general category farmers were Rs. 14139 per hectare and Rs. 17529 per hectare respectively while for OBC category it was Rs. 14482 and Rs. 17773 per hectare respectively and in SC category it was Rs. 14557 and Rs. 17442 per hectare respectively. After lease out, the company is producing carrot crop and cost of carrot is Rs. 55942 per hectare in the same land. Similarly, in Barabanki district cost of wheat and rice per hectare for OBC farmers was Rs. 17684 and Rs. 20085 respectively and for SC farmers it was Rs. 18067 and Rs. 20432 respectively. After lease out land the company shifted from wheat and rice to banana, potato, tomato and mentha crops and the cost of banana, potato, tomato and mentha per hectare is Rs. 155720, Rs. 93490, Rs. 140359 and 21808 respectively. Hence, before corporate farming the cost of production per hectare is less in comparison to after corporate farming. This difference in the cost of production per hectare is due to diversification in crop production in both the districts of Uttar Pradesh. Before lease out, traditional crops were produced in both the districts while after lease out cash crops are produced at large scale by the companies in both the districts of the state. Another reason of increase in cost of production per hectare is profit maximization goal of the companies. These companies are using hybrid seeds and pesticides to increase the production of crops in the study area.

Table 6.20 shows the impact of corporate farming on agriculture production in both the districts. It is found that before lease out land the total production of wheat and rice was 3531 Qtl and 2971 Qtl respectively for the general category farmers during the study period. In case of OBC category farmers, the production of wheat and rice was 12669 Qtl and 10715 Qtl whereas the production of wheat and rice of SC farmers was 1136 Qtl and 943 Qtl respectively in Bulandshahr district during the same period. After lease out land to the farming company, it is found that the company produces only commercialised crops or profitable crops i.e. Carrot. The table shows that after lease out, the production of carrot was 51619 Qtl, followed by 177776 Qtl and 16605 Qtl on the same land area of the General, OBC and SC farmers respectively in Bulandshahr district during the study period. In case of Barabanki

district, it is seen that farmers were producing wheat and rice before lease out land, but after lease out land, the company is producing banana, potato, tomato, and mentha. It is found that the production of wheat and rice was 1541 Qtl and 1305 Qtl for OBC farmers, while after lease out land to company, the production of Banana, Potato, and Mentha was 48000 Qtl, 1680 Qtl and 360 Kg respectively in Barabanki district. In case of SC category farmers, the production of wheat and rice was 1413 Qtl and 1198 Qtl respectively before lease out whereas, after lease out the land, the production of Banana, Potato, Tomato, and Mentha was 40200 Qtl, 1470 Qtl, 3729 Qtl, and 810 Kg respectively in Barabanki district. From the above analysis, it is observed that there is widespread variation in agricultural production during the period of before lease out land and after lease out land to the company in both the district. The corporate farming has positive impact on agricultural production in both the district. Farming companies have not only increased the production of the crops but also generating employment of the farmers and improving socio-economic conditions of farmers in both the districts of Uttar Pradesh. Further it is seen that before lease out, the expenditure of the farmers on agricultural inputs was not significant in both the districts. The majority of the farmers are suffering due to lack of inputs, lack of irrigation facilities, low investment and lack of improved technology. But the corporate companies are investing huge amount of capital at farm level to improve the production in both the districts. On the other hand, it is also found during the field survey that farmers are becoming landless labours after the entry of the firms or companies but the companies are decreasing the migration of the farmers from rural to urban for searching job opportunities in both the districts of the state.

Table 6.21 gives the idea of agricultural productivity of crops before lease out and after lease out period in both the districts of Uttar Pradesh. Table clearly highlights the improvement in productivity of the crops after lease out period. The productivity of wheat and rice before lease out period was 17 Qtl/hect and 15 Qtl/hect for general farmers, 18 Qtl/hect and 15 Qtl/hect for OBC farmers and 17 Qtl/hect and 14 Qtl/hect for SC farmers respectively in the Bulandshahr district. After the entry into firm/company in the district, the crop diversification has been taking place from traditional crops to commercial crop like carrot. The productivity of carrot is recorded at 255 Qtl/hect for every farmers of leased out land in Bulandshahr district. Similarly,

in Barabanki district the productivity of wheat and rice of OBC and SC farmers was 19 Qtl/hect and 16 Qtl/hect respectively. After lease out land, the productivity of banana, potato, tomato and mentha shows a huge increment at 623 Qtl/hect, 436 Qtl/hect, 705 Qtl/hect and 93 Kg/hect respectively in the Barabanki district. Hence, the corporate farming is playing a very important and significant role in increasing the production of crops in the state of Uttar Pradesh. The commercialization of crops is the main reason of increase in productivity in both the district of Uttar Pradesh. Before lease out, both the districts are producing only wheat and rice production and after lease out the companies, commercial crops are being producing in the same land. It means that crop diversification has taken place in U.P., the cropping pattern has also changed. It is mutual benefit for both farmers and corporate farming companies in U.P.

Table 6.22 analyse the impact of corporate farming on agricultural income. Before lease out land income from wheat and rice per hectare were Rs. 25750 and Rs. 20169 for general farmers, Rs. 26583 and Rs. 20855 for OBC farmers and Rs. 25729 and Rs. 19968 for SC farmers respectively in the Bulandshahr district. But after lease out land, the company is generating Rs. 612855 per hectare income in the same land area in Bulandshahr district. Similarly, income per hectare from wheat and rice was recorded at Rs. 29040 and Rs. 22730 for OBC farmers and Rs. 29420 and Rs. 23071 for SC farmers respectively during the study period in Barabanki district. After lease out land, company is producing banana, potato, tomato and mentha and generating Rs. 778614, Rs. 156218, Rs. 783865 and Rs. 93506 income per hectare respectively. Hence, in both the districts big difference is found in agricultural income before lease and after lease out period. This difference indicates that after lease out land agricultural income has been increased sharply in both the districts of Uttar Pradesh.

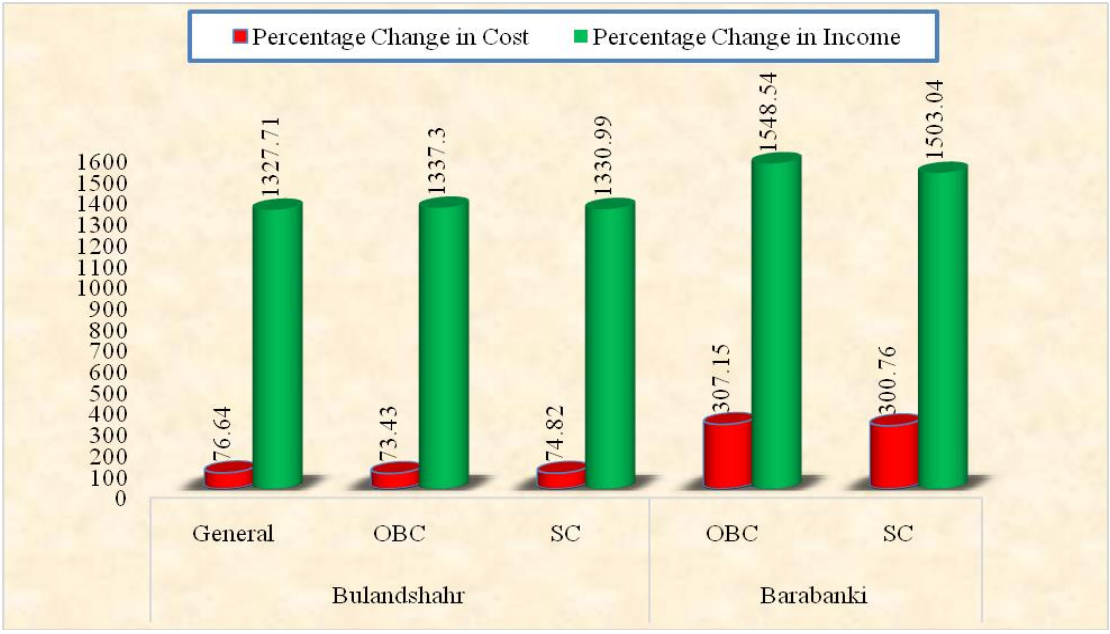
Hence, it is evident from the above analysis that the corporate farming has positive impact on agricultural expenditure, production, productivity, and income. The corporate capital in the agriculture sector also helps in the crop diversification in the state. Both districts have experiencing the crop diversification from traditional crops to cash crops.

6.4 Economic Viability of Corporate Farming

Economic viability of corporate farming can be defined as the chances of success that corporate farming is profitable. On the other hand, economic viability can

not consider a merely economic and short term perspective but it has to be linked with sustainability of the agriculture. Economic viability totally depends on the farm management. In the present study, economic viability of corporate farming has been calculated by the difference of the agricultural expenditure and agricultural income before and after lease out period. Table 6.23 shows total expenditure and total income of the agricultural crops during before lease out land and after lease out land period in both the districts. Figure 6.14 shows the percentage change in total cost and total income of the crops after lease out land in both the districts. It is found that corporate farming has increased the expenditure at 76.64 per cent in case of general farmers land, 73.43 per cent in OBC farmers land and 74.82 per cent on SC category farmers land in Bulandshahr district. On the other hand, corporate farming also increased the expenditure on crops at 307 per cent in case of OBC farmers land and 300.76 per cent in SC farmers land in Barabanki during the study period. In case of agricultural income from crops, it is found that the corporate farming also increased the income from crops at 1327.71 per cent in case of general farmers land, 1337.3 per cent in OBC farmers land and 1330.99 per cent in SC category farmers land area in Bulandshahr district. Similarly, the income of OBC farmers becomes 1548.54 per cent and 1503.04 per cent to SC farmers land after lease out land in the district of Barabanki. It is evident from the analysis that percentage change of expenditure of crops in Bulandshahr district is less comparison to Barabanki district whereas the percentage change in income in Barabanki district is higher than Bulandshahr district during the study period. The reason for the change of income in Barabanki district is the production of four types of crops which is giving high income while in Bulandshahr district only one crop is being producing. On the other hand, percentage change of expenditure in Bulandshahr district is less because, the production of as carrot is going on while in Barabanki district, multiple crops are being producing in the acquired land. In both the districts, a huge change has been found in agricultural expenditure and income after involving in corporate farming, which indicates that the corporate farming is economically viable in both the districts of Uttar Pradesh.

Figure- 6.14 District Wise Percentage Change in Total Cost and Total Income from Agriculture

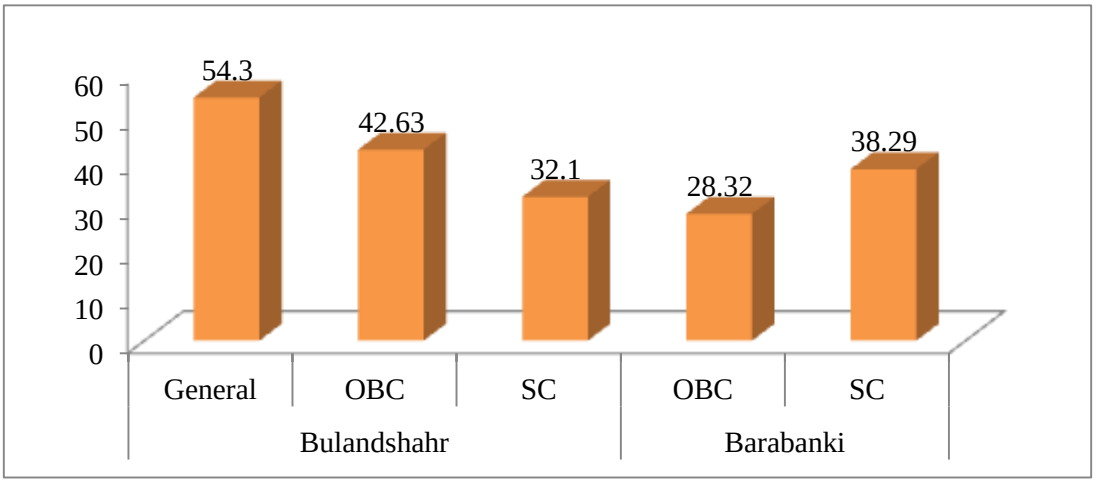


Source: Field Survey Data

6.5 Impact of Corporate Farming on Sample Farmers

The impact of corporate farming on farmers is analysed in term of average income of the farmers during before lease out land and after lease out land in both the districts of Uttar Pradesh. Table 6.24 has explained category wise average income of farmers during before lease out land as well as after lease out land. It is found that the average income of general farmers was Rs. 4, 41,334 before leased out land and increased to Rs. 6, 81,000 after leased out land in Bulandshahr district. Similarly, the average income of OBC farmers has increased from Rs. 357932 to Rs. 5, 10,526 whereas for SC category farmers the average income has increased from Rs. 3,47,786 to Rs. 4,59,429 respectively after involving in corporate farming in Bulandshahr district. On the other hand, the average income of OBC farmers has gone up from Rs. 1, 63,361 to Rs. 2, 09,638 and for SC farmer's average income increased from Rs. 1, 05,724 to Rs. 1, 46,211 respectively during the study period in Barabanki district. Hence, corporate farming has increased the income of farmers in both the districts of Uttar Pradesh.

Figure- 6.15 Percentage Change in Average Income of Household



Source: Field Survey Data

Figure 6.15 also reveals that corporate farming has changed the average income of sample farmers. The percentage change of the average income of general farmers is 54.3 per cent, 42.63 per cent in OBC farmers and 32.1 per cent in SC farmers respectively in the district of Bulandshahr. Similarly, the percentage change in average income of OBC farmers is 28.32 per cent and 38.29 per cent of SC farmers in Barabanki district. It is evident from the bar diagram that corporate farming had positive impact on the income of all farmers because the farmers get the rent on leased out land and wages. The employment of farmers also helps to increase the income of farmers in both the district of Uttar Pradesh.

6.5.1 Logistic Analysis of Income Perceptions

The Logistics Regression Model is used to analyse the factors influencing the increment in income after involved in corporate farming on various socio-economic factors. The empirical model is defined as:

$$\mathbf{Y_i = \alpha + \beta_i X_i + \mu_i}$$

Here, Y_i is unobserved response to increase the farmers income after adopting the corporate farming, X_i is matrix of independent variables comprising socio-economic factors, β is a vector of unknown parameters, α is the intercept and μ_i is the error term. Based on the variables used in the present study, the empirical model was specified and estimated to predict the likelihood or probability of the factors influencing the farmer's income after involved in corporate farming, as follows:

$$\mathbf{Log\ \lambda_i = \alpha + \beta_1 Age2 + \beta_2 Edu2 + \beta_3\ Caste2 + \beta_4 Rent2 + \mu_i}$$

Based on literature review, the model has been developed to identify the factors affecting farmers' income after adopting corporate farming. The income from corporate farming used as a dependent variable and the socio-economic factors such as age, education, rent per hectare of land and caste are the independent variables. Age of the farmers is categorising into two categories, 1 for working group and 2 for old age group. Education is categorised into three categories, 1 represents illiterate, 2 represents higher secondary level of education and 3 represent the above secondary level of education. Similarly, caste categorise into three categories 1 for General, 2 for OBC and 3 for SC and rent per hectare categorise into two categories, 1 for SRR (Small Rent Receiver) and 2 for LRR (Large Rent Receivers). μ_i is an error term. There are two categories of dependent variables, the first variable is considering increasing income and second is not support to increasing income.

The expected directional effects of each independent variable are also indicated. The logit model is based on the cumulative logistic probability function and is specified as:

$$\mathbf{P= F(Z) = 1/ (1+e^{-(\alpha+ \beta iXi)})}$$

Where, *Z* determines a set of explanatory variables *X*; *F(Z)* is the cumulative logistic function; *e* represents the base of natural logarithms and *P* is the probability of success when explanatory variable has the value *X*. Logit models are interpreted using odds and odds ratios. The odds ratio indicates the multiplicative impact in the odds for a unitary change in the explanatory variable, holding other variables as constant. If the exponential coefficient is greater than unity, it explains that the odds are increasing, and on the other hand negative value indicates that the odds decrease. Deviation of the exponential coefficient value from one indicates the magnitude of impact on the odds for a unit change in independent variable (Ali, 2011.).

Table: 6.25 Results of Logistic Regression for Income Perception

Variable	Coefficient	Odd Ratio	Standard Error	z- Value	P>Z
Constant	3.73	41.70	1.23	3.01	0.003
Age2	.268	1.30	.730	0.37	0.714
Education2	-.378	.685	.719	-0.53	0.599
Caste2	3.15	23.50	.761	4.15	0.000
Rentperhect2	-3.40	.033	1.04	-3.28	0.001

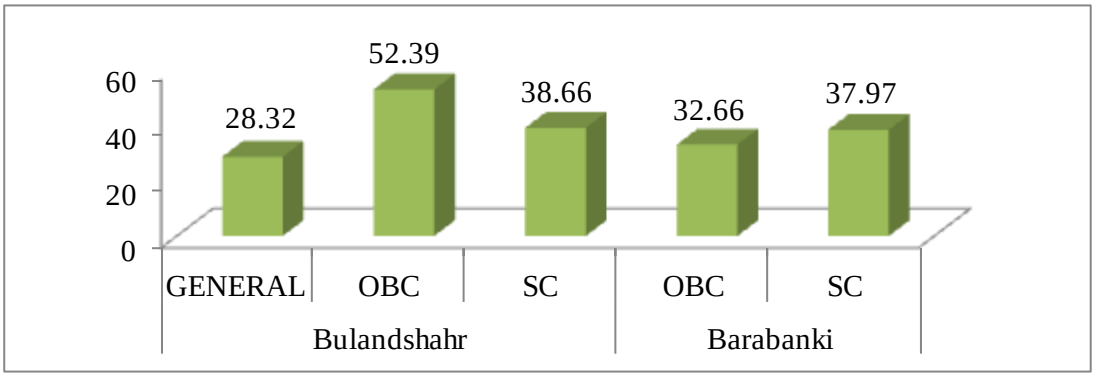
Source: Estimated From Primary Data

LR chi^2 (4) = 79.38 Prob > chi^2 = 0.0000
Log likelihood = -60.876331 Pseudo R^2 = 0.3947

The results on coefficient estimate, standard errors, significance levels and odd ratios for the parameters of the Logistics Regression Model on the income perception from corporate farming are presented in table 6.25. The model is statistically significant at 1 per cent level of significance. The constant value coefficient is positive and the odd ratio is also positive. Among the factors, caste and rent are more likely to affect income from corporate farming. The coefficient for age and education variables of the farmers is not significant. This is mainly because of no significant differences in age and education profiles of the sample farmers. Regression results indicate that social category of the farmers is likely to play a significant role in the increment in income from corporate farming. The coefficient of caste is explaining the income perception. The income of OBC category farmers is increased because their land holding size is more than SC farmers land fix. Therefore, the economic condition of OBC farmers is better than SC farmers. The negative coefficient of regression for rent per hectare implies that the income after involved in corporate farming of SSR group are more likely high as compared to LRR group. This happens because the SSR group is getting the rent as well as wages. Therefore, the income perception of LRR group is weak as compared to SRR group. The results of the regression analysis clearly identify the caste and rent affecting on the income from corporate farming in the study area.

Table 6.26 analyse the category wise expenditure during before lease out land and after lease out land of the sample households. It is found that before lease out land the expenditure was Rs. 2, 75,218 of general, Rs. 2, 30,584 of OBC and Rs. 2, 23,771 of SC farmers in the district of Bulandshahr. On the other hand, after lease out land, the expenditure of households increased to Rs. 3, 53,181 in case of general farmers, Rs. 3, 51,407 in OBC farmers and Rs. 3, 10,285 in SC farmers respectively in Bulandshahr district. In case of Barabanki district, the expenditure of OBC farmers was Rs. 1, 22,571 during before lease out land and increased to Rs. 1, 62,612 after lease out land while the expenditure of SC category farmers was Rs. 90304 before lease out land and it increased to Rs. 1, 24,597 after lease out land in the district of Barabanki. Hence, expenditure of the farmers has increased after involving in corporate farming in both the districts of Uttar Pradesh during the study period 2016-17.

Figure- 6.16 Impact of Corporate Farming on Household Expenditure



Source: Field Survey Data

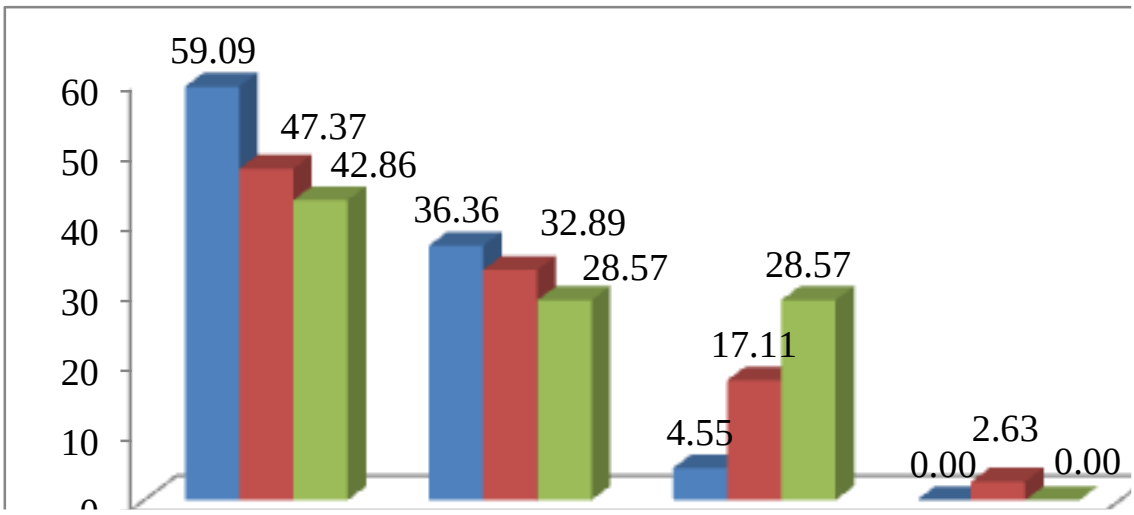
Figure 6.16 explains category wise percentage change of average expenditure of sample households. After involving in corporate farming the average expenditure of general category farmers is at 28.32 per cent, 52.39 per cent for OBC farmers and 38.66 per cent for SC category farmers respectively in Bulandshahr district. On the other hand, the average expenditure of OBC category farmers is at 32.66 per cent and 37.97 per cent in SC farmers in the district of Barabanki after corporate farming. Hence, after involvement in corporate farming, there is a sharp increase in average expenditure of farmers in both the districts. It is clear that corporate farming have positive impact on average expenditure of all farmers in both the districts of Uttar Pradesh. The farmer's average income and expenditure have been increased after lease out land in both districts. After lease out land farmer's expenditure on food

items, clothes, education, health and others have increased sharply in every category of farmers in both the districts.

6.6 Employment Status of the Households

The nature of employment in both the district of Uttar Pradesh is analysed in table 6.27. In the present study, nature of employment is divided into three categories viz. permanent, self-employed, temporary, and pensioners. The permanent employment includes government and private job holders, while, self-employment includes employed like dairy, any type of shop and temporary employment includes agricultural labour. The figures are shown in the percentage and absolute in the brackets. The table 6.27 and figure 6.17(i) shows the percentage of permanent, self-employed and temporary employed persons of general category farmers at 59.09 per cent (13), 36.36 per cent (8) and 4.54 per cent (1) respectively while, the percentage of permanent, self-employed, temporary and pensioner of OBC farmers was at 47.36 per cent (36), 32.89 per cent (25) and, 17.10 per cent (13) and 2.63 per cent (2) respectively during the study period in Bulandshahr district. Similarly, the percentage of permanent, self-employed, and temporary employed of SC farmers was at 42.85 per cent (3), 28.57 per cent (2) and 28.57 per cent (2) respectively during the study period in Bulandshahr district. It is evident from the above analysis that most of the general category farmers are permanent and self-employed followed by OBC category farmers. On the other hand, in temporary type of employment SC category farmers have maximum percentage i.e. they are engaged in agriculture labour in the Bulandshahr district.

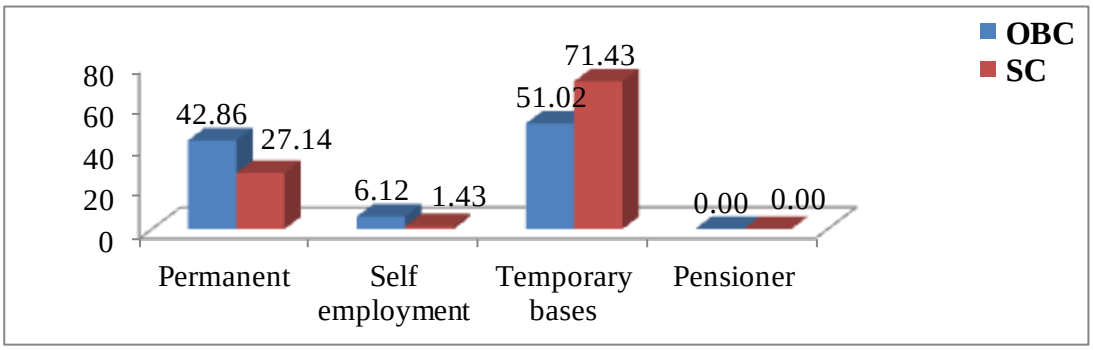
Figure- 6.17(i) Nature of Employment in Bulandshahr District



Source: Field Survey Data

Similarly, the table 6.27 and figure 6.17(ii) shows the number and percentage of permanent, self-employed and temporary employed of OBC farmers was at 42.85 per cent (21), 6.12 per cent (3) and 51.02 per cent (25) respectively while the percentage of permanent, self-employed and temporary employed of SC farmers was at 26.76 per cent (19), 2.81 per cent (2) and 70.42 per cent (50) respectively during the study period in Barabanki district. It is evident from the above analysis that majority of the SC category farmers are employed in temporary type of employment as agriculture labour.

Figure- 6.17(ii) Nature of Employment in Barabanki District



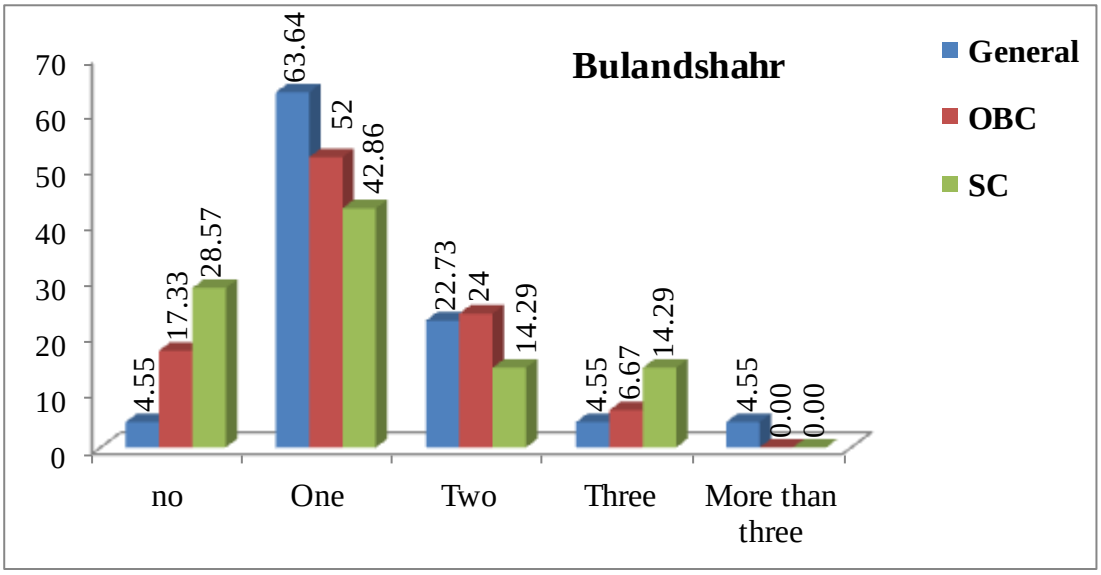
Source: Field Survey Data

Hence, it is observed that all social farmers have been found in permanent nature of employment in Bulandshahr district while in the Barabanki district majority of the farmers' falls in the temporary type of employment. It is clear that due to the decrease in productivity of crops, farmers have only better option to give their land to company on lease. In case of Barabanki district, the farmers have very few opportunities in permanent employment, because majority of farmers are small and marginal farmer who are not generating any sufficient income for their families. So, the corporate farming has led to more employment opportunities for labour. Since the labour intensity of various commercial crops is much higher than the traditional crops. For example, wheat and paddy crops largely depend on mechanization of sowing and harvesting, which reduced manual work to the labourers in the rural areas. Hence, corporate farming has the capability to create the employment opportunities in rural areas.

Table 6.28 and figure 6.18(i) explained district wise percentage of persons doing another work other than agricultural in Bulandshahr districts. The figures are shown in percentage and absolute numbers in the brackets. It is found that general

farmers 63.63 per cent (14) said the only member of family, 22.72 per cent (2) said that two persons of family have been engaged in another work. Similarly, the 51.31 per cent (39) of OBC farmers say one person is doing other work, 23.68 per cent (18) farmers said two people while in SC category 28.57 per cent (2) said no person and 42 per cent (3) said one person are working respectively in other than agriculture activities in Bulandshahr district. Hence most of the farmers are engaged in non agriculture activities in the district because the district is near to capital of the country. Job opportunities other than agriculture are plenty in the area.

Figure- 6.18(i) District Wise no. of Persons doing another Work (other than agriculture)

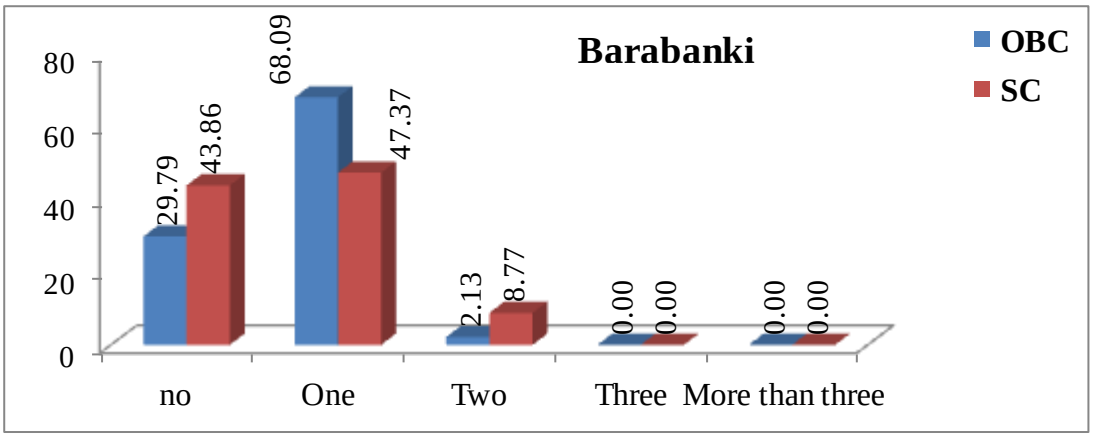


Source: Field Survey Data

In the same way, table 6.28 and figure 6.18 (ii) explains the percentage of the farmers doing non agriculture work for their livelihood. It is clear from the analysis that majority of the SC category households members are engaged in agricultural sector in the Barabanki districts of Uttar Pradesh.

Hence, during the study period we have found that the majority of sample households are engaged in non-farm activities in Bulandshahr district. On the other hand, in Barabanki district most of the sample households are engaged in agriculture activities. The Barabanki district has more small and marginal farmers in comparison to the Bulandshahr district during the study period. Further, Barabanki district low level of income, education, non-farm job opportunities due to backwardness of the district.

Figure- 6.18(ii) District Wise no. of Persons doing another Work (other than agriculture)



Source: Field Survey Data

6.6.1 Employment Perception Logit Model

The employment is influenced by three factors like age, education and caste. Based on the variables used in the present study, the empirical model is specified and estimated to predict the likelihood or probability of the factors influencing the employment after involved in corporate farming, as follows:

$$\text{Log } \lambda_i = \alpha + \beta_1 \text{Age1} + \beta_2 \text{Edu1} + \beta_3 \text{Caste1} + \mu_i$$

Where, age of the farmers is categorising into two categories, 1 for working group and 2 for old age group. Education is categorised into three categories, 1 represents illiterate, 2 represents higher secondary level of education and 3 represent the above secondary level of education. Similarly, caste categorise into three categories 1 for General, 2 for OBC and 3 for SC.

Table: 6.29 Results of Logistic Model for Employment Perception

variable	Coefficient	Odd Ratio	Standard Error	z- Value	P>Z
Constant	-1.29	.273	.494	-2.62	0.009
Age1	.812	2.25	.504	1.61	0.107
Education1	-2.31	.852	1.03	-2.23	0.026
Caste1	-2.31	.099	1.03	-2.23	0.026

Source: Estimated From Primary Data

LR chi^2 (3) = 15.92 Prob > chi^2 = 0.0012

Log likelihood = -132.32257 Pseudo R^2 = 0.0567

Table 6.29 reveals the logistic results for employment perception. In this model employment perception is dependent variable and age, education and category are the independent variables. This model is significant at 1 per cent level. In this model all independent variables are statically significant but age is not affecting the employment in the study area. The coefficient of education1 is negative which means illiterate persons have less opportunity in the employment in both the districts of Uttar Pradesh. Hence, most of the employed persons are educated at higher secondary level and above higher secondary level in both districts. Caste is also affecting the employment in the districts. Caste1 coefficient is also negative which means other than caste1 people, have more impacted on employment. In other words, majority of the SC category households are accepted that the employment increase due to corporate farming in both the districts. The companies are providing employment to the SC category farmers and they are working on the corporate farms as a labourer. They also said that after corporate farming they become landless labourers because they give their land to the company on lease.

6.6.2 Wage Perception Logit Model

The wages are influenced by three factors like age, education and caste. Based on the variables used in the present study, the empirical model is specified and estimated to predict the likelihood or probability of the factors influencing the wages after involved in corporate farming, as follows:

$$\mathbf{Log\ \lambda_i = \alpha + \beta_1 Age1 + \beta_2 Edu2 + \beta_3 Caste2 + \mu_i}$$

Here, age of the farmers is categorising into two categories, 1 for working group and 2 for old age group. Education is categorised into three categories, 1 represents illiterate, 2 represents higher secondary level of education and 3 represent the above secondary level of education. Similarly, caste categorise into two categories 1 for General and OBC and 2 for SC.

Table 6.30 is explained the logistic results for agriculture wage perception. Wage perception of the employed person is the dependent variable which is divided into two categories yes or not. This model is significant at 1 per cent level. All independent variables are statistically significant but education is not affecting wage perception because all people are getting same level of employment in the study area.

Table: 6.30 Results of Logistic Model for Agriculture Wage Perception

Variable	Coefficient	Odd Ratio	Standard Error	z- Value	P>Z
Constant	-1.17	0.30	0.46	-2.54	0.011
Age1	1.38	3.98	0.49	2.77	0.006
education2	-0.35	0.70	0.42	-0.83	0.407
caste2	-0.96	0.38	0.30	-3.18	0.001

Source: Estimated From Primary Data

LR chi^2 (3) = 18.84 Prob > chi^2 = 0.0003

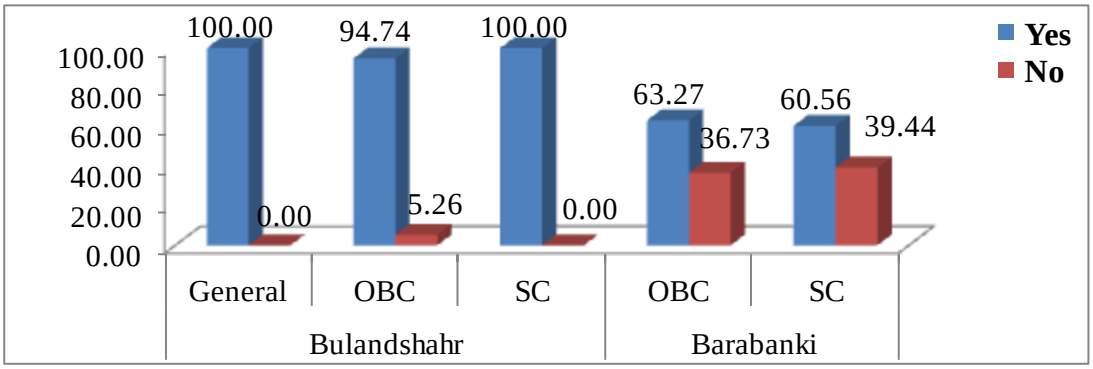
Log likelihood = -130.07823 Pseudo R^2 = 0.0675

Among the factors, age and social category are affecting the wages. The coefficient for education of the farmers is not significant. But, the age and social category are significant in the present model. Age of the farmers play a significant role in the wage perception. The coefficient of age1 i.e. working group is positive. Working age group farmers are getting more wages in comparison to old age group in both the districts. Regression results also indicate that social category of the farmers is likely to play a significant role in the increment in wages from corporate farming. The negative coefficient of regression for caste2 implies that the wages after involved in corporate farming belonging to GEN and OBC category farmers are more likely high as compared to SC category farmers. The wages of GEN and OBC category farmers are increased because they have more opportunities in management activities in comparison to SC category farmer's farms. Therefore, the GEN and OBC category farmers are getting more wages in comparison to SC category farmers in the study area. The results of the regression analysis clearly identify the social category and age of the sample farmers are the factors impacted on the wages from corporate farming in the study area.

6.7 Educational Status of Household

Table 6.31 and figure 6.19 depict response of the farmers to the question of whether farmers have sufficient money for education of the children's. The figures are shown in percentage and in absolute in the brackets. It is found that 100 per cent (22) of general farmers, 94.73 per cent (72) of OBC farmers and 100 per cent (7) of SC category farmers have sufficient money for education purpose while 5.26 per cent (4) of OBC farmers has no sufficient money for education in Bulandshahr district. On the other hand in Barabanki district, 63.26 per cent (31) of OBC farmers and 60.56 per cent (43) of SC farmers have sufficient money for educational purpose. Nearly, 36.73 per cent (18) of OBC and 39.43 per cent (28) of SC farmers have not sufficient money for education purpose. It is observed that Bulandshahr district is in better position compared to Barabanki district in terms of having money sufficiency for educational purpose of the corporate farming. The main reason of this sufficiency of money in Bulandshahr district is due to permanent jobs and better business opportunities. Farmers of Barabanki districts have no sufficient money for educational purpose. They arranged the money through giving land on lease to the company, credit from their friends and relatives and other sources in the state.

Figure- 6.19 Category Wise Sufficiency of Money for Education Purpose

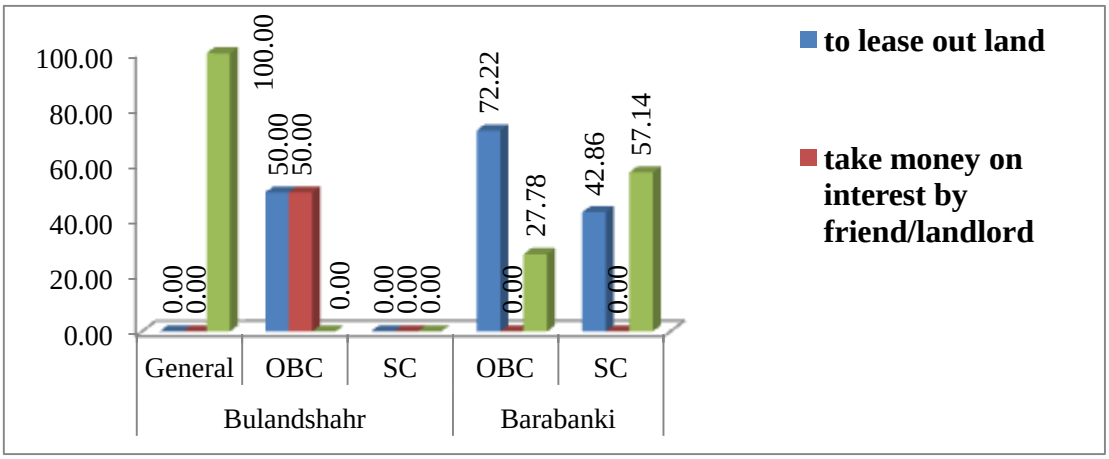


Source: Field Survey Data

Table 6.32 and figure 6.20 depicts how category wise manage money for education purpose in both the districts. The figures are shown in percentage and absolute in the brackets. It is found that around 50.00 per cent (2) of OBC farmers manage money from giving their land on lease whereas 50 per cent (2) of OBC farmers and 100 per cent (1) manage money for education purpose through credit from friend/landlord in Bulandshahr district. On the other hand 72.22 per cent (13) of

OBC farmers and 42.85 per cent (12) of SC farmers said that they manage money for education purpose by giving their land on lease in Barabanki district.

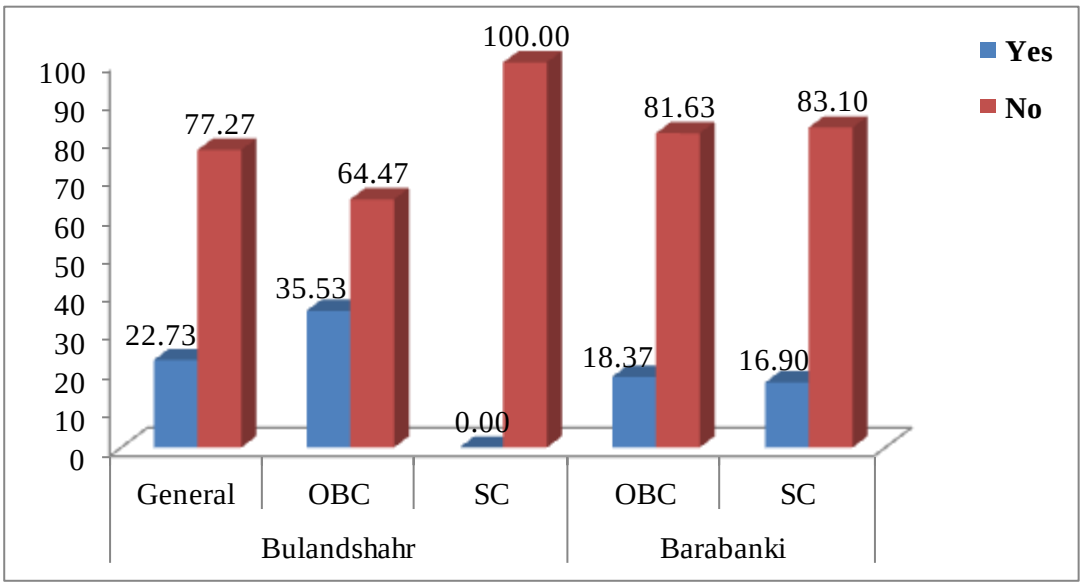
Figure- 6.20 Category Wise Management of Money for Education Purpose



Source: Field Survey Data

Table 6.33 and figure 6.21 shows category wise impact of corporate farming on education level in both the district of Uttar Pradesh. The figures are shown in percentage and absolute in the brackets. It is found that around 77.27 per cent (17) of general farmers, 64.47 per cent (49) of OBC farmers and 100 per cent (7) of SC farmers said that the corporate farming have no impact on education level. On the other hand, 22.72 per cent (5) of general farmers and 35.52 per cent (27) of OBC farmers said that the corporate farming have improved their educational level in Bulandshahr district. Similarly, 81.63 per cent (40) of OBC farmers and 83.09 per cent (59) of SC farmers have not been affected by lease farming on their education level while 18.36 per cent (9) of OBC and 16.90 per cent (12) of SC farmers improved their education level due to lease farming in Barabanki district during the study period. It is observed that majority of the farmers has accepted that there is no impact of corporate farming on their educational level in both the districts of Uttar Pradesh.

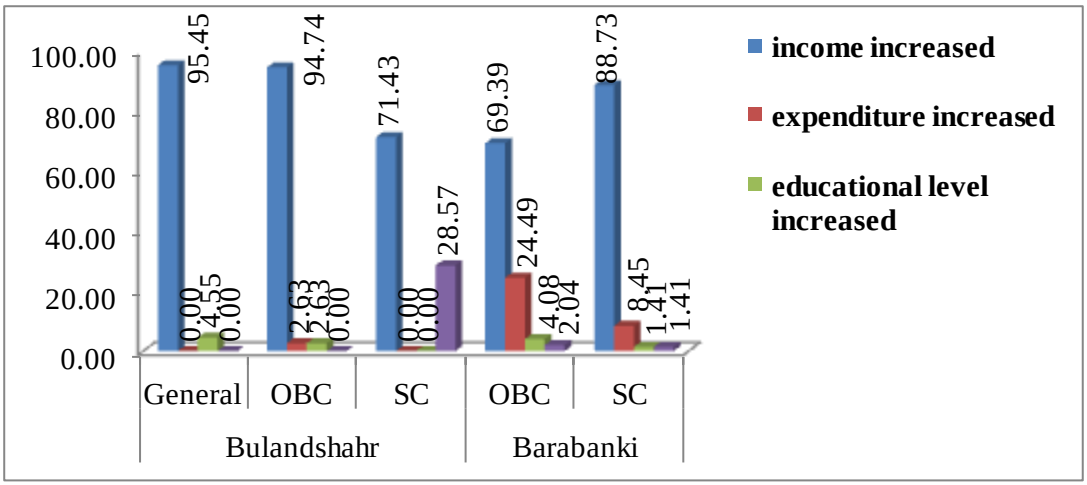
Figure- 6.21 Category Wise Impact of Corporate Farming on Education



Source: Field Survey Data

Table 6.34 and figure 6.22 highlights category wise impact of corporate farming on economic conditions of farmers in both the districts of Uttar Pradesh. The figures are shown in percentage and absolute in the brackets. It is found that 95.45 per cent (21) of general farmers, 94.73 per cent (72) of OBC farmers and 71.42 per cent (5) of SC farmers have said that corporate farming has increased income in Bulandshahr district. In the same way, 4.54 per cent (1) of general farmers said that corporate farming has increased educational while 2.63 per cent (2) of OBC category farmers said that corporate farming has increased expenditure and 2.63 per cent (2) of OBC farmers also said that corporate farming has increased the educational level of farmers in the district. Nearly 28.57 per cent (2) of SC farmers said that corporate farming is supporting other factors in Bulandshahr district. On the other hand, 69.38 per cent (34) of OBC farmers and 88.73 per cent (63) of SC farmers said that the corporate farming has increased income while 24.48 per cent (12) OBC farmers and 8.45 per cent (6) SC farmers said that the corporate farming has increased the expenditure in the Barabanki district. Similarly, 4.08 per cent (2) of OBC farmers, 1.40 per cent (1) of SC farmers said that corporate farming increased educational level while 2.04 per cent (1) of OBC farmers and 1.40 per cent (1) of SC farmers said that the corporate farming has also affected other factors in the district of Barabanki. Hence, it is evident from the analysis that the majority of farmers here improved their economic conditions through corporate farming in both the districts of Uttar Pradesh.

Figure- 6.22 Category Wise Impact of Corporate Farming on Economic Condition of Household

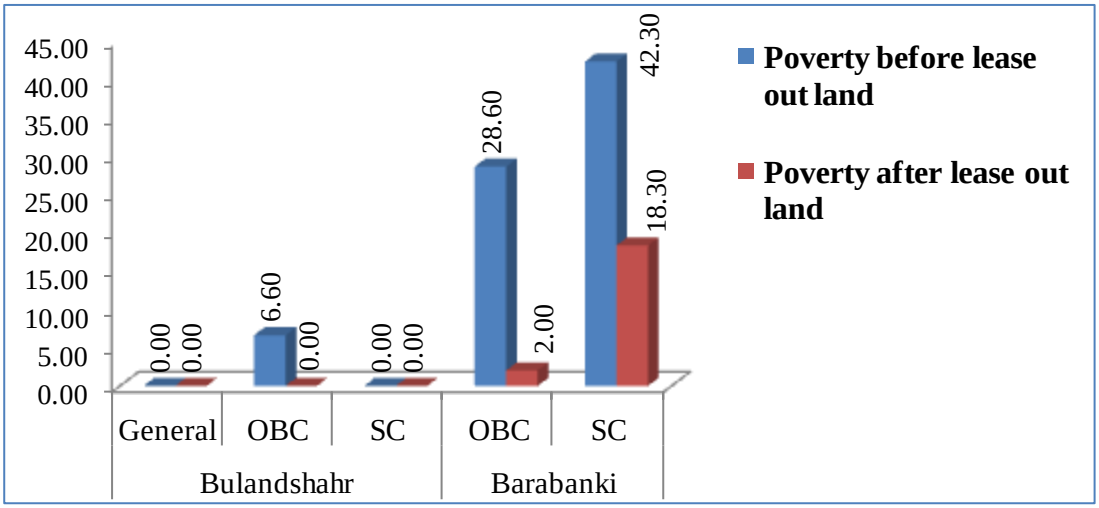


Source: Field Survey Data

6.8 Poverty

Poverty is a very burning issue in India since 1947. The state has taken several steps to remove the poverty in India. The rural poverty is very high compared to urban poverty. The Government of India has appointed various groups and committees to define the poverty line. Dr. C. Rangarajan committee is one of the committees which defined the poverty line. The government appointed a committee under the chairmanship of C. Rangarajan in 2012. The Committee has used the per capita monthly expenditure as a base to define the poverty. The committee defines the poverty line for urban and rural areas differently. For urban poverty line per month per Person was Rs. 1,407 while for rural it was Rs. 972 was decided by this committee as limits for poverty. Hence, in the present study, we have used Rangarajan criteria for poverty estimation. Table 6.35 and figure 6.23 reveals that the percentage of poverty among social groups in both the districts of Uttar Pradesh. The figures are shown in percentage and in absolute the brackets. It is found that around 6.6 per cent (5) of OBC farmers were living below poverty line before lease out land but after lease out land they become in APL category. On the other hand, the percentage of poverty was 28.6 per cent (14) of OBC before lease out land and it decreased to 2.0 per cent (1) after lease out land whereas 42.3 per cent (30) of SC farmers was below poverty and further decreased to 18.3 per cent (13) of SC farmers after lease out land in Barabanki district. It is observed that corporate farming had positive impact on poverty among all farmers in both the district of Uttar Pradesh.

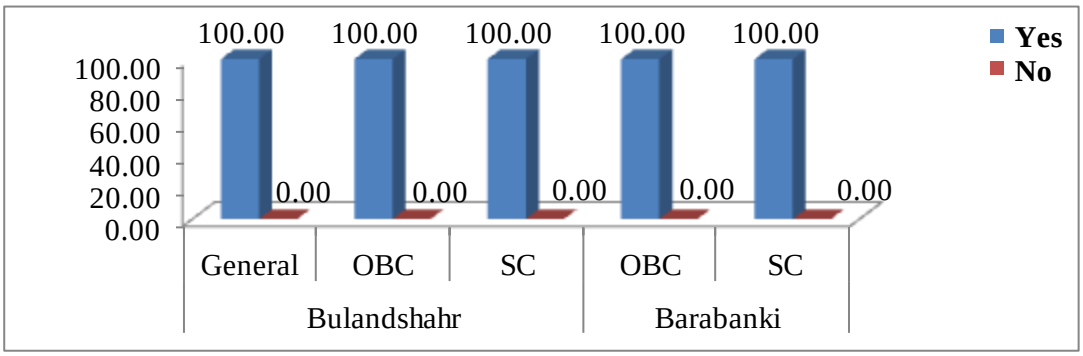
Figure- 6.23 Category Wise Poverty in Districts



Source: Field Survey Data

Table 6.36 and figure 6.24 describe social category wise preference of farmers about corporate farming both the districts of Uttar Pradesh. The figures are shown in absolute and percentage in the brackets. It is found that all the farmers are in the favour of the corporate farming in both the districts. However, lease farming is in the initial stage in the Uttar Pradesh but selected farmers have said that employment opportunities, income and expenditure condition have improved in both the districts. That's why they have been in the favour of corporate farming in U.P.

Figure- 6.24 District Wise Preference of Corporate Farming Model in Future

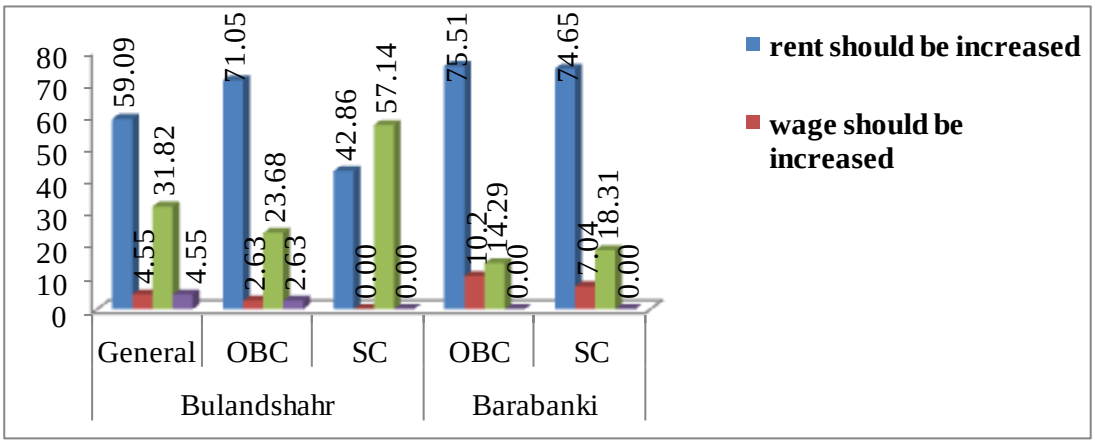


Source: Field Survey Data

Table 6.37 and figure 6.25 shows social category wise suggestions for further improvement in corporate farming in both the districts. It is found that 59.09 per cent (13) of general farmers, 71.05 per cent (54) of OBC farmers and 42.85 per cent (3) of SC farmers have said that the rent is very low. The company is generating huge income in the Bulandshahr district, while 1(4.55 per cent) of general farmers, 2.63 per cent (2) of OBC farmers are in the favour of wage increment and 31.81 per cent (7) of

general farmers, 23.68 per cent (18) of OBC farmers and 57.14 per cent (4) of SC farmers have not given any suggestion in Bulandshahr district. On the other hand, 75.51 per cent (37) OBC of farmers and 74.64 per cent (53) of SC farmers are in favour of increase rent and 10.20 per cent (5) of OBC farmers, 7.04 per cent (5) of SC farmers are in the favour of wage increment and 14.28 per cent (7) of OBC farmers, 18.30 per cent (13) of SC farmers have not given any suggestion in the Barabanki district. It is observed that majority of farmers suggested that rent and wage should be increased in both the districts of the Uttar Pradesh.

Figure- 6.25 District Wise Suggestions for Corporate Farming Model



Source: Field Survey Data

6.9 Conclusion

After analysis of data, present study has found that Bulandshahr district farmers are in better condition than Barabanki farmers in terms of socio-economic conditions after corporate farming. The peoples of that region have more opportunities to do the business. The most of sample farmers are engaged in permanent service or in their own business. Majority of the farmers in Bulandshahr have a large size holding. That is why the company gave more preference to large farmers. On the other hand Barabanki district majority of farmers are small and marginal land holders.

Further, it becomes clear from the above analysis corporate farming has positive impact on agricultural expenditure, production, productivity, and income. The entry of corporate companies into the agriculture sector also helps in the crop diversification in the state. In both, the districts the crop diversion from traditional crops to horticulture or cash crops has been observed.

Further, the percentage change in expenditure on crops in Bulandshahr district is less in comparison to Barabanki district while the percentage change in income in Barabanki district is higher than Bulandshahr district. In both the districts, a huge change has been found in total income from agriculture after corporate farming, which indicates that the corporate farming has been economically viable in both the districts of Uttar Pradesh.

Corporate farming also has been positively impact on lease out land farmers in both the districts of Uttar Pradesh. Farmer's average income and average expenditure has been increased after lease out land in both districts. After lease out land farmer's expenditure on food items, clothes, education, health and others have increased sharply in all social categories of farmers in both the districts during the study period. On the other hand, majority of the sample farmers have no impact of lease farming on their educational status in both the districts of Uttar Pradesh. However, lease farming is in the initial stage in the Uttar Pradesh but selected farmers have said that employment opportunities, income and expenditure condition have improved in both the districts. Poverty is also decreased due to corporate farming in both the districts of the state. Hence, the sample households are found in the favour of corporate farming in both the districts during the study period. However the companies are paying very less rent for their leased land. The small and marginal land owners are working in their own land as labour after leased out land to the company. The wages are very low. It means the small and marginal farmers are being exploited to some extent in both the districts.

APPENDIX

Table: 6.00 District Wise Land Acquired on Lease by Companies

District	Name of Company	Land acquired (in Hectare)
Bulandshahr	Sun Shine Agri Farms Pvt. Ltd.	963.3
Barabanki	Hi-Tech Agriculture & Consultation	154.13

Source: Field Survey Data

Table: 6.01 Category Wise Number of Lease out Land Farmers Involved in Corporate Farming during 2016-17

District	Category	Name of the Company		Total
		Sun Shine Agri Farms Pvt. Ltd.	Hi-Tech Agriculture & Consultation	
Bulandshahr	General	22 (20.95)	NA	22
	OBC	76 (72.38)	NA	76
	SC	7 (6.66)	NA	7
	Total	105	NA	105
Barabanki	OBC	NA	49 (40.83)	49
	SC	NA	71 (59.17)	71
	Total	NA	120	120

Source: Field Survey Data

Table: 6.02 District Wise Status of House Type Facility

Name of District	Category of Household	House Details			Total
		Kuchha House	Semi-Pucca	Pucca	
Bulandshahr	General	0 (0.00)	1 (4.55)	21 (95.45)	22 (100.00)
	OBC	0 (0.00)	16 (21.05)	60 (78.95)	76 (100.00)
	SC	0 (0.00)	0 (0.00)	7 (100.00)	7 (100.00)
Barabanki	OBC	1 (2.0)	7 (14.29)	41 (83.67)	49 (100.00)
	SC	5 (7.0)	34 (47.89)	32 (45.07)	71 (100.00)

Source: Field Survey Data

Table: 6.03 District Wise Status of the Sanitation Facility

Name of District	Category of Household	Toilet Facilities			Total
		Flush Toilet	Temporary Toilet	Open Field	
Bulandshahr	General	21 (95.45)	1 (4.55)	0 (0.00)	22 (100.00)
	OBC	65 (85.53)	10 (13.16)	1 (1.32)	76 (100.00)
	SC	5 (71.43)	1 (14.29)	1 (14.29)	7 (100.00)
Barabanki	OBC	18 (36.73)	8 (16.33)	23 (46.94)	49 (100.00)
	SC	9 (12.68)	12 (16.90)	50 (70.42)	71 (100.00)

Source: Field Survey Data

Table: 6.04 District Wise Status of the Drinking Water

Name of District	Category of Household	Sources of Drinking Water			Total
		Supply water	Hand pump	Other	
Bulandshahr	General	6 (27.27)	16 (72.73)	0 (0.00)	22 (100.00)
	OBC	15 (19.74)	57 (75.00)	4 (5.26)	76 (100.00)
	SC	0 (0.00)	5 (71.43)	2 (28.57)	7 (100.00)
Barabanki	OBC	0 (0.00)	46 (93.88)	3 (6.12)	49 (100.00)
	SC	0 (0.00)	69 (97.18)	2 (2.82)	71 (100.00)

Source: Field Survey Data

Table: 6.05 District Wise Percentage of Electrified Households

Name of District	Category of Household	Status of Electricity		Total
		Electrified	Not Electrified	
Bulandshahr	General	22 (100.00)	0 (0.00)	22 (100.00)
	OBC	76 (100.00)	0 (0.00)	76 (100.00)
	SC	7 (100.00)	0 (0.00)	7 (100.00)
Barabanki	OBC	49 (100.00)	0 (0.00)	49 (100.00)
	SC	60 (84.51)	11 (15.49)	71 (100.00)

Source: Field Survey Data

Table: 6.06 District Wise Educational Status of Sample Farmers

District	Category	Educational Status								Total
		Illiterate	Primary	Upper primary	Secondary	Senior secondary	Graduate	Post graduate	Others	
Bulandshahr	General	12 (9.16)	19 (14.50)	16 (12.21)	22 (16.79)	19 (14.50)	30 (22.90)	13 (9.92)	0 (0.00)	131 (100)
	OBC	73 (16.82)	25 (5.76)	52 (11.98)	71 (16.36)	87 (20.05)	88 (20.28)	36 (8.29)	2 (0.46)	434 (100)
	SC	4 (12.90)	2 (6.45)	4 (12.90)	5 (16.13)	5 (16.13)	8 (25.81)	3 (9.68)	0 (0.00)	31 (100)
Barabanki	OBC	21 (10.14)	48 (23.19)	60 (28.99)	29 (14.01)	26 (12.56)	16 (7.73)	5 (2.42)	2 (0.97)	207 (100)
	SC	41 (15.36)	94 (35.21)	58 (21.72)	30 (11.24)	34 (12.73)	10 (3.75)	0 (0.00)	0 (0.00)	267 (100)

Source: Field Survey Data

Table: 6.07 District Wise Percentage of Source of Cooking Food

Name of District	Category of Household	Sources of Cooking Food				Total
		Wood	Dung cake	LPG	Other	
Bulandshahr	General	0 (0.00)	0 (0.00)	19 (86.36)	3 (13.64)	22 (100)
	OBC	0 (0.00)	0 (0.00)	48 (63.16)	28 (36.84)	75 (100)
	SC	1 (14.29)	0 (0.00)	4 (57.14)	2 (28.57)	7 (100)
Barabanki	OBC	11 (22.45)	0 (0.00)	26 (53.06)	12 (24.49)	49 (100)
	SC	40 (56.34)	2 (2.82)	11 (15.49)	18 (25.35)	71 (100)

Source: Field Survey Data

Table: 6.08 District Wise Use of Vehicles

Name of District	Vehicle Type	Category of Households		
		General	OBC	SC
Bulandshahr	Car	2 (9.09)	7 (9.21)	3 (42.86)
	Tractor	1 (4.55)	2 (2.63)	0 (0.00)
	Motorcycle	19 (86.36)	63 (82.89)	4 (57.14)
	Cycle	0 (0.00)	4 (5.26)	0 (0.00)
	Total	22 (100)	76 (100)	7 (100)
Barabanki	Car	0 (0.00)	2 (4.08)	3 (4.23)
	Tractor	0 (0.00)	3 (6.12)	1 (1.41)
	Motorcycle	0 (0.00)	37 (75.51)	27 (38.03)
	Cycle	0 (0.00)	7 (14.29)	40 (56.34)
	Total	0 (0.00)	49 (100)	71 (100)

Source: Field Survey Data

Table: 6.09 District Wise Use of Television as an Entertainment

Name of District	Category of Household	Television		Total
		using	not using	
Bulandshahr	General	22 (100.00)	0 (0.00)	22 (100.00)
	OBC	76 (100.00)	0 (0.00)	76 (100.00)
	SC	7 (100.00)	0 (0.00)	7 (100.00)
Barabanki	OBC	46 (93.88)	3 (6.12)	49 (100.00)
	SC	57 (80.28)	14 (19.72)	71 (100.00)

Source: Field Survey Data

Table: 6.10 District Wise Use of Refrigerator/Washing Machine

Name of District	Category of Household	Refrigerator/Washing Machine		Total
		using	not using	
Bulandshahr	General	22 (100.00)	0 (0.00)	22 (100.00)
	OBC	57 (75.00)	19 (25.00)	76 (100.00)
	SC	5 (71.43)	2 (28.57)	7 (100.00)
Barabanki	OBC	10 (20.41)	39 (75.59)	49 (100.00)
	SC	5 (7.04)	66 (92.96)	71 (100.00)

Source: Field Survey Data

Table: 6.11 Social Category Wise Pattern of Land Holdings

Name of District	Category of Household	Category of Farmers				
		Marginal	Small	Semi- Medium	Medium	Large
Bulandshahr	General	0 (0.00)	0 (0.00)	0 (0.00)	4 (18.18)	18 (81.82)
	OBC	0 (0.00)	0 (0.00)	1 (1.32)	9 (11.84)	66 (86.84)
	SC	0 (0.00)	0 (0.00)	0 (0.00)	3 (42.86)	4 (57.14)
Barabanki	OBC	2 (4.08)	38 (77.55)	9 (18.37)	0 (0.00)	0 (0.00)
	SC	42 (59.15)	29 (40.85)	0 (0.00)	0 (0.00)	0 (0.00)

Source: Field Survey Data

Table: 6.12 District Wise Sold Out Land by Households

Name of district	Category of Household	Have you sold any of your agriculture land?	
		Sold	Not sold
Bulandshahr	General	0 (0.00)	100 (100)
	OBC	8 (10.53)	68 (89.47)
	SC	0 (0.00)	100 (100)
Barabanki	OBC	4 (8.16)	45 (91.84)
	SC	5 (7.04)	66 (92.96)

Source: Field Survey Data

Table: 6.13 Category Wise Main Reasons to Participate in Lease Farming

Name of District	Category of Household	Reasons to Participate in Lease Farming					Total
		low productivity	lack of input	lack of credit	lack of marketing facility	Others	
Bulandshahr	General	2 (9.09)	0 (0.00)	1 (4.55)	0 (0.00)	19 (86.36)	22 (100)
	OBC	17 (22.37)	5 (6.58)	11 (14.47)	0 (0.00)	43 (56.58)	76 (100)
	SC	1 (14.29)	1 (14.29)	0 (0.00)	0 (0.00)	5 (71.43)	7 (100)
Barabanki	OBC	17 (34.69)	5 (10.20)	10 (20.41)	1 (2.04)	16 (32.65)	49 (100)
	SC	20 (28.17)	10 (14.08)	26 (36.62)	0 (0.00)	15 (21.13)	71 (100)

Source: Field Survey Data

Table: 6.15 District Wise No. and Percentage of Livestock

District	Category	No. of Cows	No. of Buffalos	No. of Goats	No. of Cock/Hen	Total
Bulandshahr	General	9 (14.29)	36 (57.14)	14 (22.22)	4 (6.35)	63 (100)
	OBC	29 (15.59)	126 (67.74)	13 (6.99)	18 (9.68)	186 (100)
	SC	1 (16.67)	5 (83.33)	0 (0.00)	0 (0.00)	6 (100)
Barabanki	OBC	32 (31.37)	52 (50.98)	13 (12.75)	5 (4.90)	102 (100)
	SC	28 (21.88)	71 (55.47)	29 (22.66)	0 (0.00)	128 (100)

Source: Field Survey Data

Table: 6.16 Districts Wise Total Value of Livestock (in Rs.)

District	Category	Value of Cow	Value of Buffalo	Value of Goat	Value of Cock/Hen	Total value
Bulandshahr	General	340000	1783000	87000	1600	2211600
	OBC	1107000	7580000	78000	37500	8802500
	SC	40000	295000	0	0	335000
Barabanki	OBC	1050000	2630000	77000	7500	3764500
	SC	945000	2820000	244000	0	4009000

Source: Field Survey Data

Table: 6.17 District Wise Type of Lease Agreement between Farmers and Companies

District	Category	Type of Lease Agreement	Total
		Un-written	
Bulandshahr	General	22 (100)	22 (100)
	OBC	76 (100)	76 (100)
	SC	7 (100)	7 (100)
Barabanki	OBC	49 (100)	49 (100)
	SC	71 (100)	71 (100)

Source: Field Survey Data

Table: 6.18 District Wise Issue of Land Boundary after Completion of Agreement

District	Category	Will company return the land to farmers with proper boundary after completion of agreement?	Total
		Yes	
Bulandshahr	General	22 (100)	22 (100)
	OBC	76 (100)	76 (100)
	SC	7 (100)	7 (100)
Barabanki	OBC	49 (100)	49 (100)
	SC	71 (100)	71 (100)

Source: Field Survey Data

Table: 6.19 Impact on Agricultural Expenditure

(Cost in Rs. per hect)

District	Category	Land in Hect.	Before Lease Out Land		After Lease Out Land				
			Cost of Wheat	Cost of Rice	Cost of Carrot	Cost of Banana	Cost of Potato	Cost of Tomato	Cost of Mentha
Bulandshahr	General	202.15	14139	17529	55942	0.00	0.00	0.00	0.00
	OBC	696.19	14482	17773	55942	0.00	0.00	0.00	0.00
	SC	65.03	14557	17442	55942	0.00	0.00	0.00	0.00
Barabanki	OBC	80.92	17684	20085	0.00	155723	93506	0.00	21818
	SC	73.22	18067	20432	0.00	155717	93472	140359	21799

Source: Field Survey Data

Table: 6.20 Impact on Agricultural Production

(In Qtl and mentha in kg.)

District	Category	Land in Hect.	Before Lease Out Land		After Lease Out Land				
			T.P. of Wheat	T.P. of Rice	T.P. of Carrot	T.P. of Banana	T.P. of Potato	T.P. of Tomato	T.P. of Mentha
Bulandshahr	General	202.15	3531	2971	51619	0	0	0	0
	OBC	696.19	12668	10715	177776	0	0	0	0
	SC	65.03	1136	943	16605	0	0	0	0
Barabanki	OBC	80.92	1541	1305	0.00	48000	1680	0	360
	SC	73.22	1413	1198	0.00	40200	1470	3729	810

Source: Field Survey Data

Table: 6.21 Impact on Agricultural Productivity

(Quintal/hect)

District	Category	Before Lease Out Land		After Lease Out Land				
		Yield of Wheat	Yield of Rice	Yield of Carrot	Yield of Banana	Yield of Potato	Yield of Tomato	Yield of Mentha (Kg/Hect)
Bulandshahr	General	17	15	255	0	0	0	0
	OBC	18	15	255	0	0	0	0
	SC	17	14	255	0	0	0	0
Barabanki	OBC	19	16	0	623	436	0	94
	SC	19	16	0	623	436	705	93

Source: Field Survey Data

Table: 6.22 Impact on Agriculture Income from Crops

(Income per hectare)

District	Category	Before lease out Land		After lease out Land				
		Wheat	Rice	Carrot	Banana	Potato	Tomato	Mentha
Bulandshahr	General	25750	20169	612855	0	0	0	0
	OBC	26583	20855	612855	0	0	0	0
	SC	25729	19968	612855	0	0	0	0
Barabanki	OBC	29040	22730	0	778614	156218	0	93506
	SC	29420	23071	0	778587	156160	783865	93426

Source: Field Survey Data

Table: 6.23 District Wise Percentage Change in Total Cost and Total Income from Agriculture

District	Category	Before lease out Land		After lease out Land		Percentage Change in Cost	Percentage Change in Income
		Total Cost	Total Income	Total Cost	Total Income		
Bulandshahr	General	6401600	8677200	11308338	123885600	76.64	1327.71
	OBC	22455200	29685050	38945952	426662400	73.43	1337.3
	SC	2080800	2784925	3637710	39852000	74.82	1330.99
Barabanki	OBC	3056300	3697900	12444000	60961440	307.15	1548.54
	SC	2818700	3476700	11296500	55732908	300.76	1503.04

Source: Field Survey Data

Table: 6.24 District Wise Impact of Corporate Farming on Household Income

District	Category	Before Lease Out Average Income	After Lease Out Average Income	Percentage Change
Bulandshahr	General	441334	681000	54.3
	OBC	357932	510526	42.63
	SC	347786	459429	32.1
Barabanki	OBC	163361	209638	28.32
	SC	105724	146211	38.29

Source: Field Survey Data

Table: 6.26 District Wise Impact of Corporate Farming on Household Expenditure

District	Category	Before Lease Out Average Expenditure	After Lease Out Average Expenditure	Percentage Change
Bulandshahr	General	275218	353181	28.32
	OBC	230584	351407	52.39
	SC	223771	310285	38.66
Barabanki	OBC	122571	162612	32.66
	SC	90304	124597	37.97

Source: Field Survey Data

Table: 6.27 Nature of Employment among Social Groups

District	Category	Permanent	Self-Employed	Temporary	Pensioner	Total
Bulandshahr	General	13 (59.09)	8 (36.36)	1 (4.54)	0 (0.00)	22 (100)
	OBC	36 (47.36)	25 (32.89)	13 (17.10)	2 (2.63)	76 (100)
	SC	3 (42.85)	2 (28.57)	2 (28.57)	0 (0.00)	7 (100)
Barabanki	OBC	21 (42.85)	3 (6.12)	25 (51.02)	0 (0.00)	49 (100)
	SC	19 (26.76)	2 (2.81)	50 (70.42)	0 (0.00)	71 (100)

Source: Field Survey Data

Table: 6.28 District Wise Number of Persons Doing another Work (other than agriculture)

District	Category	No	One	Two	Three	More than Three	Total
Bulandshahr	General	1 (4.54)	14 (63.63)	5 (22.72)	1 (4.54)	1 (4.54)	22 (100)
	OBC	14 (18.42)	39 (51.31)	18 (23.68)	5 (6.57)	0 (0.00)	76 (100)
	SC	2 (28.57)	3 (42.85)	1 (14.28)	1 (14.28)	0 (0.00)	7 (100)
Barabanki	OBC	16 (32.65)	32 (65.30)	1 (2.04)	0 (0.00)	0 (0.00)	49 (100)
	SC	35 (49.29)	31 (43.66)	5 (7.04)	0 (0.00)	0 (0.00)	71 (100)

Source: Field Survey Data

Table: 6.31 Category Wise Sufficiency of Money for Education Purpose

District	Category	Sufficient	Not sufficient	Total
Bulandshahr	General	22 (100)	0 (0.00)	22 (100)
	OBC	72 (94.73)	4 (5.26)	76 (100)
	SC	7 (100)	0 (0.00)	7 (100)
Barabanki	OBC	31 (63.26)	18 (36.73)	49 (100)
	SC	43 (60.56)	28 (39.43)	71 (100)

Source: Field Survey Data

Table: 6.32 Category Wise Management of Money for Education Purpose

District	Category	Management of Money for Education		
		Lease Out Land	Take Money on Interest by Friend/Landlord	Others
Bulandshahr	General	0 (0.00)	0 (0.00)	1 (100)
	OBC	2 (50.00)	2 (50.00)	0 (0.00)
	SC	0 (0.00)	1 (100)	0 (0.00)
Barabanki	OBC	13 (72.22)	-	5 (27.77)
	SC	12 (42.85)	-	16 (57.14)

Source: Field Survey Data

Table: 6.33 Category Wise Impact of Corporate Farming on Education

District	Category	Have Corporate Farming Improve Education Level?		Total
		Improved	Not improved	
Bulandshahr	General	5 (22.72)	17 (77.27)	22 (100)
	OBC	27 (35.52)	49 (64.47)	76 (100)
	SC	0 (0.00)	7 (100)	7 (100)
Barabanki	OBC	9 (18.36)	40 (81.63)	49 (100)
	SC	12 (16.90)	59 (83.09)	71 (100)

Source: Field Survey Data

Table: 6.34 Category Wise Impact of Corporate Farming on Economic Conditions of Household

District	Category	How Corporate Farming Helped You?				Total
		income increased	expenditure increased	educational level increased	other	
Bulandshahr	General	21 (95.45)	0 (0.00)	1 (4.54)	0 (0.00)	22 (100)
	OBC	72 (94.73)	2 (2.63)	2 (2.63)	0 (0.00)	76 (100)
	SC	5 (71.42)	0 (0.00)	0 (0.00)	2 (28.57)	7 (100)
Barabanki	OBC	34 (69.38)	12 (24.48)	2 (4.08)	1 (2.04)	49 (100)
	SC	63 (88.73)	6 (8.45)	1 (1.40)	1 (1.40)	71 (100)

Source: Field Survey Data

Table: 6.35 Percentage of Poverty among Sample Farmers

Name of District	Category of Household	Poverty before lease out Land	Poverty after lease out Land
Bulandshahr	General	0 (0.0)	0 (0.0)
	OBC	5 (6.6)	0 (0.0)
	SC	0 (0.0)	0 (0.0)
Barabanki	OBC	14 (28.6)	1 (2.0)
	SC	30 (42.3)	8 (18.3)

Source: Field Survey Data

Table: 6.36 District Wise Preference of Corporate Farming Model in Future

District	Category	Would You Prefer Corporate Farming in Future?	Total
		Yes	
Bulandshahr	General	22 (100)	22 (100)
	OBC	76 (100)	76 (100)
	SC	7 (100)	7 (100)
Barabanki	OBC	49 (100)	49 (100)
	SC	71 (100)	71 (100)

Source: Field Survey Data

Table: 6.37 District Wise Suggestions for Corporate Farming Model

District	Category	Rent should be Increased	Wage should be Increased	No	others	Total
Bulandshahr	General	13 (59.09)	1 (4.54)	7 (31.81)	1 (4.54)	22 (100)
	OBC	54 (71.05)	2 (2.63)	18 (23.68)	2 (2.63)	76 (100)
	SC	3 (42.85)	0 (0.00)	4 (57.14)	0 (0.00)	7 (100)
Barabanki	OBC	37 (75.51)	5 (10.20)	7 (14.28)	0 (0.00)	49 (100)
	SC	53 (74.64)	5 (7.04)	13 (18.30)	0 (0.00)	71 (100)

Source: Field Survey Data

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Chapter-VII

CONCLUSION AND SUGGESTION

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CONCLUSION AND SUGGESTION

Agriculture is playing an important role in the process of economic development. It is providing food employment opportunities, saving, materials or inputs to industrial sector and foreign exchange. At the time of Indian Independence, the share of agriculture in total GDP was more than 55 per cent and 70 per cent of population was depending on agriculture sector for their livelihood. Now, the share of agriculture in total GDP has declined to 15.4 per cent in 2015-16 (GOI, 2016) and employing as 52 per cent of the total workforce of India. Hence, there is a continuous steady decline in its contribution to the GDP, and the agriculture sector is losing its shine and anchor position in the Indian economy. However, still 50 per cent people are depending on agriculture for their livelihood and employment. This sector has been facing various problems, they are in general institutional and technological. The farmers are facing several general problems like indebtedness, absence of crop rotation and population pressure. Indian agriculture has also been suffering from the technological problems. Inadequate use of inputs like fertilizers & High Yield Variety (HYV) seeds is the main concern. Indian farmers are not applying sufficient quantity of fertilizers on their lands. Small size of land holding is the main institutional problem faced by the Indian agriculture sector. Over 70 per cent of the holdings are either small or marginal, less than one hectare land. These farmers have less resource for investment in the farming. The public investment in agriculture sector also continues to decline which leads to low capital formation, the farmer. Due to low capital formation farmers can not invest in farming activities and ends with low agricultural production. Many times, these farmers would not be able to sell their products at better remunerative prices. Due to the lack of buyers, often farmers are forced to throw their products at cheap rate. On the other hand, the agri-based industry, which requires timely and adequate inputs of good quality agricultural produce, falls short of such raw material. The state has experimented several farming system models like state farming, estate farming, cooperative farming contract farming to solve these problems. But all these farming systems have not benefitted to the small and marginal farmers. Now in this chain of reforms in farming system in India, the state is allowing private sector investment in agriculture sector. As results

the model of corporate farming came into existence in Indian agriculture. Entry of the corporate sector can solve these problems through land-leasing and land buying ways. All the states are following the corporate farming to increase the production, income, productivity, employment and reduce the poverty in rural India. Hence, there is a need to examine the feasibility of the corporate farming in India. The corporate farming improves the socio-economic conditions of small and marginal farmers, agriculture production and sustains the soil health and food security in India.

The corporate farming describes the business of agriculture, as the practices of mega-corporations involved in food production on large scale. It is a modern food industry and encompasses not only the farm itself but also the entire chain of agriculture-related business including seed supply, agrichemicals, food processing, machinery, storage, transport and distribution, marketing, advertising and retail sales. The ultimate goal of corporate farming is to vertically integrate the entire process of food production up to the point of the distribution and sale of food to consumers. It refers to direct ownership or leasing in of farmland by business organizations to produce for their captive processing requirements (Singh 2006). Asian economies, like India and Pakistan have resorted to corporate farming in a bid to lure multinationals into investing in the agricultural sector. Economies of U.K. and U.S. have already witnessed this business phenomenon in their agricultural sector. They are proofs of a highly developed food industry with a well-developed agricultural system.

The corporate farming is not legal entity at present in India. The agribusiness firms are increasingly choosing leasing in land option to resort to corporate farming as a way out of this situation. Some of the corporate agencies in the states are asking for long-term lease (20-30 years) of farmers land for corporate farming. The agriculture is a state subject and many state governments in India have attempted liberalization of land laws, especially land ceiling laws to allow the corporations in agriculture.

Now the corporate farming also has been started in the States of Punjab, Maharashtra, Gujarat and Uttar Pradesh. It is nothing but the transformation of agriculture as industry. It also helps for consolidation of fragmented land holdings in India. The agricultural sector is being converted into an industrial sector, as multinational corporations are interested in direct participation in farming and cultivation.

A few corporate companies are involved in the agriculture in the form of contract or corporate farming systems. The corporate farming is very long-term leasing in of land from small and marginal farmers operating at large scale operating farming systems and sustains the soil health and food security of the country. There is threat of ownership rights of small and marginal farmers.

In the early years of independence the agriculture was dominated by peasant farming in the state. It was not in a position to increase production and productivity in state. So the multiple models of farming were recommended by Kumarappa committee in 1956 in the form of state farming and collective farming. Thereafter, most successful farming was the cooperative farming in the state as it reduces the institutional credit requirements and cooperation among the farmers. But in the post-reform period, reduced public investment in agriculture in the state leaves the little incentive to cooperative farming in the state. No doubt, the cooperative farming and green revolution has increase the agriculture production in the state but problems of agriculture like credit, infrastructure, marketing still exist in the state of Uttar Pradesh. So, the government of the state also adopted the policy of the government of India. Agriculture policy, 2000 of Government of India allowed the private players in the agriculture sector for the development of the sector. In the state private players also came into existence after this policy through contract farming and corporate farming. Contract and corporate farming may be solving the problems of small and marginal farmers in the state if the government makes a good policy in this direction. Therefore, the model of contract and corporate farming may play a vital role in the development of agriculture sector in the state.

The growth and development of the agriculture sector is slow in Uttar Pradesh. There is need to adopt multi-prone strategies and integrated approach through improved institutional arrangements and better infrastructure to boost sustainable agricultural development at state level. The future agricultural development efforts must be focused on innovations which will improve productivity of land as well as farm labour. On the other hand, a strong steps need to take to improve land market, seed, credit, investment, soil health, irrigation facility, marketing, watershed development, agro-processing, climatic variability and research and technological development in the state. It is essential to raise the growth of commercial crops such

as vegetables, fruits, livestock produce, poultry and rural entrepreneurship in the rural areas at state level.

Agricultural development mainly includes development of cropped land, improvement in farm system, farm implements, irrigation system, high yielding improved varieties of seeds, chemical fertilizers, insecticides and pesticides, intensity of cropping and specialization and commercialization of agriculture. In India majority of population depend upon agriculture. So, a vast rural mass tries to earn their livelihood from agricultural land. With fast increasing pressure of population on agricultural land, old methods and techniques of production cannot cope with growing demand of the people. As a result, farming system methods are adopted to develop agro-economy at state level

The growth rate of agriculture and allied sector showed fluctuation trends during 1950-51 to 2011-12 at state level as well as national level. The growth rate of agriculture and allied sector in second plan period was less than the first plan period because second plan focused to develop industrial sector rather than agriculture and allied sector. The biggest change came in third plan period when the government introduced "Intensive Agricultural District Programme (IADP) and High Yielding Varieties Programme (HYVP) to increase the agricultural productivity in the state. But, the extensive and serious drought and famine conditions in 1965-66 adversely affected the growth of the agriculture and allied sector and it's become negative at state level and national level. In this period the government was forced to imports food grains and adopted "plan holiday" for three years. Further, the government emphasized on effective and favorable techniques for the promotion of agricultural productivity. Therefore, the condition of the agriculture sector started to improve in positive trends at state level. Around 69 per cent of the available land has been allocated under the area of agriculture in the state. Majority of area in the state are under single cropping. There is a possibility of agricultural development through increase in net area sown and multiple cropping patterns in the state of Uttar Pradesh.

The percentage of number and area of marginal land holdings was 66.8 per cent and 21.10 per cent 1970-71 and increased to 79.5 per cent and 40.7 per cent in 2010-11 at state level. With regards to small holdings, the number and area was 17.2 per cent and 20.8 per cent in 1970-71 respectively and become 13 per cent and 24 per cent in 2010-11 in the state. The number and area of marginal farmers are increasing

during the study period. In fact, the high division of land has been restricting and hindering the diffusion of modern technology in agriculture. Apart from characterized by the largest proportion of small and marginal land holdings among all size class, there is also high incidence of tenancy cultivation dominated by landlords which is decreasing the growth prospects because of small segments of land remained out of investment at state level. The average size of land holdings in all categories are decreasing during the period 1970-71 to 2010-11 in Uttar Pradesh.

The compound annual growth rate of area, production, and productivity of food grain crops and non-food grains crops has extensive variations during the study period at state level. The cropping pattern is changing in Uttar Pradesh. The area of foodgrain crops are shifting from traditional crops to commercial crops at state level. On the other hand, the productivity of non-food grain crops is increasing at a faster rate compared to the productivity of food grain crops during the study period at state level.

The irrigated area by tube wells and wells has been increased during the study period at state level. Canals are the second best source for irrigation in the state and have declining trend during the same period at state level. More than 50 per cent of gross cropped area seems to be rainfed area and it depends on the gamble of monsoon which is the matter of concern. Further, the percentage of nitrogenous fertiliser and potassic fertiliser has gone down and phosphatic fertilizer has been going up respectively during the study period in Uttar Pradesh.

The number of marginal and small farmers sharply increases in the state during 1950-51 to 2010-11. The area and production of cereal crops in the state has also increased while the area and production of pulses goes down tremendously in the state. There is a diversification from traditional crops to commercial crops due to private participation through contract and corporate farming in the state. Agriculture cultivators have also been decreasing in the state and migrating to other sectors for the betterment of their welfare. Agriculture credit may be one of the reasons of migration in the state of Uttar Pradesh. Credit is playing important role in increasing agriculture productivity but, the flow of credit by formal sources is still not sufficient for small and marginal farmers in the state.

In Uttar Pradesh, Bulandshahr and Barabanki districts are agriculture dominant economy. Around 90 per cent small and marginal farmers are engaged in agricultural

activities. There is less participation of rural people in other sectors of the economy like manufacturing and service sector. As a result, agriculture is the main source of income for the rural area people. In both districts rural literacy rate of female is less than male literacy rate. In urban areas literacy rate is higher than the rural areas literacy rate. The literacy rate of SC females in urban is also high in comparison to the rural SC females.

The cultivators constitute 28.3 per cent of total workers in Bulandshahr district while in Barabanki cultivators constitute 46.20 per cent share of total workers in the district. The proportion of cultivators of females is less than the males, but in case of agricultural labourers their proportion is distinctly higher in both the districts.

Further, small and marginal land holdings are dominant in both the districts. Small and marginal land holdings hindered the farmers to achieve the required goal. These small and marginal holdings are in a scattered form which leads to inefficiency in using new technology on the land. As a result, farmers are facing various problems in agriculture sector like a low level of production and productivity, lack of financial assistance and lack of market facility.

Now, the entry of the companies in the agriculture sector in both the district provides a ray of hop to the small and marginal farmers. The companies are taking the land on lease from the farmers and give them rent and provide work in the corporate farm as a labourer. This type of farming is going on, in both the district. In Bulandshahr district Sun Shine Agri Farms Pvt. Limited company produces carrot at large scale. Approximately, 1000 acres of land has acquired by the company in the district. Similarly, in Barabanki district Hi-Tech Agriculture & Consultation Company is doing agriculture. This company produces banana and providing employment in the district. The entry of companies in agriculture sector is very beneficial to the small and marginal farmers in both the districts. Socio-economic conditions of the farmers have improved. Hence, these two districts are selected for the study purposefully.

The impact of corporate farming is studied by collecting 225 samples of lease-out farmers from the two districts of Uttar Pradesh during 2016-17. Sample of 105 farmers are taken from Bulandshahr district and sample of 120 from Barabanki district respectively. Nearly 963.3 hectares of land is acquired by Sun Shine Agri Farms Pvt. Ltd in Bulandshahr district whereas 154.13 hectares of land is acquired by Hi-Tech Agriculture & Consultation in Barabanki district to large scale operation.

The Bulandshahr district farmers are in better condition than the Barabanki farmers in terms of socio-economic conditions. Since Bulandshahr district is very near to Delhi. The peoples of that region have more opportunities to do the business. The most of sample farmers are engaged in permanent service or in their own business. Majority of the farmers in Bulandshahr have a large size holding that is why the company gave more preference to large farmers. On the other hand in Barabanki district majority of farmers are small and marginal land holders.

Before corporate farming the cost of production per hectare is less in comparison to after corporate farming. This difference in the cost per hectare is due to diversification in crops production in both the districts of Uttar Pradesh. Before lease out the traditional crops were produces in both the districts while after lease out, cash crops are produced at large scale by the companies in both the districts of the state. Another reason of increase in cost per hectare is profit maximization goal of companies. These companies are using hybrid seeds and pesticides to increase the production of crops in the study area.

There is a widespread variation in agricultural production before lease out land and after lease out land in both the district. The corporate farming has positive impact on agricultural production in both the districts. The farming companies is not only increasing the production of the crops but also generating employment of the farmers, income and improving socio-economic conditions of farmers in both the district of Uttar Pradesh. Before lease out land, the expenditure of the farmers on agricultural inputs was not significant in both the district. Majority of the farmers are suffering from lack of inputs, lack of irrigation facilities, low investment and lack of improved technology. But the corporate companies are investing huge amount capital in farm level to improve the production in both the district. On the other hand, the farmers are becoming landless after the entry of companies in agriculture but the companies are decreasing the migration of the farmers from rural to urban for searching job opportunities in both the district of the state. Further, corporate farming plays a very important role in increasing the production of crops per hectare in the state of Uttar Pradesh. The commercialization of crops is the main reason of increase in productivity in both the district of Uttar Pradesh. Before lease out, both the districts are producing only wheat and rice production and after lease out land to the companies commercial crops are producing on the same land.

Further, before lease out land, income per hectare from wheat and rice were Rs. 25750 and Rs. 20169 for general farmers, Rs. 26583 and Rs. 20855 for OBC farmers and Rs. 25729 and Rs. 19968 for SC farmers respectively in the Bulandshahr district. On the other hand, after lease out land, the company is generating Rs. 612855 per hectare income on the same land in Bulandshahr district. Similarly, income per hectare from wheat and rice was recorded at Rs. 29040 and Rs. 22730 for OBC farmers and Rs. 29420 and Rs. 23071 for SC farmers respectively in Barabanki district. After lease out land, company is producing banana, potato, tomato and mentha and generating Rs. 778614, Rs. 156218, Rs. 783865 and Rs. 93506 income per hectare respectively. Hence, in both the districts has big difference in agricultural income before lease and after lease out land. This difference indicates that after lease out land agricultural income has been increased sharply in both the districts of Uttar Pradesh. Hence, corporate farming has positive impact on agricultural expenditure, production, productivity, and income. The corporate entry into the agriculture sector also helps in the crop diversification in the state. In both, the district diversion from traditional to horticulture or cash crops has been found.

Further, the percentage change in expenditure of crops in Bulandshahr district is less among the social groups in comparison to Barabanki district, whereas the percentage change in income in Barabanki district is higher than Bulandshahr district. The reason of much change in income in Barabanki district is production of four types of crops generate high income while in Bulandshahr district only one crop is producing. On the other hand, percentage change in expenditure in Bulandshahr district is less while in Barabanki district multiple crops are producing on the acquired land. In both the districts has a huge change in agricultural expenditure and income after involving in corporate farming, which indicates that the corporate farming is economically viable in both the districts of Uttar Pradesh.

The corporate farming also has been positive impact on lease out land farmers in both the districts of Uttar Pradesh. Farmer's average income has increase because they get the rent on leased out land and employment opportunities in both the district of Uttar Pradesh. The average expenditure has also increased after lease out land in both districts. After lease out land expenditure on food items, clothes, education, health and others increased sharply in all social categories of farmers in both the districts.

The results of the logistic regression analysis clearly identify the cast and rent affecting on the income from corporate farming in the study area. Among the factors, caste and rent are more likely to affect income from corporate farming. The coefficient for age and education variables of the farmers is not significant. This is mainly because of no significant differences in age and education profiles of the sample farmers. Regression results indicate that social category of the farmers is likely to play a significant role in the increment in income from corporate farming. The coefficient of caste is explaining the income perception. The income of OBC category farmers is increased because their land holding size is more than SC farmers land fix. Therefore, the economic condition of OBC farmers is better than SC farmers. The negative coefficient of regression for rent per hectare implies that the income after involved in corporate farming of SSR group are more likely high as compared to LRR group. This happens because the SSR group is getting the rent as well as wages. Therefore, the income perception of LRR group is weak as compared to SRR group.

Further, it is observed all social categories farmers have permanent nature of employment in Bulandshahr district while in the Barabanki districts majority of the farmers falls in the temporary type of employment category. It is clear that due to the decreasing productivity of crops, farmers have only better option to give their land to company on lease in the study area. The corporate farming has created more employment opportunities for labour, as the labour intensity of various commercial crops is much higher than the traditional crops. For example, wheat and paddy crops largely depend on mechanization of sowing and harvesting, which reduced the manual work of the labourers in the rural areas. Hence, corporate farming has the capability to create the employment opportunities in rural areas.

The majority of sample households are engaged in non-farm activities in Bulandshahr district. On the other hand, in Barabanki district most of the sample households engaged in agriculture activities. This happens due to small and marginal land holdings in the Barabanki district. Other reason of backwardness of the Barabanki district has been low level of income, education, non-farm job opportunities.

The logistic results for employment perception show that all independent variables are statically significant but age is not affecting the employment in the study area. The coefficient of education1 is negative which means illiterate persons have

less opportunity in the employment in both the districts of Uttar Pradesh. Hence, most of the employed persons are educated at higher secondary level and above higher secondary level in both districts. Caste is also affecting the employment in the districts. Caste1 coefficient is also negative which means other than caste1 people, have more impacted on employment. In other words, majority of the SC category households are accepted that the employment increase due to corporate farming in both the districts. The companies are providing employment to the SC category farmers and they are working on the corporate farms as a labourer. They also said that after corporate farming they become landless labourers because they give their land to the company on lease.

Similarly, the results for wage perception show that the social category and age of the sample farmers are the factors impacted on the wages from corporate farming in the study area. The coefficient for education of the farmers is not significant. But, the age and social category are significant in the present model. Age of the farmers play a significant role in the wage perception. The coefficient of age1 i.e. working group is positive. Working age group farmers are getting more wages in comparison to old age group in both the districts. Regression results also indicate that social category of the farmers is likely to play a significant role in the increment in wages from corporate farming. The negative coefficient of regression for caste2 implies that the wages after involved in corporate farming belonging to GEN and OBC category farmers are more likely high as compared to SC category farmers. The wages of GEN and OBC category farmers are increased because they have more opportunities in management activities in comparison to SC category farmer's farms. Therefore, the GEN and OBC category farmers are getting more wages in comparison to SC category farmers in the study area.

In terms of having money sufficiency for educational purpose it is observed that Bulandshahr district is in better position as compared to Barabanki district. The main reason of the sufficiency of money in Bulandshahr district is permanent jobs and better business opportunities of farmers. Farmers of Barabanki districts have no sufficient money for educational purpose. They arranged the money by giving land on lease to the company, credit from their friends and relatives and other sources in the state.

On the other hand, majority of the sample farmers have no impact of corporate farming on their educational status in both the districts of Uttar Pradesh. However, the corporate farming is in the initial stage in the Uttar Pradesh but selected farmers have said that employment opportunities, income and expenditure conditions are improved in both the districts. The poverty is also decreased due to corporate farming in both the districts of the state. Hence, the sample households are found in the favour of corporate farming in both the districts during the study period. However, the small and marginal farmers are working in their land after leased out to the companies on wages. The companies are paying very less rent for leased land and lower wages for labours. The majority of the farmers prefer the corporate farming due to the benefits of income, employment, production and productivity. The corporate farming has positive impact on socio-economic conditions of farmers. But the exploitation is to be reduced in the system.

Recommendations

The study proves that corporate farming is economically viable and has positive impact on socio-economic conditions of the small and marginal farmers in the villages. The majority of the farmers are in favour of corporate farming because of surety, security and assurance of income from the companies. The companies are following the unwritten agreement of lease of land from the farmers. The corporate farming has no legal framework in India. It needs to be developed. The farmers are being exploited by paying very less rent for leased land and low wages for labours. The state has to develop a legal framework for corporate farming and guidelines, directions and laws/acts of leased land and laws for rights of ownership of small and marginal farmers for SC and OBC social group farmers. The corporate farming and contract farming are the future of Indian agriculture. Hence, there is an immediate need of a legal framework with strict rules/laws for agriculture in India. Alternative employment opportunities need to be created for farmers in rural areas.

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APPENDIX

SOME PICTURES OF FIELD SURVEY

Appendix

PICTURES OF BULANDSHAHR DISTRICT

PICTURES OF BARABANKI DISTRICT