CHAPTER 1

INTRODUCTION

Agriculture is the backbone of Indian economy and is not only considered as an occupation carried forward by farmers but also is regarded an important aspect which shapes their way of life and the pattern of living. Generally, it refers to all such human activities which are being employed by people for their survival purposes. In broader sense, the term agriculture includes cultivation of the soil, growing and harvesting of crops, breeding and raising livestock, dairying and forestry etc. It is also entitled as farming and is confined to the cultivation of various products used to sustain life such as plants, animals, biofuel, food stuff, fibre and the like. All those persons who are engaged in agriculture and allied activities are referred as farmers or agriculturalists. A farmer may be owner of the land or may be working on the land owned by others. However, in advanced economies, the term farmer is usually used to farm owner, whereas the employees are termed as farmworkers.

Agriculture has been significantly contributing to Gross Domestic Product (GDP) of our country since ancient times. However, its contribution is consistently declining in planned economy but still it contributes 19 per cent in our GDP and 56 per cent of our labour force is dependent upon it (Thakur and Kumar, 2009). It may be said that 68 per cent of Indian population relies upon agricultural production directly or indirectly. Till mid-1990s, 48 per cent of the world’s labour force was employed in agriculture; however, the distribution ranged from 61 per cent in Asia, 60 per cent in Africa, 20 per cent in Europe to less than 3 per cent in United States and Canada (Kumar, 2001). According to ILO (2009), one third of the world's workers are employed in agriculture although, at present the services sector has overtaken agriculture as the economic sector is employing most of the people worldwide as a result of which social inequalities have become more intense (Judge et.al., 2002). In this context he states that the precedence of service or the tertiary sector has been detrimental to primary sector that is being neglected in terms of investments and holistic development and is hence leading to amounting distress among the ‘poorest majority’ within the sector. The falling agriculture output, increase in the agricultural inputs have further aggravated the plight of the peasantry in the form of increasing indebtedness (Ahlawat, 2002). The agrarian crisis in India has acquired such a
magnitude that the sturdy and hardworking peasants in Andhra Pradesh, Karnataka, Maharashtra, Punjab and Haryana are committing suicide. It signifies that for better and successful economic development of the country, agrarian crises that have crept in Indian Agriculture must be addressed at the earliest.

An analysis of India’s agricultural growth from 1970 to 2001 by Food and Agriculture Organization of the United Nations (2003) has identified crucial and systemic problems in Indian agriculture. According to this analysis, the annual growth rate in production has declined to a large extent; which provide inadequate returns to Indian farmers. The various reasons for low growth may be attributed to poor rural roads which affect timely supply of inputs and transfer of outputs from Indian farms, failure of crops because of lack of water supply and in some other parts of the country due to regional floods, inadequate irrigation systems, poor seed quality, inefficient farming practices besides lack of cold storage, economic and environmental unsustainability of the agriculture besides poorly maintained irrigation systems and almost universal lack of good extension services. Farmer’s access to markets is hampered by poor roads, rudimentary market infrastructure, and excessive regulation (World Bank, 2008). This ultimately leads to harvest spoilage and wastes nearly 30 per cent of farmer's produce. These problems are responsible for high spoilage rates, not only in India but throughout the whole world. These problems in agriculture have resulted in decline of production to a large extent and restricted the primary sources of the farmer’s survival. Thakur and Kumar (2009) also view past of Indian agriculture glorious and present and future as hoary and challenging. The hoary present of Indian agriculture and the challenging future is because of various prevalent problems regarding storage, packaging as well as transporting and marketing etc.

It is evident that Indian agricultural system is declining both qualitatively as well as quantitatively. Therefore, Indian agricultural policy should best focus on the improvement of rural infrastructure primarily in the form of irrigation and flood control, awareness about better yield verities and more disease resistant seeds in addition to package of practices. Mahadaven (2003) also views that cold storage and efficient modern retail should be undertaken to reduce waste and to improve India’s rural income and agricultural output (cf: Kaushal, et.al., 2006). These problems are needed to be addressed as their uncontrollable increase may have adverse effects on
the agricultural and allied activities which are regarded as strength of Indian economy. The slow agricultural growths is not a major concern only for farmers but for the policymakers also as large number of the India’s population dwells in rural areas and depend on rural employment for their living.

Globally, the history of agriculture informs us that agriculture was subsistence in nature for majority of the population till industrial revolution. However, in response to development of world markets, new technologies and need and demand of different crops, a significant shift in agricultural practices has occurred over the past century. The advancements in technology and decline in traditional practices of using animal manure and crop rotation has affected the farming practices to a great extent. The increasing trend of the various crops in terms of their production continued till 1980’s, but afterwards a decline in the production of various crops was seen. The yields of various crops has tremendously increased as of the plant engineering, fertilizers and pesticides, modern agronomy and technological improvements but has caused widespread ecological damage at the same time. It has been observed that several problems which are encountered by farmers led them to shift their land use pattern from agriculture to any other viable land use. As a result, in some regions of country (Punjab) many of the cultivators shifted to crops like sunflower, grapes and other citrus plants however, due to the non-availability of appropriate markets they shifted back to the traditional crops. Despite, the farmers have started undertaking new practices of cultivation to enhance their standard of life.

Different patterns of adjustments in land relations occur at particular stages of demographic evolution and may be more or less severe and determine access to land in society (Bilsborrow and Ogendo, 1992). These re-adjustments in land relations brings change in means of productions which may lead to change in mode of production as Marx visualised. Marx, upholds that the old mode of production in which paternalistic relations among forces of production and means of production has changed to new mode of production determined by market forces both in terms of forces of production and means of production (cf: Panikkar, et. al., 2002). Mode of production generally refers to way of producing but for Marx it refers to the way people work with their productive forces, utilization of material resources, the division of labour and forms of specializations among them (cf: Cohen, 1978). However, if modes of production are class based as their relations of production, then
it results into contradictions which leads to sublation of one mode of production and the emergence of a new one (cf: Fuchs, 2014).

The change in mode of production is associated with change in social and economic status of the farmers. It may be contributed to shift from subsistence based production to that of commercial one which led to economic disparity and resulted into capitalistic mode of production. The capitalistic mode of production in agriculture is associated with capital formation and generation of surplus to be invested in agriculture. For this reason; Bhakta (1989) states that the mode of production and surplus value are closely related to each other. The mode of production being closely associated with the means of productions mandates the analysis of land use by the farmers. Land use refers to any sort of human intervention on environment (permanent or cyclic) in order to satisfy human needs besides the capability, soundness and suitability of land to support different types of land utilizations under given cultural and socio-economic conditions (Vink, 1975).

The land throughout the world is being used for various purposes in order to have its better and sound utilization. The land use pattern studies are very essential in order to understand and modify the areas of optimum and degraded land use areas for better productivity. Rao and Vaidyanathan (1990) with regard to importance of land-use patterns reveal that it helps planners to analyse the further development patterns by restricting and modifying the undesirable trends of land exploitation and to adjust different forms of land use as per land capability, so that to direct the expansion of intensive land utilization into suitable areas. The proper and intensive use of land of any society has become essential for its overall development in general and that of country in particular.

The land use is not static in nature but undergoes changes as per the need and demand of the society. There are considerable variations in land use pattern throughout India in general and in temperate regions in particular as of diversities in climatic conditions and land forms. However increase and decrease in need and demand of particular produce also leads to considerable changes in land use. The change in land use by farmers is always directed towards better gains. The existing land use may be changed if production gets hampered either qualitatively or quantitatively. The land use was initially subsistence based but now it is converted to
raise commercial crops of short duration (Hardikar and Tawade, 1990). The various problems which are encountered by farmers may also lead them to shift their land use pattern from agriculture to any other available land use pattern. Among the various newly adopted practices, the horticulture is the most preferred practice of the farmers of temperate regions. Horticulture has emerged as one of the significant enterprises in accelerating the growth of Indian economy over the years. It has played a very important role in poverty alleviation and employment generation programmes. According to National Horticulture Board, Apple is fourth major fruit crop cultivated on total area of 0.231 million hectares with a production of 1.38 million tons and is grown in temperate regions of country which include the States of Jammu and Kashmir, Himachal Pradesh, Uttarakhal and Arunachal Pradesh.

Horticulture refers to the art of plant cultivation and the techniques, science and the business involved in exhaustive cultivation of plants for human use. It incorporates plants for food and its diverse activities include services in plant conservation and garden designing and construction, landscape maintenance and much more. This range of horticultural produce in shape of food, environmental and medicinal products and services are fundamental to the development of human health and wellbeing (Doyle, et al., 2012). It is practiced from the individual level (in a garden) up to the activities of a multinational corporation.

Horticulturalists, generally deal with cultivation of plants with the aim of improving plant growth, quantity and quality of produce besides its nutritional value. Most of them work as growers, gardeners and designers in different sectors of horticulture in order to carry out the processing and maintenance of products which in turn helps them to sustain their survival in the era of modernization.

Horticulture is becoming indispensible in temperate regions of the country and majority of farmers in such regions are getting benefits out of its cultivation and regard it as a best source for earning. The cultivation of fruits and vegetables has become significant in such regions due to which the production has increased to a great extent. India ranks second in the world after China in the production of fruits and vegetables. The diverse agro-climatic regions provide suitable and ideal environment for growing different and large variety of crops in India. In today’s era, agriculture is not regarded as the only source for the survival of people but
horticulture and its other allied activities also contribute equally towards their survival. Various horticultural crops are grown by farmers in India; however, the major horticulture crops that are exported from India are apple, orange, mango, grapes, banana, onion, potato and tomato etc. The crop export helps farmers to have better gains and improves their income to a great extent. Apart from bringing in revenue from exports, horticulture also plays a significant role in improving the livelihood of the rural population. Being labour intensive, it generates a lot of direct and indirect employment opportunities for the rural dwellers. Therefore, it may be regarded as the most beneficial practice undertaken by the farmers.

Although, various horticultural fruit crops are being cultivated throughout the world by farmers but apple is regarded as one of the major fruit crops of temperate regions of the whole world. Its area under crop cultivation in India has increased from 1, 95,000 hectares in 1991-92 to 3, 31,000 hectares in 2013-14 (National Horticultural Board, 2011/12-2013/14). In India, it has become an important cash crop in States like Jammu and Kashmir and Himachal Pradesh besides some hilly areas in North-Eastern part of country. It has helped greatly in improving socio-economic status of the farmers of these areas. The land is not only used for traditional farming but is also regarded to supply healthy and nutritious food to people.

However, a lot of work still needs to be done in India in order to achieve the optimum results in the horticulture sector. Various problems such as lack of awareness, use of techniques, faulty processing systems and improper methods may pose threat to horticulture. There is need to have secondary and tertiary industries related to processing of horticulture products in the vicinity of the production area and to increase awareness about new methods of agricultural production, monetary investment and proper planning among farmers (Srivastava, 2010). The Indian horticulture also faces drastic problems with regard to irrigation facilities, cold storages, roads and distribution of management, packaging and financial instruments like institutional loans due to which its production decreases. There are many bottlenecks in its production because the attack of various diseases and pests pose a serious threat by reducing yield and quality of the produce due to which survival of those farmers who mostly rely on it is under a great threat (Sharma and Sharma, 2005).
Most of the regions of India which are associated with horticulture face one or the other problem. Horticulture is being practiced by all sections of the society irrespective of their class. Generally, a class is a group of people having a same social status and share power and wealth in common. Karl Marx views that when people share same relations with means of production, form a class (cf: Hands, 2010). On the other hand, Warner (1963) holds that when two or more orders of society are believed to be and are ranked in socially superior and inferior positions by the members of the community, they form a class (cf: Crompton, 2008). However; the resources possessed by the individuals may not be of same quality and quantity. This unequal distribution leads towards stratification within the individuals. Max Webber defines class as an economic dimension of stratification which may include things like property, income and other financial assets (cf: Andersen and Taylor, 2008). The farmers belong to different classes and may have different sources of income. However, the intensity of problems faced by different classes of farmers may not be same. Therefore, a class based study of their problems with regard to horticultural production may be very significant and future oriented. These problems may become hindrance in progress and development of our country in general and the states involved in it such as Jammu and Kashmir in particular.

The state of Jammu and Kashmir which is northern most part of India has a population of 12,548,925, out of which majority 6,907,622 (55 per cent) resides in Kashmir division. The majority of the population of the state is residing in rural area and their proportion is 72.79 per cent as against 27.21 per cent which reside in urban areas (Census 2011). The State of Jammu and Kashmir besides being unique agro-climatic region is characterized by mountainous terrain. The variations in the agro-climatic conditions affect different aspects of land such as land use, cropping patterns and crop rotation. The cropping pattern of the irrigated regions of the state had been dominated by paddy. This is because of snow which covers land for 4-5 months a year, due to which, rice was regarded as the main kharif crop of the valley (Hangloo, 1995). Moreover, the land which was used for Kharif crop was not cultivated for Rabi crops as harvesting of the crop in the months of September and October left very little time for the sowing of another crop in the same land. Therefore, the farmers of Kashmir had to subsist on one crop economy- kharif or Rabi.
The main source of income of rural population of Kashmir is agricultural and horticulture besides tourism which is limited to certain pockets of Kashmir. Initially, agriculture was the main source of most of the population but now-a-days people are shifting from agriculture to horticulture generally to have better economic security. Among horticulture mostly apple orchards are preferred because of their greater demand at national and international level. Its importance has risen to such an extent in the State that it is being adopted as land use by large number of farmers. This has increased its production to a large extent as of which the state became the greatest producer of apple throughout the country. As per the report of National Horticultural Board (2013-14), Kashmir is leading apple producing state of the Country and produces 66 per cent of its total production. It also fetches huge profits as against other crops. Mostly illiterate people are associated with it due to which they have to face so many problems in the process of cultivation and marketing. Although Government is providing grants to them but due to their unawareness, they fail to utilize it to the fullest extent. The lack of awareness and particular skills and the unique climatic conditions of the region may make crop susceptible to the attack of insects and pests. To control such attack, the cultivators may increasingly use different ways and means which not only affect the quality of the produce but also the soil. In this context, it becomes important to study the problems of orchard farmers related to land use, crop production and marketing for which the present study is conducted in Kashmir division of Jammu and Kashmir State. The study is focused to understand land use and cropping pattern of the farmers and the various problems faced by horticulturalists in the processing, maintenance and marketing of production in the Kashmir division. Additionally, it also analyses the causes of climatic change and its effect on the production as climate of the region plays a great role in production process. The programs and facilities provided by the Government to support the farmers and the utilization of same by them are also examined in the study.

**REVIEW OF LITERATURE**

Various studies have been conducted worldwide with regard to problems of orchard farmers, land use and cropping pattern and rotation. Singh (1997) in his study “Land Use, Environment and Economic Growth in India” reveals that land being a precious resource is regarded very important for sustenance and wellbeing of people
in general and farmers in particular throughout the world. Land although being a static resource is also regarded as a dynamic aspect because of its productivity and use besides interaction between land, man and technology. This dynamism has given rise to growing realization for management and proper care of land resources although the steps taken so far are very inadequate. So, there is a need for an integrated approach for conservation, management and development of the land resources besides land use plan. Economic consideration for net return maximization and environmental considerations for ecological considerations, for the balance and sustainability can be best possibly executed by drafting land use plans properly and timely.

Fazal (2013) reveals that land use is very important as it plays a decisive role in social and economic development of the people besides sustaining quality of land resources. Land is being used for diverse purposes due to which land transformation accelerated to great extent especially with the onset of the Industrial and technological revolution and globalization. Diverse needs and demands of people have led to various land cover changes such as for extraction of sand and clay etc. the vegetation and soil is being removed, conversion of land for settlements and routes for transportation etc.

Ninan (1999) reveals that hill agriculture form of cultivation is very unique as it determines land use, utilization of modern tools and commercialization of hill agriculture. It is also revealed that various land use patterns are being carried forward by different hilly states. This has given rise to uneven distribution of land use which is evident as area under forests varies from around 25 per cent in Nagaland and Assam to 55-61 per cent in Jammu and Kashmir and Tripura. However, the permanent pastures and land used for grazing varies from 0.8 per cent in Meghalaya to 35 per cent in Jammu and Kashmir. Rice as a part of cropping pattern is grown in all hill States of India but its total share in cropped area varies and is as high as 84 per cent in Manipur and the lowest 27 per cent in Jammu and Kashmir.

Sharma (1991) in his study “Land Use Survey in Tarai Tract, eastern Uttar Pradesh” reveals that majority of the proportion of the inhabitants throughout India depend on land resource for their survival. It is revealed that the strip of Tarai is bound by Ghanghra in west Gandak in the east and has low gradient with forests and tall grass under natural conditions. The area is marked by high water table and is
composed of fertile soil with excessive moisture besides some areas being prone to flood hazards. Socio-economic profile of the area reveals that it has poor means of transport and communication and the population density is also less and is comparatively stagnated and under developed. The study concludes that forests cover is 4.8 per cent of the total area of Tarai as against the 22.1 per cent in the country and claims forest cover declined during 1955-57 to 1985-87. The proportion of area not available for cultivation is 11.6 per cent which is lower than that of the country (13.3 per cent). The study has found a positive correlation between percentage of net sown area and population pressure whereas a negative moderate correlation between forest-land, waste land and this category of land (net sown area). Agriculture comprises of major proportion of the net sown area while as other land categories show a decline. The Kharif crops occupy 84.1 per cent of net sown area and 56.4 per cent of total cropped area as against the 63.8 per cent and 42.8 per cent respectively in case of Rabi crops. As of climatic influence on the crops cereals and pulses are found to play an excessively important role in cropping pattern by occupying 90 per cent of total cropped area contribute mainly in sustaining the population. The study also shows a decline in food grains by 3.1 per cent because of shift towards food-cum-commercial crops like legumes etc. Fruits and vegetables comprise of very less proportion of 1.0 per cent cropped area. The study concludes that land use is not constant in the region and under goes considerable change as per climate and needs and demands of the population.

With regard to importance of land use surveys, Chatterjee (1953), in his study on two districts of West Bengal upholds that there is immense need to cover whole India by land use surveys after British model because generalization drawn on the basis of a few areas in diverse India is not worthwhile. Further it reveal that land use determines the future development aspect of the region is general and country in particular, so land use pattern studies should be given prime importance for developing any nation.

Shafi (1961) with regard to land use reveals that emphasis should be placed on field to field survey as it is worthwhile for deep understanding on land use patterns, although it is very difficult in vast country like India. So sample technique should be adopted to draw out the generalizations. This view is also supported and suggested by Rao (1956).
The cultivation of different crops is not always easy as it has to follow a proper and skillful channel. The cultivators face various hardships in carrying out different patterns of production. The various problems faced by them may hamper the production process to a great extent.

Pretty (1995) with regard to use of modern technology claims that undoubtedly there has been an improvement in production but it has adversely affected the environment. Modern techniques which are being utilized by farmers have led to various dreadful impacts which range from contamination of water by pesticides and nitrates and contamination of food and fodder by residues of various insecticides, nitrates to damage of natural resources. Besides, it has been revealed that contamination by ammonia and nitrous oxide to atmosphere and new health hazards for farm workers are equally affecting the social setup. The adverse effects of this contamination result in causing harm to farm workers and wildlife and create possible health problems in drinking water besides displacement of traditional breeds and verities. In addition to the above adverse effects of modern technological use in farming, the traditional agriculture is regarded as environmental destructive and its modernization is regarded as a primary need.

Clay (2004) reveals that the use of agrochemicals damage intensive agricultural production. The damage which occurs is not uniform rather depends on crop requirements, its nature and physical and biological environmental conditions in which it is grown. Further, it is revealed that the awareness and information regarding use of agrochemicals such as fertilizers etc., determine the production scale.

Mazoyer and Roudart (2006) are of the view that there is indefensible inequality of access to land. The inequality leads to deprivation (more or less) of land to poor peasants. The small land holders are cultivating the land with family labour but are unable to meet their subsistence needs. Further, study reveals that Green Revolution apart from increasing productivity has resulted into extreme impoverishment of hundreds of millions of peasants because it resulted into sharp drop in real agricultural prices of various concerned countries due to which exportable surpluses was unloaded by various countries at low prices.

Krishna (2002) in his study “Economic profile of Uttarakhand” reveals that as of unique climate, horticulture is practiced in the region. He claims that apple is
regarded as the main fruit of the region but its production is suffering from various
problems. He also reveals that lack of government management in marketing and
dispatching of fruits equally contributes towards the miseries of the farmers. Various
other problems faced by orchard cultivators of the region include storage, packaging,
transportation and processing. The study reveals that farmers of the region have to
face various bottle necks during the horticultural cultivation.

The various problems which have been faced by the farmers throughout the
world compel them to change their land use towards any other available pattern. The
land use is directly related with the standard of life, so it is observed that shade of
problems decreases the production of the particular crop due to which land use pattern
may be changed. Various factors have been regarded responsible for bringing change
in existing cropping pattern by different researchers.

Singh (1997) claims that with the increase in human population and increase
in economic growth the demand for land also increases. Various factors such as size
of livestock and human population, technology in use besides demand pattern and
location and capability of land determine the land use pattern at any given time. Land
use patterns besides having economic implications have various ecological
dimensions also which are very necessary and if ignored may prove to be very
disastrous.

Sharma (2006) finds that increase in population and economic growth are the
major challenges faced by land use pattern in India because in almost all developing
countries land use patterns determine economy and population growth for next few
generations.

Jha and Singh (2008) reflect that land use is widely debated and practiced
subject matter in developed and developing economies as it occupies a centre place in
different aspects of development planning. The shift of land use from subsistence
mode to intensive mode has made land very precious resource as it links us with
different aspects such as biodiversity, ecosystems, global warming, climate and
economic development etc. Radical changes are being witnessed in climate with
development of civilization and have helped to a great extent in meeting up the
changing demands and trends by providing fuel, fibre and food for concerned
population. However, such changes in land use have led to various drastic changes
which range from land and soil degradation and depletion of vegetation to reduction in biodiversity worldwide. The study further reveals that such confronted situations have brought land use planning in lime light. The land use change may be reversed in some cases but not in others such as land used in urban development and housing is irreversible. With tremendous increase in world population, the problems of land resource management, food security, degradation of land and landlessness have posed immense threat worldwide. Due to such threats especially in developing countries, major steps in policy and planning are needed to be taken in the fields of land use, forest cover and urban expansion.

This instance is seriously taken by Government as of which whole sub-Himalayan region was mainly converted into temperate fruit growing zone due to growth rate of apple fruit exceeds that of wheat. This lead to creation of surplus labour force as western section of sub-Himalayan region was converted successfully into apple and related other fruit cultivation and local farmers into fruit cultivators. Amongst fruit trees, various high and quick yielding fruit trees which have been planted irrespective of their maturation periods which mostly varies from 5-7 years. Further, study with regard to landless, small and marginal farmers reveals that India’s IRDP Programme which was mainly meant for their income generation through production of poultry and sale of milk have only strengthened the very large farmers. Its goal to enhance the social and economic status of the marginal and small farmers has remained untouched. (Savur cf; Pawar and Patil (ed.), 1994)

Sharma (2008) while studying “Agricultural Transformation and Crop combination in Himachal Pradesh” reflects that the shifting trend is observed both in temperate wet and temperate dry regions. The cultivators irrespective of class are shifting towards fruits mainly apple and off season vegetables with potatoes as main crop. The study further reveals that 18 out of 23 tehsils have shifted land use towards fruits especially apple.

Thorat (2002) in his study “Population Pressure, Land Holding Structure and Land Use Pattern- an analysis of inter-linkages” claims that the land tenure status of the cultivators has changed entirely because of various new agricultural forces since early 1950’s in India. The study further reveals that between 1960’s to 1990’s, the proportion of net sown area increased 46.63 per cent from 44.63 per cent. The
increase was mainly witnessed because of increase in land use category by utilization of barren and uncultivable land which was not available for cultivation earlier besides pastures and grazing land and rarely by cultivable wasteland.

Singh (1989) in a “Case study of Land Use Change in the Tarai Region, Uttar Pradesh (village Chandayan )” reveals that the cultivated area remained fluctuating largely due to shift cultivation by Bhoksas tribes. After Independence, the village was taken up by Government for mass reclamation and development for the rehabilitation of the refugees of Bangladesh. This reduced the cultivation area of the village to 0.4 per cent as during this period land remained vacant and later it was distributed to Bengali families. Because of Government initiative, the non-productive land along with forests and grasslands were cleared and the land was brought under use either for cultivation or for construction of houses and the like. The mass migration raised the concerns of production for which various developmental plans were started by the Government. As a result, land use pattern witnessed a radical change due to transforming of non-productive or less –productive land into cultivable one.

Lambin and Giest (2006) have revealed that throughout the world, land cover changes have taken place due to which cropland in temperate regions decreased whereas in tropical regions it increased. Various land cover conversions took place which replaced one cover with another. These conversions gave rise to change in land use, however, as of time and speed and specific human –environment it varies considerably. The study further reveals that land use change is the result of response-individual and social to dynamic economic conditions mediated by institutional factors. Markets and policies create demands and constraints besides opportunities for new land uses making land use pattern inevitable. Besides the above mentioned aspects, it is also revealed that the interaction of economic, political and legal institutional factors with attitudes, values and knowledge system of the individual also plays a vital role in land use change.

In his study “Changing Agricultural Land Use Pattern in Sindhudurg District (M.S.): A Geographical Analysis”, Waghmare (2011) reveals that a great variation has been witnessed in land use pattern since 1981 to 2011. He finds that the net sown area has grown by 1.67 per cent while there is a decline of 0.54 per cent in land under forests. The study reflects that horticulture has developed in the region; as a
consequence there is a remarkable increase in fruits and vegetables (by 29.86 per cent) since 1981. He further finds that area under fruits is increasing whereas that under fodder is decreasing, which clearly reflects the change in land use pattern. This shift is attributed to 100 per cent subsidy being provided to horticulturalists for fruit plantation.

Tiwari (2000) upholds that tremendous growth in population has not only resulted into extensive changes in land use patterns in Himalayas but has also disrupted the ecological balance by reducing the ground water recharge and increasing soil erosions. This has also negatively affected the ecology and economy by frequent floods and reduced irrigation potential of Indo-Gangetic plains which may be responsible for change in land use.

Kumar and Sangwan, (2013) in their study “Urban Growth, Land Use Changes and its impact on Cityscape in Sonipat city” reveals that urban growth, economic development and population growth are responsible land use change worldwide. Because of new economic reforms the Indian Government policies with regard to globalization and privatization have paved way for foreign direct investment (FDI) in real estate sector which gave rise to the establishment of large scale industries and factories besides development of educational institutions, tourism places, hospitals, roads and residential areas, a quick expansion of urban areas occurs which gave rise to land use transformation at large.

Mohanty 2007, in his study “Population Growth, Changes in Land Use and Environmental Degradation in India” reveals that the increasing pressure of population on land resources has given rise to change in land use pattern. The change as per study has mainly resulted into increase in land put for non-agricultural uses. The area under miscellaneous tree crops has decreased considerably.

Chawla’s (2012) study on “Land Use Changes and its Impacts on Environment” points that land use changes are the result of population growth and migration towards urban areas by the rural poor people for various economic aspects and opportunities.

Gogoi (2013) in her study on “Patterns of Land Use and its Impact on Guwahati city” concludes that there is continuous decrease in forest area and
cultivable land. She further states that various geo-environmental issues being faced by the society are the outcomes of unplanned growth and development of the cities.

The state of Jammu and Kashmir too, has witnessed various transitions in land use. The terrain and the climate are not favourable for all such cultivations which are carried forward in the rest parts of the country. Moreover, the climate changes in the region have affected the land use as well as cropping pattern.

Wani et. al., (2009), in there study “Land –Use Dynamics” in Jammu and Kashmir reveal that net sown area in Jammu and Kashmir has increased till early 1980’s as of various land reclamation measures but later towards 2004-05 this land use class has shown an unfavourable decline reflected in cropping intensity. Jammu region has higher cropping intensity than that of Kashmir largely due to climatic conditions. With regard to land holding, study reveals that 94 per cent of the farmers in the state belong to small and marginal farmer’s categories. The unproductive land in the State has decreased to a great extent but still over 500 thousand hectares of land can be brought under cultivation with effective measures. Development of agriculture is pre-requisite for poverty alleviation and hence cultivable area needs to be increased through various land reclamation measures.

Malik’s (2014) provides that horticulture has proved to be an important source of economic development and majority of the population in the valley depends on it. The study further reveals that any change in horticultural sector directly affects the social and economic standards of the apple cultivators. For this, attention is being given upon national horticulture mission and various reforms under 12th five year plan. These measures are being put into practice for the upliftment and promotion of the horticulture and olericulture sectors.

Shah, et.al., (2013) in their study “Changing Land use and Cropping Pattern in Budgam District of Jammu and Kashmir- A spatio-temporal Analysis”, hold that land has remained an important aspect to determine the economy of a country while agricultural resources have dominated being the principal occupation of the famers. Since 1987 till 2010, the land under non-agricultural use has decreased to 781 hectares while in 2010-11 it has decreased from 8992 hectares to 8211 hectares. There is an increase in the permanent pastures and other grazing land in the district Budgam.
Malik (2013) has elaborated on marketing problem of apple production in his study Assessment of Apple Production and Marketing problems in Kashmir Valley. The main problem in the marketing of apple is lack of support of government. The price of the produce is not guaranteed. The marketing of apple further becomes problematic when the produce gets infected by diseases such as apple scab, alternaria, red might, powdery mildew to leaf fall and red spider mite that results in decline of quality and quantity of the produce, Marketing, fluctuating prices, climatic changes and lack of storage and transportation affect 65 per cent of the orchard cultivators who depend upon this fruit only.

Sharma (2006) finds that agriculture, climate change and land use are to such an extent interdepend that change in any one of them affects the other parameters in his study “Climate Change and Land use”. The study further reveals that considerable changes in cropping pattern, ownership, diversion of land to non-agricultural uses, have been witnessed since 1950-1970s. Climate changes have given rise to degradations especially soil erosion due to which fresh forest have been converted to agriculture cultivation thereby resulting into a loss of 144,000 hectares of forest cover per year up to 1980. Harasawa, et.al., (2002) has found that environmental changes affect agricultural productivity to a large extent by affecting potential crop yields.

The change in cropping pattern and the crop rotation are the product of various problems which farmers face during cultivation of agriculture or horticulture. The decline in production has its impact on the farmer’s social and economic position. Various problems witnessed by the farmers may affect the production negatively. Therefore the decline in production both qualitatively as well as quantitatively leads to change in cropping pattern and farmer community’s wellbeing. Various studies in this regard have been conducted and throw light on various reasons behind the change in crop rotation.

Bhat (2013) in his study “Agricultural Land-use Pattern in Pulwama District of Kashmir Valley” reveals that agricultural land use pattern in the study area has been greatly affected by technological, socio-economic, physical and organizational factors. The study further shows that agriculture is mostly a dominant form of cultivation in the study area and food grains cover more than 60 per cent of the gross
cropped area among which cereals, rice and wheat rank first and second respectively. Study also reveals that mustard and potato are regarded as major cash crops however, fruits which are regarded as main cash crops stand third in total crops of the district.

Shah, et. al., (2013) while emphasising on the cropping pattern of Budgam District of Jammu and Kashmir reveals that various crops being grown range from rice, wheat, pulses, cash crops, vegetables to fruits. In spite of this, agriculture is a dominant activity in the area and is regarded as a means for subsistence. Rice has been once an important was regarded as the crop but now the trend has undergone a change and cultivators prefer to practice horticulture because of its economic value and benefit. The study further reveals that multiple crop combinations have been in practice in the district and it ranges from minimum of two to maximum of eight crops. Mono-crop culture has not been found in the district. However, among all the three tehsils of the district, six crop combinations has been found and it largely include rice, maize, oilseeds, fodder crops, fruits and wheat. The study concludes that with this change in land use and other related subsequent changes in the various activities of transport, industry and commerce, the socio-economic conditions of various classes of farmers has improved. The author states that the changes in the farming practices have induced other farmers to adapt to these changes.

Qazi (2005), in his study Systematic Geography of Jammu and Kashmir, explains that cropping pattern of the country is dynamic in nature and mandates changes in government policies and agricultural prices besides other related factors. The main crops are rice, wheat, maize, pulses, oil seeds, fodder, apples, walnuts, almonds, cherry and peach etc., and the state has to make efforts for their proper disposal and marketing which is not meeting the needs of the peasantry.

Singh (2004) in his study “Economics of Apple Cultivation, a case study of Baramullah district of Jammu and Kashmir” claims that apple is of particular interest for farmers as it provides major source of income and employment to people. Although its production and marketing is promoted through various government policies and programmes but still many problems are faced in marketing process of its produce.
Das, et.al., (2009) while studying Impact of Agricultural Credit on Production for the period 2001 to 2007 highlight a positive and significant impact of credit on production output and also claims its effect to be very immediate.

From the above analysis of the literature it may be deduced that the cultivators face many problems during the cultivation process. All of the above mentioned studies have highlighted various problems which play very significant role in production process. The various inhibitors highlighted by available literature on cultivation process include sudden climate changes, traditional methods and tools used for cultivation, agro-chemical damage to ecology, non-scientific methods and techniques, sub-standard fertilizers and pesticides, lack of guidance and counselling besides population growth and commercialization of crops. The Government support, dysfunctional institutional credits, improper markets and traditional channels, corruption and subjective disbursement of various Government policies and schemes etc., are also among the inhibiting factors reported by various studies. Taking the above mentioned problems of cultivation process in consideration, this study is conducted so that various problems of the horticulturalists of the region may be studied and observed along with various available facilitators.

**OBJECTIVES OF THE STUDY**

The objectives of the Study are as follows:

1) to study the land use pattern of the farmers and its associated changes.
2) to highlight the Cropping pattern and Crop rotation of the region.
3) to examine the various inhibitor and the facilitator factors associated with the cultivation of horticulture.
4) to analyse the marketing of produce and its associated channels and
5) to evaluate various government schemes launched for the promotion of horticulture.

**RESEARCH QUESTIONS**

The various research questions which are being answered by the study are as follows:

1. What is land use and cropping pattern of the region?
2. Is there any change in land use pattern?
3. What is the preferred land use pattern of the farmers?
4. How far ancestral and current land use of farmers differs?
5. How far climate of the region has changed?
6. What is the impact of Climate change on land use, production, cropping pattern and crop rotation?
7. Does climate of the region affects cropping pattern?
8. How product is being sold by the farmers?
9. What is the preferred marketing channel followed by the farmers to sell their produce?
10. What are the problems faced by farmers in marketing of their produce?
11. Is there any impact of political turmoil on marketing of produce?
12. Which government facilities are being availed by farmers for promotion of horticulture?
13. Does the cropping pattern, production, marketing and the like varies with the class of the farmer?

**SIGNIFICANCE OF THE STUDY**

The study highlights the various problems of the horticulturalists. These problems are directly associated with social and economic status of the farmers. Therefore, it throws light on various emerged and emerging problems and briefs about their reasons and impacts on production. The study further shows the pattern of land use followed by the farmers and the corresponding changes which are taking place thereof. It highlights the impact of climate change on cropping pattern and crop rotation of the study area and the associated alterations followed by the cultivators. The study may highlight the problems faced by the farmers in marketing of their product. The sale of product through various agencies facilitate or hinder the orchard owners to continue the production and ma help in formulation of a marketing policy of vegetables and fruits. Further, study shows various government facilities which are available to farmers and reflects the ways through which these are disbursed.

In nutshell, it may be said that study is of immense significance as it deals with primary sources of income of the farmers which has a direct association with their social, economic and political set up. Further, it sums up various inhibitors and
facilitators of the horticultural cultivation and mandates a need to rectify the inhibitors and to promote the facilitators so that production may be increased both qualitatively as well as quantitatively.

LIMITATIONS OF THE STUDY

The study is also having some limitations. The limitation of the study may be the consideration of only one hilly district (Shopian) for data collection due to which the conclusions may not be generalized over to plain regions.

CHAPTERIZATION

The study consists of the following chapters:

1. Introduction
2. Methodology
3. Socio-economic profile of the Respondents
4. Land use, Cropping patterns and Crop rotation
5. Issues and Concerns in Orchard Farming
6. Marketing
7. Summary and Conclusions
8. Bibliography