Introduction
The Republic of Uzbekistan is located between latitudes 37°.00 to 45°.00 north and 56°.00 to 73°.00 east longitudes. It lies in the Central Asia. Its boundaries touches the neighbouring countries of Kazakhstan in the north, Kyrgyzstan in the east, Afghanistan in the south and Turkmenistan lying in the west. Major portion of the country is desert (85 %), especially in the west of country. A small portion of the country is hilly and the height from sea level varies between 6,00 to 4,301 mts. The lowest point of the country is Sariqarnish Kuli (-12mts) and the highest point is Adelunga Toghi (4,301 mts.) on the east, there are mountains around the country. On the south and south east, country has a strip of plains, which are conducive for agricultural activities.¹ (Fig. 0.1)

For the purpose of administration, the country has been divided into 13 States (oblasts), viz Bukhara, Andijan, Djizak, Fergana, Kashkadarya, Khorezm, Namagan, Navoi, Samarkand, Surkhandarya, Syrdarya, Tashkent and Karakulpakstan.²

Despite period of political instability, attention was paid towards the development of agricultural economy in the country. With the help of Tuaymuyun, Charvak and Chirchik reservoirs large area has been brought under cultivation. It is estimated that about 900km² of land were irrigated by these reservoirs. The project has thus played a wider role in the land reclamation. After 1991, overall development of agricultural sector was the main aim of Uzbekistan, progressive changes were brought in the agricultural sector. For example, priority was given to agricultural industry.³

According to Ministry of Agriculture and Water Management reports, the Republic’s total land resources equaled 44,579km² in 2001. Out of this total area, 61.1 percent was in agricultural use. 3.2 percent
is under forestry administration, 2 percent is made up of permanently protected area, 24 percent is unused and the remainder 6.1 percent is utilized for urban areas, 0.5 percent for hydro technical installations, 1.2 percent for industry, transport and other nonagricultural activities cover 2 percent.

In terms of agricultural land use the vast majority (82 percent of agricultural land) is utilized for livestock as pasture or hayfields, with the remainder being cultivated. Cultivated agriculture utilizes 10.8 percent of the total land area of the Republic, the remainder being plantations, desert, orchards and land under forestry administration. About 69 percent of the total land area of cultivated land is irrigated.

The contribution of agriculture in Uzbekistan's economy is very significant. Agriculture was for many years the mainstay of Uzbekistan's economy, inspite of the existence of traditionally strong trading sectors and more recently relatively successful attempts at industrialization. The agriculture sector engages 44.4 percent of the working population and contributed 30.1 percent in gross domestic product during 2001. Its share to gross domestic product has shown increasing tendency as compared to period 1991 and 2001, when it was 29 and 31 percent respectively. However, during 2005 the share of agriculture to GDP was more than other sectors of economy, like mining and industry. These sectors contributed only 15 percent to GDP, showing thereby the increasing share of agriculture to Gross Domestic Product.

0.1 Agriculture and Capital Formation

Agricultural sector plays a dynamic role in economic development. Sources of capital for economic development are classified into two categories - domestic savings, foreign aid and foreign commercial investment. A developing country requires huge amount of capital to achieve economic progress. It requires capital for expansion and creation of manufacturing mining enterprises and for strategic investment in overhead capital such as rail roads, education and research. For these requirements the developing
countries have to depend mainly upon agriculture as it is the only major existing industry and a major source of capital for overall economic growth."

The historical experience shows that in developing countries where agriculture accounts for some 40 to 50 percent of total national income, economic growth can not be achieved unless agriculture makes a significant net contribution to capital formation. Naravana, while commenting on the contribution of agriculture to capital formation in under developed countries point out that, "in several under developed countries, the surplus could rise more easily in a large measure in the agricultural sector because of its dominant place in economy and the good scope for increasing the productivity in view of existing level of productivity."

Increase in agricultural productivity through modern methods of cultivation leads to increase in the rural net cash income. This high agricultural income promotes rural saving that could be mobilized for industrial development. As Johnstan and Meller point out that, "with the rising of agricultural productivity with comparatively smaller outlays, greater is the scope for agricultural sector to make contribution to the capital requirements of overall economic growth." A low income country depends more on foreign aid and foreign commercial investment and less on domestic saving.7

0.2 Agriculture and Employment Generations

One of the major problems in most of the developing countries is widespread unemployment. Agriculture has to provide employment on one hand and it release labour force for industrial employment on the other hand by increasing its productivity. In the early stages of development, labour force can be easily drawn into industry from agriculture on account of abundant supply of labour in the agricultural sector. But it was not always true because if the rural population is spare and there is good potential for expanding output of profitable cash crop, it may be difficult to obtain labour for a rapidly expanding industrial sector. Further the urban sector in many developing
countries are too small in relation to agriculture and they can not provide employment for all the workforce even if they create higher jobs than hitherto experienced. Hence, agriculture must absorb the growing labour force in developing countries for years to come.  

Labour absorption in agriculture can be decomposed into area and the locational effect, yield and cropping pattern effect. While the area effect and yield effect have direct employment potential that employment implications of cropping pattern are indirect. A shift in cropping pattern in favour of labour-intensive crops and more labour using regions will enhance total labour absorption in agriculture. This can also have substantial second round employment effects. This can be achieved by making desired more profitable through price incentive. Therefore agricultural sector needs diversification at large scale on modern scientific means and methods.

0.3 Agriculture and Foreign Exchange

Agriculture contributes significantly to net foreign exchange earnings through displacement of current and potential imports and expanded exports. Expansion of agricultural exports is likely to be one of the most promising means of foreign exchange earnings in a country which step up development efforts. The developing countries require large amount of foreign exchange earnings for imparting machinery and equipments for industrialization especially at the initial stages of economic progress. This requirement justifies the substantial expansion of export oriented agricultural production as a rational policy even the face of an unfavourable world supply demand situation. The contribution from import displacement may represent a direct displacement of imports of agricultural commodities through expanded domestic production and through a shift in consumption pattern towards domestically produced agricultural commodities. Agriculture can also earn/save foreign exchange by becoming internationally more competitive. This can be achieved through diversion of resources to cultivate crops which are either import substitutes or exportables.
0.4 Agriculture and Rural Welfare

Agricultural development programmes normally increase the welfare of a large population of low income countries. Agricultural development programmes will have at best an indirect welfare effect on two groups (land owners and labour) of the rural population. The landless labourers derive benefits from the agricultural development only in so far as technological change creates greater employment opportunities for hired labour. The improved welfare for this group will depend to a large extent on creation of non-farm job opportunities.

0.5 Agriculture in Uzbek Economy

Uzbekistan is a predominantly peasant economy and agriculture forms the backbone of the Uzbek economy. Despite concerted industrialization in the recent past, agriculture continues to occupy a place of pride. The performance of agricultural sector determines to a large extent, the economic development of Uzbekistan. Being the largest industry in the country, agriculture is the source of livelihood for 2/3 of Uzbekistan’s population. It contributes nearly half of the Uzbekistan’s National Product and it serves as an index of country’s economic development. Growth of other sectors of the economy are dependent on the performance of agricultural sector. These aspects reveal two important things:

Firstly, agriculture claims a priority consideration for economic development. Secondly, it would be difficult for rest of the community to subsidize agriculturists in Uzbekistan. The significance of agriculture in the national economy can be best explained by the role of agriculture under different headings.

0.6 Share of Agriculture in National Income

The share of agriculture in national income is often taken as an indicator of economic development. Normally, developed economies are less dependent on agriculture as compared to developing countries. But in Uzbekistan, the share of agriculture has persistently declined on account of the development of secondary and tertiary
sectors of the economy.

0.7 Large Employment Providing Sector

With rapid increase in population, the absolute number of people engaged in agriculture and all allied activities has become exceedingly large. Development of the other sectors of Uzbek economy has not been sufficient to provide employment to the increasing additions of working population who are, therefore, forced to fall back upon agriculture even if there marginal productivity on land is zero or nearly so. This gives rise to the familiar problem of under employment and disguised unemployment.

0.8 Role of Agriculture in Industrial Development

In Uzbekistan as in other developing countries, agriculture plays an important role in industrial development. Agriculture provides raw material to the industries such as cotton textile, jute, woolen textile and sugar industry. But in recent years, the significance of agriculture in industrial development is slowly decreasing since new industries have been coming up which are not dependent on agriculture for their raw material. Despite this, as Uzbek agriculture develops and as the income accruing to the rural people increase, the size of the market for industrial products in rural areas will also increase. This would lead to expansion of industrial sector in the country.

0.9 Strategies of Agricultural Development in Uzbekistan

In order to attain rapid progress in agriculture, several strategies have been evolved and executed from time to time in Uzbekistan. These development strategies for agriculture are designed not only to achieve a certain level of output but also to maintain nutritionally desirable composition of output, based on diffusion model of agricultural development. For example extension service scheme were started with the objective of attaining rapid development in agriculture. However, these programmes suffered from several difficulties such as failure of supply lines and administrative lapses.
As a result, these programmes could not produce the desired results. With the implementation of these programmes Uzbek agriculture has undergone significant impact of new Agricultural Strategy.

0.10 New Agricultural Strategy and Agricultural Development in Uzbekistan

Uzbek agriculture has been experiencing substantial development and rapid growth during post-independence period. The most important of these changes is the widespread adoption of new agricultural strategy. A major role of the new strategy is its package approach. The package includes the adoption of new high yielding variety of seeds, use of modern inputs like fertilizers, pesticides and insecticides, tractors, pump-sets, threshers, use of genetically modified organisms and combined harvests with assured irrigational facilities. Another redeeming feature of new strategy is the emphasis on the organizational and institutional arrangements for the production, import and distribution of the entire package of inputs. All these inputs changed the Uzbek agriculture significantly.

With the introduction and widespread adoption of new strategy, agriculture in Uzbekistan has assumed a new role. This has brought many short-run and long-run implications for the economy in general and the farm sector in particular and transformed Uzbek agriculture from traditional to modern one. A significant breakthrough has been achieved in agricultural production and a phenomenal rise in yield levels which helped Uzbekistan to achieve self-sufficiency in foodgrains and improved the efficiency of resource use in Uzbek agriculture. Above all, Uzbek farmers are becoming increasingly aware of the benefits that can be accrued from the application of new technology to agriculture and have been responding favourably to the new practices recommended by the extension services. This indicates that it was becoming clear by the mid-nineties that there was no alternative to technological change in agriculture for achieving self-sufficiency in food-grains.

The achievement in food production and productivity under new
agricultural strategy is significant and substantial. In the context of the success of new strategy in increasing food production, there is ample evidence to show that a change has occurred in Uzbekistan's food grains production. However, these changes are not uniform across different crops, farmers and regions of the country. Some studies—using aggregate data have measured the magnitude of technical change in terms of output and yield. These studies show that considerable improvement at aggregate level has taken place only in wheat and rice. The effects of new strategy are mixed for aggregate output, spectacular for wheat and rice and some improvement for vegetables and fruits. Another redeeming feature of Uzbek agriculture is increasing disparities among different regions (irrigated and unirrigated area). This is because of the fact that new strategy was first successfully employed in the eastern states of Uzbekistan which led these states to achieve high growth rates. Further, the resource base of new strategy has also led to uneven distribution of benefits across different size groups of farmers. The experience in Uzbekistan shows that the new agricultural strategy has bypassed large number of resource poor regions, small farmers and inferior food crops leading to regional and crop wise imbalance in agricultural growth. This differential growth is mainly due to the fact that acreage under various agricultural crops have responded differently to techno-economic changes particularly price changes.

0.11 Nature of Problem

Uzbekistan occupies an unique position in terms of its agricultural productivity. About 61 percent of the total geographical area of 44,579km² (2001) is cultivated. However, the productivity in some parts of the country is high inspite of the low share of cultivated area to the total geographical area. The country is primarily agricultural, because agriculture for long has been the mainstay of Uzbekistan's economy. Since the problems of the agricultural development include the self-sufficiency implies that the level of domestic production is at least adequate to meet the basic needs of
existing population.

But this sector of the economy has different dimensions of the problems i.e., the growth of food grains production is not keeping pace with the growth of population. Besides there exists a regional variation in levels and growth of food grains production. The most aggravating situation of agricultural economy is an unequal distribution of agricultural land, which has resulted into variation in agricultural productivity in the country as a whole. The major suggestions so far made were to increase the yield level, to accelerate the growth rate, to remove the regional imbalances, to minimize the gape between the small and big operational land holdings and to change the existing cropping patterns etc. But at national level to achieve more additional production, following suggestions were repeated by a number of agencies.

1) Expansion of cultivated area.
2) Increasing skilled labour input.
3) Introduction of higher yielding crops.
4) Adoption of more intensive system.
5) Change to a new systems.
6) Adequate farm credit.
7) Adequate supply of essential production needs.
8) Intensification of educational, technical and farm management.

But still the food production problem for the well being of the people is unsolved and the Uzbek agriculture presents the following problems.

1) Low yield level.
2) Low growth rate keeping in view the high growth of population.
3) Low level of agricultural inputs.
4) Lack of institutional facilities.

Within the country the yield level per unit is not uniform as well as in increase in area, production and yield varies from one region to another. Therefore, the main objective of the proposed work is to
study the magnitude of regional imbalances in agriculture i.e., the increase in area, production and yield, so that corrective measures are adopted to augment the agricultural production at uniformly high level. In this way the farmers will not feel themselves deprived of the present gains of the agriculture developmental measures. Therefore, the present problem will deal with the present levels and characteristics of agricultural productivity as well as the growth characteristics in terms of existing variations at micro level both in space and time. Secondly, the problem will also analyse the various sources responsible for such a situation i.e., existing imbalances at regional level in yield and growth in area, production and yield.

Keeping in view the present level of food grains impact and growth in food grains production as well as the present rate of population increase, it appears that country is importing much food grains. Moreover, the problem is bound to be aggravated because the per capita income is increasing which will led to the demand of better quality of food grains and food items. In such a situation the different aspects of the country’s requirement need to be analysed in order to cope with the present shortage of food.

Therefore, in order to increase the production, the contribution of increase in area as well as increase in yield should be measured. In this way we can find out the existing potentiality to increase the area under cultivation as well as to suggest possibilities of increasing the technological mechanisms.

0.12 Aims and Objectives

The space of economic development and economic transformation has an important implication in the role and strategy of agricultural development. On the one hand the space of transformation is the key determinant of the size and rate of change of agricultural labour force, which in turn affects the labour and capital productivity. On the other hand the extent and rate of transformation and specific nature of agricultural sector determines the extent to which economic development depends upon capital
formation in agriculture and transfer of capital from agriculture to other sectors.

It is likely that the production in the agricultural sector can be expanded at least in proportion to the increase of labour and capital input. Indeed there are probably significant external economies of scale in the non-agricultural sector. Hence a successive investment in the non-agricultural sector reinforce each other. It is quite likely that production expands more proportionately with increase in capital and labour input.\textsuperscript{15}

Keeping in view the complexities of economic development, it becomes necessary to study the aims and objectives of concerned problem. Diagnosis of development policy and recommendation concerning future policy requires measurement of success of past programmes and the choice of measure of success is in time dependent upon explicitly understanding of goals and objectives. The general objectives of economic development is to rise the average level of living standard of human population. Level of living is a per capita concept rather than one of the aggregate of the economy. Hence increasing the level of living require that the total production of goods and services in a society should expand more rapidly than the population.\textsuperscript{16}

It is thus obvious, that the interplay between the developmental means and developmental objectives are more important. The initial size and backwardness of agriculture suggests wide scope for rising GNP through agricultural development. These factors also provide scope for the rural sector to combine income distribution objectives with developmental objectives through plans, which increase production and income across a wide spectrum of agricultural sector. Agricultural planning requires a wide set of objectives but achieving a set of objectives does not necessarily require planning. Planning makes a positive contribution only if it causes the objectives to be reached more rapidly and more efficiently. On the other hand planning carried within incorrect information is likely to give no better results.\textsuperscript{17}

The present study requires an analysis in the variations in agricultural productivity in Uzbekistan in a regional framework. This
will be undertaken after finding out the various sources responsible for such a situation. However, keeping in view, the varied dimensions of the present work, like low level of productivity, low level of farm technology, low farm income and wide fluctuation in agricultural output due to vagaries of nature following objectives are broadly outlined.

i) To analyse the level of production of each food grain crop.
ii) To examine the spatial variability in the cropping and productivity levels.
iii) To analyse either area or yield is more responsible for the increase in the total production.
iv) To study the various factors such as environmental, technological and institutional, for the present situation and how far they are related with these sources.
v) To examine the productivity relationship with positive and negative areas of food availability.
vi) To find out the priority regions for planning and to suggest suitable strategy to make the agriculture more productive and suitable.

0.13 Hypothesis

The following hypothesis have been formulated for the present study.

i) Environmental, Technological and Institutional factors are responsible for variations in agricultural productivity in Uzbekistan.

ii) Regional levels of production and productivity are associated with a function of socio-economic factors coupled with variations in ecological habitats.

iii) Increase in irrigation is more responsible for increase in production than increases in area.

0.14 Data Base

For successful planning and analysis of various problems in the decision of agricultural policies data is essential. Agricultural
development is a complex problem, therefore, reliable collection and sources of data are necessary for decision making and for future planning. The assigned study have been carried out on secondary data. This data have been collected from various sources. Main sources of data collection include FAO production yearbooks published by the United States and Uzbekistan agricultural Abstracts, Statistical Digest, Asia and Pacific, I.M.F. sources published by United States. Data for climatic variations have been collected from World Statistical Yearbooks and various Uzbek Agricultural Abstracts. Other sources of data collection include Statistical Abstracts published by the office of Prime Minister in Uzbekistan and State Planning Agency, for economic and social Development data, published by Uzbek Republic Government have also been taken into consideration. Finally the processed data have been tabulated and plotted on the GIS technique, representing existing scenario of agriculture in Uzbekistan.

0.15 Methodology

Keeping in view the varied dimensions of the problems, the methodology used is also of different nature. Each chapter has a different methodology. For the study of trends, five years average data have has processed in order to avoid environmental abnormalities. For crop combination analysis, Weaver’s and Doi’s method has been applied. Similarly location quotient method has been used for crop concentration analysis. Accordingly for crop diversification Gibbs Martin method proved results for catrographic analysis.

Secondly for measuring the growth, production and levels of productivity, Mohammad Shafi’s Qommen’s and Kendall’s ranking coefficient method’s have been used. Yield level for each region and for the country as a whole has been calculated. This has been done at each crop level also. In this way percent area as well as percent production being occupied by each level of yield has come out. Growth level and yield level situation has been shown by GIS maps and graphs. Thirdly, to measure the role of environmental and
0.16 Review of the Literature

A good number of studies have been carried out to study the agricultural production both in Uzbekistan and abroad. We shall discuss briefly the findings of some important studies which bear a direct relevance to the present study. A detailed analysis of the models, underlying assumptions and variables included in the specific studies are not attempted in this discussion. Instead, a brief and general review of the major developments in this field is discussed.

Thompson, (1926), while measuring the relative productivity of British and Danish, emphasized and expressed it in terms of gross output of crops and livestock. He considered the following parameters, while measuring agricultural productivity. (i) Yield per acre of crop (ii) Livestock per 100 acres (iii) The gross production per hundred acre (iv) Proportion of arable land (v) The number of persons employed (vi) The cost of labour. ¹⁸

Ganguli (1938), presented a theoretical discussion for computing productivity in agriculture. Firstly, he took into the account the area under any crop ‘A’ in a particular unit area belonging to a certain region. Secondly, he tried to obtain number of yield. This is found by dividing the yield per hectare for the entire region as the standard. This yield may be expressed as percentage. Thirdly, the proportion of area under ‘A’ and the corresponding number of yield were multiplied. ¹⁹

Kendall, (1939), treated productivity as a mathematical problem and initiated a system of four co-efficients (a) productivity coefficient (b) ranking coefficient (c) money coefficient (d) starch equivalent or energy coefficient. Kendall pointed out that the productivity coefficient and the ranking coefficient are concerned only with the yield per acre, but not in any way weighted according to volume of production. He, therefore, evolved a measure of crop productivity by using index number technique. In this technique the yield of different crops should be expressed in terms of some common units. These are,
money value as expressed in price and secondly energy as expressed in starch equivalent.  

Hirish, (1943), has suggested (crop yield index) as the basis of productivity measurement. It expresses the average of the yields of various crops on a farm or on a locality relative to the yield of the same crops on another farm in a second locality.

Zobel, (1950), has attempted to determine the labour productivity. He considered productivity of labour as the ratio of total output to the total man hours consumed in the production of that output resulting in output per hour.

Stamp, (1958), applied Kendall’s ranking coefficient technique on an international level in order to determine agricultural efficiency of a number of countries as well as of some major crops.

Loomis and Bartoon, (1961), suggested that the productivity depends upon conceptually consistent measures of agricultural output and inputs. They have measured United States Agricultural input and productivity in aggregate.

Qommen, (1962), while working out the trends of agricultural productivity of the states of Kerala in India and has measured productivity on the basis of yield per acre.

Enyedia, (1964), while describing geographical types of agriculture in Hungary refers to a formula for determining agricultural productivity.

Horring, (1964), had suggested that the concept of productivity is based not only on the single relationship between more relationships i.e., difference in the same agricultural regions or sub-regions as between successive periods and between similar geographical regions in different countries or regions during the same period (in space).

Sapre and Deshpande, (1964), have attempted to refine further the Kendall’s ranking coefficient method. For this, they used weighted average of ranks instead of simple averaged ranks. Thus, it incorporates the proportion of crop area to that area of district. In order to assess the weighed ranks, the ranking positions of a crop is multiplied by the magnitude of it to the total cropped area.
Khusro, (1965), agricultural productivity can be measured with the output permit of a single input and output per unit of cost of all inputs in the agricultural production.²⁷

Saron, (1965), has applied Cobb-Douglas production function approach for the measurement of productivity. The common purpose of this function is to express input/output relationship between several inputs and one output in the agricultural system.²⁸

Thambad, (1970), had adopted crop yield index as the basis for measuring agricultural productivity. He explains that the purpose of this technique is to express the average yield of various crops on a farm or on a region relative to the yield of same crops on an another farm or in a second region.²⁹

Eskender Trushin, (2003), while studying the problems of Development and Reform in the Agrarian Sector of Uzbekistan. In the entire chain of economic reforms, the chief principle significance is attached to the task of transforming the agrarian sector. This is because of the dominance of rural inhabitants in the population structure, because of the agro industrial character of the economy, and because of the role that agriculture can play in resolving vitally important problems.³⁰

Max Spoor, (2001), while studying the Uzbekistan’s Agrarian Transition was of this opinion that agricultural sector has been the backbone of the development model that Uzbekistan has followed during its transition. Cotton became the major foreign exchange earner, and agriculture was the largest single provider of employment in the country, even absorbing labour during the first years of economic contraction. Uzbekistan has followed a path in which surplus, produced in particular in the cotton sub-sector, was transferred out and used to finance key energy and industrial projects and development of urban infrastructure. This economic strategy based on resource extraction and import substitution has avoided a major contraction of the economy and led to recovery in the second half of the 90’s, but also has caused a substantial urban base, and did not result in a “investment-led” growth path.³¹
Peter C. Bloch, (2002), has suggested (Agrarian Reform in Uzbekistan and other Central Asian Countries) there have been some achievements in farm restructuring and changes in the structure of agricultural production, including positive economic growth in real terms in some years, increase in yield and production, and development of the private sector. Despite the efforts towards self-sufficiency, Uzbekistan remains one of the largest importers of food in Central Asia.32

Bloch and Rasmussen, (1998), Kazakhstan and Turkmenistan have had similar legal and policy reforms, but implementation has lagged.

Lerman and Brooks, (1998), there is no comprehensive analysis of the Kazakhstan. Tajikistan’s efforts at reform have been hampered by civil strife and continued weakness of government.

Lerman, (1998), after a brief discussion of the similarities and differences among the Central Asian countries. Uzbekistan’s choice to proceed “Step to Step”, as the govt. says, by examining the country’s characteristics of agrarian structure.33

Azizur Rahman Khan, (1996), while studying the transition of Uzbekistan’s agriculture to a market economy, analysis evolution of Uzbekistan’s agriculture during the soviet period, and provides essential background information for understanding current issues of agricultural development.34

Abdul Rauf Shah, (2003), while studying resource potentiality of Central Asian Republics figures out all resource potentials and lays stress on agricultural potential of Central Asian Republics. He also points out prospects for agricultural development in Central Asian Republics.35

G. M. Mir, (1993), while having his indebth analysis on Regional Geography of Central Asia points out rational utilization of socio-economic variables of whole Central Asia.36

Gulshan Majeed, (1997), after framing out a detailed book entitled “Studies in Central Asia”, systematically details out economy, agriculture, resources and sociology of the entire region.37
The foregoing review of literature shows that several studies, using different approaches, have been carried out by different scholars to study the agriculture in Uzbekistan and abroad. Most of these studies have succeeded in explaining the various characteristics of agriculture and its role in economy and various problems regarding the agriculture of Uzbekistan. The general consensus that emerges from these studies supports the hypothesis that production decisions of farmers are guided by market. Besides, most of them analyse the response of area under crop and not of output. They presume that allocation of non-land resources will be influenced by changes in relative prices in the same extent as allocation of land.

Further, the magnitude and nature of farmer's response to price may vary from crop to crop depending on nature of crop and also from region to region depending on agro-climatic and socio-economic conditions. In a country like Uzbekistan where agro-climatic and socio-economic conditions are widely varied from region to region and there is a need for more and more micro-level studies which focus on regional variations in agricultural production.

Some literature in the form of books and articles have revealed the general picture of the agriculture in the country. No study of regional imbalances in the field of agriculture of such nature has been made so far.

The literature so far available provides information on the various agricultural characteristics of the region like crops and their production and productivity as well as percent area under each crop. While the study like growth trend in area, production and yield in relation to growth in production and future need has not been made so far in country. Therefore, the proposed work has provided a picture regarding the variation in the agricultural productivity in the country as a whole.

The present study is divided into six chapters. The Introductory part highlights the significance of study, objectives of the problem, data base, hypothesis, methodology used for fulfilling the different objectives of the problem and literature review.
Introduction

The 1st chapter entitled, "Physical Setting of the Study Area" frames out in detail Physiography, Vegetation, Resource Potential of the Republic of Uzbekistan.

The chapter 2nd, "Trends in Area Production and Yield" deals with growth in area and yield broadly of food grains, cotton and other dominant crops. It has been seen that growth in production can be availed through the increase in yield, mostly, from those regions and oblasts where yield level is very low, because of the unavailability of the infra-structural facilities needed by the crops. Therefore, to increase the production, the control over the environment is needed through the factors like technology and institutions in the weaker regions.

In the third and fourth chapters i.e., "Cropping Pattern" and "productivity Levels," crop-wise situation and their productivity and growth levels have been dealt with. For this purpose dominant food grain crops and cash crops were analysed in terms of growth in area, yield and production. Besides share of area and production in each yield and growth categories have been calculated.

While the chapter fifth, "Sources of Variations in the Levels and Growth of Agricultural Productivity", various factors like environmental, technological and institutional were taken into consideration in order to find out the truth behind the existing situation. Firstly, the environmental factors were analysed with rainfall as one of the important variable. The country has been divided into a number of physical complexes (relief, soil and rainfall) and the yield level is correlated with these regions. The factors like relief and soil were held lesser responsible than rainfall in affecting the yield and uncertainty in production. The technological factors like tractors, various irrigation machines, fertilizers etc. were analysed in relation to yield level and growth level and the concentration of these inputs is analysed in terms of percentage share of each oblast as well as amount of these inputs per thousand hectare of the cultivated area. In institutional factors, it is realised that land holding, tenancy and agricultural labours were held more responsible in affecting the
agricultural productivity. However, detailed analysis of the size of land holdings has also been made. Yield level helps to find out degree of relation and it is concluded that small size of land holdings are more important for agricultural development.

Lastly, in sixth chapter, the thesis has been concluded and possible suggestions have been formulated for solving problems of the Uzbek agriculture.

References

Introduction

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