Chapter-6

Conclusion & Suggestions
Agriculture is the predominant sector in most developing countries. The economic development of developing countries is largely dependent on agriculture. The historical experience of many countries reveals that agriculture played a vital role in the process of economic development. The development of agriculture contributes much to the development of a nation in many ways, as such it meets the growing demand for food, earns foreign exchange, provides labour force to manufacturing sector and stimulates capital formation and industrial expansion. But, the most important way by which agriculture can contribute to overall economic development is through increased agricultural productivity. In addition, agriculture has to provide employment for growing labour force in rural areas. Therefore, the pace of economic transformation has an important bearing on the role and strategy of agricultural development in developing economies.

Uzbekistan has predominantly agricultural economy and agriculture forms the backbone of Uzbekistan’s economy. The performance of agricultural sector determines the economic development of Uzbekistan to a large extent. Agriculture forms livelihood for 2/3 of population and contributes nearly half of the national product in Uzbekistan, though the share of agriculture in national income has been persistently declining over time. Agriculture also contributes significantly to employment generation and industrial development in Uzbekistan. As a result, the planning commission accorded highest priority to agriculture. However, plan outlay to agriculture has declined significantly. Several strategies have been implemented for development of agriculture over the years, especially after 31 August 1991, which led to significant transformation of
Agriculture. Uzbekistan's agriculture has been marked substantial development particularly since mid nineties with the adopting of new agricultural strategy. However, the agriculture in Uzbekistan exhibited imbalance in growth across regions and crops. Several factors have been responsible for these inequalities but price is considered to be an important factor contributing to variations in agricultural production.

The present study is an agrographic investigation of Uzbekistan, carried out in a comparatively methodological framework. It deals with yearwise trends in area, production and yield and also examine the sources of variations in levels and growth of agricultural productivity in different oblasts of Uzbekistan. This work has been carried out within the framework of environmental factors combined with technological, sociocultural and institutional mechanisms. The trends in area, production and yield have revealed the change taken place in Cash crops, foodgrains, cereals, pulses and fruits. The following main observations can be deduced.

i) In the country as a whole more than 43 percent area is devoted to the cotton crop. This distribution is not uniform in all the oblasts of the country. However, it has been observed that almost in all the oblasts of the country the cotton is the dominating crop. It is because of the higher yield of cotton than the other crops and dominance of State farms.

ii) During the period under study food crops have undergone through marked fluctuation. The production trend of these crops have witnessed a high instability. For example, in case of rice the production during 1991 - 1995 was 498 thousand metric tons and has gone down during the period 1996-2000 (480 thousand metric tons), while as in the remaining periods the production shows slightly increasing trend. During 2001-2005 the production has reached to 492 thousand metric tons.

Similarly in Barley the production curve recorded a complete
variation. It has been observed that the total average production from 1981 - 1985 to 2001 - 2005 was 291 thousand metric tons. The total average production during 1981 - 1985 was 311 thousand metric tons. It has gone down and reached to 289 thousand metric tons during 1996 - 2000. But a slight increase had taken place and the production had reached to 327 thousand metric tons during 1991 - 1995.

Same situation prevails in case of maize. It has been observed that maize has recorded very low area under cultivation, while as the yield Kg. per hectare of maize have gone very high. For example, yield Kg. per hectare of maize during 1981 - 1985 was 318 Kg. per hectare when the area devoted to the crop was only 70.9 thousand hectares. Same trend prevails in the remaining years from 1986 - 1990 to 1996 - 2000 i.e. the area during these periods was low as compared to yield recorded per Kg. per hectare.

However, some other crops like potato, grapes and tobacco have recorded low area under cultivation and their yield kg. per hectare has gone high, especially vegetables and fruits. In case of vegetables the yield kg. per hectare during 2001 - 2005 was 12726 kg. per hectare, when area during that period was 50 thousand hectares. The average yield of the crop from 1981 - 1985 to 2001 - 2005 was 9440 kg. per hectare when the area had reached to only 46 thousand hectares. On the other hand fruits have covered large area under cultivation, while as the yield recorded by the crop had remained low as compared to vegetables.

On the whole there is much fluctuation observed in all the cereal crops, but the rate of fluctuation is high in vegetables and fruits as compared to cereal crops, while as in case of cereals, cotton and foodgrains, the rate of fluctuation is high in foodgrains as compared to cereals and cotton.

In the last two chapters i.e., "Agricultural Landuse and Cropping Pattern" and "Productivity Levels". The percent share of each crop to the total grass cultivated area and productivity levels of each crop has been analyzed. It has been seen that in the country as a whole cotton and wheat have occupied 43 and 38 percent of the total gross
cultivated areas, while as the remaining crops constitute insignificant share. Barley crop and Rice have recorded a share of 7 and 5 percent respectively. Cotton and wheat are grown almost in all oblasts of the country, while some of the oblasts like Andjian, Bukhara, Samarkand, Ferghana, alongwith cotton and wheat other crops like rice and barley are also grown.

In Andijan, cotton constitutes 6.9 percent, wheat 7.6 percent and rice 8.5 percent. High percentage of cotton and wheat was found in Kashkadarya and Syrdarya (11.9 and 8.9 percent respectively). It has been observed that almost in all oblasts, like Djizak, Fergana, Khorezm, Samarkand, Namagan and Tashkent percentage of cotton reached upto 8.5, 8.4, 8.5, 7.1 and 8.9 percent respectively. In these oblasts cotton is dominant crop, while in Ferghana, Syrdarya, and Kashkadarya both cotton and rice are grown. But on the whole the country is bio-crop region.

There is a high level regional variation of cotton and cereals. Mostly there is dominance of cotton crop in the country. During 1991 - 1995 to 2001 - 2005 the high average yield level was recorded in Djizak (2.71 tons per hectare), while as in case of wheat the yield level had reached to 3.18 tons per hectare in Tashkent and Fergana.

Oblasts like Namagan, Samarkand, Surkhandarya, Syrdarya, Tashkent, Fergana and Navoi have contributed 75 percent in the total production of food grains during 1991 - 1995 to 2001 - 2005 and have recorded an area of about 68 percent under cultivation. These oblasts have recorded a high share of area under cultivation, while as high growth level of vegetables was recorded in Karakalpakstan, Surkhandarya, Syrdarya and Kashkardarya. It is thus observed that there is a great variation in all the oblasts of the country.

In case of cereal crops, the wheat and barley are leading crops of Bukhara, Tashkent and Fergana and these oblasts have contributed 35 percent in the total production and 30 percent in total area, while low growth rate of wheat was recorded in Syrdarya, in which the total area and production shared by the crop was 22.74 percent and 1.74 percent production was recorded during 1991 - 1995 to 2001 -
2005.

The growth level has also shown a wide variation. The growth level in cotton is mostly towards the South Western parts of the country and a small portion towards east of the country. The main provinces where cotton growth level in area is high include, Djizak, Samarkand, Syrdarya and Surkhandarya. While as low growth level was recorded in Kashkardarya, where only 1.8 percent area is under cultivation and contributes 64.16 percent in the total production of the country.

Next to cotton comes wheat. High average yield of the crop was recorded in Fergana (3.4 tons per hectare). However, the oblasts like Bukhara, Syrdarya, Tashkent, Surkhandarya, Fergana and Khorezm have shown a total area of about 51 percent and have contributed 38 percent in the total production of the country. While as low yield level on the other hand was recorded in Andijan, Surkhandarya, Khorezm and on the other hand negative growth was recorded in Kashkardarya and Namagan, Tashkent and Syrdarya etc. These oblasts falls almost in south of the eastern block of the country, contribute 15 percent in the total production and share an area of about 10 percent.

Since the work has been carried out within the environmental, technological, sociocultural and institutional framework, therefore, the influence of all these variables can be studied as here under:

The land form, soil and climate have played a vital role in affecting the land use and spatial distribution of crops. Relief and structure of the land have exercised a direct influence on the land use, cropping pattern and spatial diversity in crop yield. For example, the Fergana valley in the eastern Uzbekistan is influenced by the nature of land and is known for cereal crops.

With vast areal differences in topography, climate, soil and irrigational facilities, the agricultural attributes have also shown diversity all over the country. The areas having assured rainfall and developed water supply differ from the areas, where rainfall is more or less scanty and irrigation facilities are available to some extent e.g. The Fergana valley lies in the east of Uzbekistan is mostly a
productive agricultural zone, because the area is favoured by good soils, adequate rainfall, suitable climate and favourable geographical location.

Next to the Fergana valley's interior plain region comprising the plains of Kashkadarya, Surkhandarya, Syrdarya, Tashkent and Bukhara are known for cotton and wheat crops. The plain is also located suitably.

The chemical composition of the soil also plays equally an important role in determining the potentiality of land e.g., the calcic soil, which is known for wheat cultivation is blackish in colour and its rainfall vary from 100 - 150mm. This soil is rich in calcium contents and mostly covers the interior plain of the Uzbekistan.

On the other hand the Alluvium soil is having a loam and clayey texture. This kind of soil is mostly found in low valleys of Syrdarya and Amudarya and their tributaries. This soil is suitable for the cultivation of cereal crops, especially rice and wheat. The fertility rate is high and its moisture retaining capacity is also very high. However, it has been observed that alluvium soils at higher grounds has high fertility rate. The soil receives 300mm rainfall, but in some parts it goes very high.

Rainfall variation have directly affected the cropping pattern in the country. It has been observed that the eastern region have an average rainfall of 300 - 450 inches, as the northeastern and southwestern parts of the country have an average rainfall below 250 inches. Accordingly there is a variation in the crops grown in these areas. Western region mostly Karakalpakistan and Bukhara are known for cotton, while as eastern and southeastern area are known for rice and fruit cultivation.

The extension of irrigation land is of vital importance. It has been observed that large potentially fertile areas yield little, because rainfall is inadequate. It has become more imperative with the shrinkage in the area of good rainfed land, which can still be taken under cultivation. Thus irrigation is the principal means for expanding the cultivated area, increasing and stabilizing yields and diversifying.
agricultural production, developing summer crop cultivation. The possibilities of additional irrigation are by no means limitless. Except for the Amudarya and Syrdarya, Uzbekistan has no large river with a substantial flow during the summer dry season. In fact, the Amudarya and Syrdarya accounts for 90 percent of the aggregate annual flow of Uzbekistan's rivers. Thus the available water supply may add more hectares of land to the additional area, which can be irrigated, provided irrigation facilities are made available.

It is seen that foodgrains in the country along with all cereal and pulse crops have undergone much fluctuation. This fluctuation is directly proportional to the environmental constraints. For example, a wholesome rainfall, leads to higher agricultural productivity and conversely an unfavourable weather corresponds to lower productivity levels. Therefore, it is imperative that more arable land should be brought under cultivation, so as to avoid fluctuations.

It is also suggested that agriculture land should be planned under well developed perspectives. A multidimensionally technological infrastructure is needed in order to ensure a wholesome agricultural yield. Modern agro-technological implements should be used at wider scale. Also the introduction of HYV and fertilizers has to be introduced, so as to countervail vagaries of nature. In order to built up a sound agricultural economy following objectives are to be fulfilled.

i) Action to sustain and enhance the momentum of economic expansion and technological development.

ii) Adoption of effective promotional measures to the productivity and incomes of the poorer section and poorer oblasts.

iii) Expansion and qualitative improvement in facilities for health, education and other basic civic amenities.

iv) Measures for bringing about a sharp reduction in the rate of population growth.

v) Land use should be done in planned way, so that the interaction between rural and urban may be at the maximum
level.

vi) The empowering of agricultural development with special reference to irrigation system inputs and other innovative technologies should be adopted both in rural and urban areas.

vii) Fergana valley oblast as being an agricultural region, there should be another green revolution, white revolution, blue revolution and yellow revolution. So that human resource and agricultural development may be possible further leading to enhancing the employment opportunities vis-à-vis poverty alleviation.

viii) Efforts should be taken to minimize effects of soil erosion.

It has been observed that farmers in the country are largely dependent on capital. It has also been seen most of the large owners do not live permanently on their land and operate through some type of share cropping system. Hence the organization of the extension service should be such, so as to permit ultimate development into the central agricultural agency, through which the educational activities related to improve techniques in agriculture and rural living are channelised. In its particular sphere the activity of extension service should coordinate the findings of all departments within the Ministry of Agriculture. It should become eventually one of the three or four principal departments of the Ministry of Agriculture, separated from the research control or administrative work of the Ministry. For the present, however, it seem desirable to retain the division of cooperatives and the extension service on the joint basis. The extension service should not have regulatory or police power function. For this they would evolve education in the pleading of special causes or the enforcement of sanctions. Education and extension rather involve training on the basis of voluntary participation by farmers. At the national level the service should be staffed adequately to serve the village communities.

The institutional mechanisms have in the same way more or less created their equivalent role in causing the agricultural imbalances
in the country. For example the traditional forms of the ownership, the large coverage of dead land belonging to the state, lack of institutional organizations have stood in the way of developing the agricultural regionalization in the country. It is seen that private ownership has mostly prevailed in the country. During 2005 the private sector individual farms have occupied about 65 percent of the land, while as the remaining land had fallen under state, collective and cooperative sectors. These institutional reforms had a plan for accelerating growth and agricultural development in the country and flexibility in diversified plans in order to cope-up with many sources of uncertainty which characterize so modern agroeconomic spectrum of the Republic of Uzbekistan. It was also planned that dependence of farmers on landlords for their farm produce should be minimized so that there will be an accelerated growth in agricultural sector.

The further development of agriculture will require increasing applications of science and technology so as to increase factor productivity. The management of science and technology development will need to be revived on a continuing basis for ensuring that the pace of the technical progress is enhanced. Arrangements for access to technology need to be improved. Quality of education need to be upgraded so as the knowledge and skill of labour force can be improved in order to facilitate the faster production of new science and technology.

Planning for accelerated growth in a country and diversity must have built in flexibility to cope with the many sources of uncertainty which characterize modern economic life. To add to the effectiveness of planning process there must be emphasis on decentralization to provide the needed elements of built in flexibility as well as greater involvement of people at all levels. This will ensure that development programmes particularly those relating to agriculture and rural development will take adequate account of regional diversities in resource endowment, and development potential. There are following basic necessities of a rural institutional infrastructure designed to assist the small farmer.
i) It must ensure him access to needed resources of technical advice and information as well as the cooperation of his peers.

ii) There must be proliferation of both competitive and non-competitive public sector and private sector institutions sufficient to target groups. (E.g. the small farmers with easy access).

iii) It must place critical rural institutions at a level above that of village in order to give each institution an adequate resource base and to break the rigidity of traditional village level power structure.

Rural Primary Assembling Centres should be considered as depot centre to provide the fair dealings to the small and marginal farmers, who remained unable to visit main regulated market located at a distance especially in the urban centres.

Infrastructural facilities should be extended to village level, link roads, storage facilities, shops of inputs, banking credit facilities, drinking water, auction platform and the cattleshed etc. are needed in rural markets which can be a source of attraction for producers-sellers in different states.

Entry and tittle of producer sellers should be checked at the gate of market campus to avoid proxy representation of mobile and tillage traders as a producer sellers in the market.

All the village markets should be brought under the regulation of "Agricultural Produce Market Act" on the priority basis all over the country.

Agricultural implements and farm inputs needed by farmers should be locally available at reasonable price. Presence of adequate, educational training and support facilities for farmers are urgently needed. Mechanization for planning and directing agricultural programmes should be integral component of overall economic development.

The application of the proposed discrete multicriteria paradigm would be more in demand in backward disadvantageous regions.
where opportunities for socioeconomic development/ upliftment of poor communities are to be floated.

The small farmer development strategy should make full use of frontier technologies, including bio-technology and ensure the linkage between research, technology and production on the one hand and effectiveness of delivery system and extension network to carry fruits of science and technology to the farmer on the other.

There is a shortage of trained agriculturalist. Steps should be taken to improve the teaching and research facilities at various intermediate agricultural strategies at Fergana, Syrdarya, and other oblasts and also at the secondary agricultural schools. The extension worker needs a well training in the technical aspect of the agriculture and a good knowledge of social and economic problems in rural communities. In addition to pre-service training centres, it is essential that inservice and refresher course be provided for extension personal. The food and agricultural organization should be requested to assist in the development of training centre for extension. This activity might be supplemented by a cooperative management between the Ministry of Agriculture and nearest Foundation for the training of village community worker. The work of this foundation provides a useful example of an effective method of reaching the small farmers.

The findings of research experimentation and the experience of the farmers give support to extension programme. Much information is already available and should be transmitted to farmers, but more systematic and better coordinated practical research should be the aim in the future. The two functions of research and extension should be coordinated within the Ministry of Agriculture, so that each performs its specialized service, in a manner that supplements and complements the other. Research must focus on the key and anticipate future problems.

Through the establishment of the Cooperative Joint Farming Society, per hectare yield may successfully be increased. In this system the right of individual ownership is recognized and respected, but small owners possessing uneconomic holdings should pool their land
for the purpose to joint cultivation viz. The individual ownership and collective farming. The farmers being joint, will also provide facilities to use modern scientific agricultural equipment which will increase the state-wise production.

A continuous monitoring system should be evolved to examine and investigate into the performance of farmers. The cultivators required short intermediate and long term credit for variety of purposes and finance for the development and conservation of resources like construction of wells and embankments etc. However, the government has introduced much schemes in which it provides finance to the villages in the form of loans.

The most important innovation need to be undertaken in the institutional sectors. Modern agricultural institutions which can provide adequate training facilities should be set up. Land reforms should be carried out so as to ensure greater involvement of the masses in agricultural sector. Land must go to the tillers. The feudal wastage should be removed. The landless agricultural labourers should get surplus land and adequate facilities so as to motivate the tilling class for producing more food.

With the introduction of water fee and the rising relative price of agricultural chemicals on the one side and deficiency of foodstuffs on the other, the Uzbekistan should adopt such a policy in agriculture which will be environmentally sound and economically viable. For this purpose, the Republic, first of all, should reduce the land under cotton and expand the area under other crops, like grain crops, vegetables, melons and potatoes.

For improving the agricultural production and productivity, the Republic should focus its attention towards land ownership, organization and restructuring of Collective and Private Farms, land use, soil fertility, irrigation and the sustainability of production, the availability and use of critical agricultural inputs and the role of agricultural research and technology transfer, including agricultural education, extension and services.

The irrigational techniques leading to minimum water loss
should be applied so that the already existing salinity problem is not further deteriorated. However, the areas where salinity cannot be avoided even after the application of reasonable expenditure, should be devoted to salt resistant crops. Sometimes it happens that we squander an imported expensive desalination technology while the most suitable solution probably exists in the backyards. This is with the intention that the region should experiment on other species like 'Halophytes' or crops which grow in saline soils and whose systematic cultivation cannot only help green wasteland to great extent, but also provide us with food, fuel, fodder, fibre, reins, essential oils and medicines.

Conservation of water by lining of canals, reservoirs, ponds is possible with plastic film. Also there can be conveyance of water through plastic pipes. Drip irrigation has the advantage of saving 50 - 70 percent of water with agricultural yield rising up by 50 percent along with saving labour, fertilizers and power. The regional environment, to a large extent, can be protected through avoiding use of wood for packaging, using plastic instead.

The other techniques applicable for the region comprise reducing runoff velocity by slope management, diversion channels and engineering structure. Sprinkle irrigation is also recommended for the region by only for low volume closed spacing crops. Furthermore, the proper water laws be passed and the farmers be charged for water provision especially for irrigation purposes. The revenue received and the financial assistance should be spent on the development of the water resources in a priority planned manner. Moreover, for planning water source a watershed/river basin is an ideal ecological unit (ecosystem) for management which presupposes a multi-national cooperative approach because watershed transcends national boundaries.

Agriculture, the largest sector in Uzbekistan and the foundation and financial donor for the national economy, has developed primarily in an extensive manner. However, the full utilization of water resources in the Aral sea basin impose natural limits to the economic
growth on the basis of an expansion in the area of irrigated land. The extensive line of development is now exhausted. Therefore, in the long-term perspective, the inevitable and rational strategy for development in the agrarian sector is to increase productivity through more efficient use of the land, water, labour, capital and technology. The Republic has significant potential in its agro-industrial complex.

Economic growth in Uzbekistan is possible only if the significant reserves for more efficient agriculture are realized. The natural, historical reduction in the significance of the agrarian sector, along with its share of GDP and work force, can occur only if it undergoes a systematic and rapid development and if it raises its productivity. The strategy of an artificial solution, whereby the share of agrarian sector in GDP and employment is reduced but the old technology or production is maintained (with a corresponding low level of productivity and depressed standard of living in rural areas), can lead to stagnation in the entire economy, not just to economic growth.

The agrarian sector represents an enormous source for economic growth. It is the supplier of food products, raw materials, labour and financial resources for industry and other sectors of the economy. However, the opportunities for a simultaneous, balanced development of agriculture and industry will not depend upon the forced extraction of resources from a stagnation agrarian sector but will mean a natural channeling of resources from a developing agrarian sector (with the assistance of bilateral market ties in the production and distribution of goods). All this will ensure rapid, stable growth throughout the economy.

The main obstacles to shifting the agrarian sector of Uzbekistan to the intensive path of development and achieving a radical increase in efficiency consist of the following factors.

(a) Unreceptivity to scientific-technical progress.
(b) Backwardness of economic relations, and
(c) Lack of necessary incentives for agricultural enterprises. It is therefore essential to make fundamental reforms in the existing order of agrarian relations and to create a system
of incentives for development in the agro-industrial complex.

It must be admitted that, in just six years since becoming independent, Uzbekistan has advanced a considerable distance in this direction. One must not forget that precisely evolutionary approach to reform and the presence of a viable agriculture saved Uzbekistan from a massive decline of production and ensured social stability.

At the same time, the agrarian reforms which have been implemented at a slow pace and incompletely - have not yielded the expected results and are essentially still in the initial stages. Under the existing system of economic relations, agricultural producers are passive, as yet, they do not have a sufficient interest in expanding the yield of the basic agricultural crops. The main causes include the pricing, institutional, and commercial disproportions. It is therefore necessary to continue the structural reforms - above all, in the prices institutions, and trade policy of the agro-industrial complex.

The main thrust of price reform in agriculture is twofold (a) eliminate inefficient subsidies by establishing scientifically grounded payments for the use of land and water resources, and (b) establish parity between the incomes of agriculture and industry.

It is necessary to shift from a general price regulation of grain to targeted subsidies of consumers. This will shift the burden for social protection.

The main thrust of institutional reform in agriculture is to create a flexible structure based on the new model of private utilization of state-owned land. Above all, it also means the transition to the family form of organization for agriculture enterprises, with a vertical cooperative (joint stock) organization of agricultural services and industrial enterprises for the primary processing of agricultural commodities.

In creating joint-stock companies in agriculture, one should bear in mind that the usual model for a joint-stock company has certain shortcomings. Namely, the allocation of profits due to each shareholder is determined not be the quantity, quality and intensity
of work performed, but by the shares of stock. Differences in the qualification and intensity of work is expressed only in the wages, while profits are distributed without any regard to the labour by the shareholders.

It is also necessary to consider individual conditions and the willingness of agricultural producers to adopt new technologies, construct installations and conduct other measures to increase the productivity of the agrarian sector.

The above suggestions it is hoped, can go a long way in bringing about a wholesome change in the agricultural scenario of modern Uzbekistan.