SUMMARY AND CONCLUSION
Chapter - VIII

Summary and Conclusion

The present study entitled "An Economic Analysis of Existing Farming System and Developing Viable Alternatives in Central Uttar Pradesh" was undertaken in the agricultural year the 2005-06 with the main purpose to make report/ documents over characteristics of farming systems prevailing under existing socio-economic influences over production decisions at farm households level. The considered objectives of the study were:

1. To study the socio economic condition of selected households under existing farming systems in Central U. P.
2. To characterization existing farming systems and associated factors in shaping them \( \textbf{(farming systems)} \).
3. To identified income gap along limiting factors for solution.
4. To suggest a sustainable, economically viable alternatives.

The experimental design of the study consisted in cluster sampling of 50 households from Kanpur Dehat and of 50 from Fatehpur districts. Of 50 households from Fatehpur, 25 households from two blocks- Malwa and Khajua have been selected. Similarly, 50 households were selected from two blocks: Matha and Akbarpur \( \textbf{(25 each block)} \). The cluster approach was adopted for selections, which have two dimensions- first dimensions, consists of the relationship components may involve collectively; building trust, open communication and close relationship between the participatory farm firms. The second dimension, which stems from the first and helped in cement relationship components-, involves cultivating various forms of clustering activity, namely sharing, collaborating and cooperating. The households were selected under three size groups namely 0-1; 1-2 and 2 & above hectares. The precautions were under taken during districts and blocks selection, by developing a composite developing index through assign weight and scale value for agriculture, infrastructure, and social sector. The development indexes of each district and each block have been worked out accordingly one district having height composite development index and one district having low composite development index have been selected \( \textbf{(and thus, Kanpur Dehat is found with high development index and Fatehpur is as low composite development index)} \). As regards to selection of blocks, the same for calculating composite development index was
applied for a block weight composite development index and one block of lower CADI of from both selected districts and accordingly four blocks namely Metha and Akbarpur from Kanpur Dehat, Malva and Khajua from Fatehpur have been selected for selecting of 100 farmers in cluster manner.

The general description of central region can be known by considering data on area, population, temperature and topography. One can visualize the production, environment. The central region has an area of 61110 $^2$ km and a population 4.42 million with population density. The mean maximum temperature in January ranges from 20.10C to 23.7 0C where as respective minimum value lies between 8-90C to 9.200C, the maximum temperature being 42.40C while the minimum value 33.3 0C. Average annual rainfall ranges 885-1160 mm in July and August the month of maximum rainfall in this region. The two selected district Kanpur Dehat and Fatehpur are widely covered by irrigation system. The water supply for much of the area is not sufficient to provide permanent requirement in the Rabi seasons, known for wheat, oilseeds, pulses, potato and filed pea. The kharif crops known for paddy, urd, pearl millet, and sorghum etc. The crops are dependent on rainfall and external water both. The land utilization pattern of Kanpur Dehat indicates that nearly 70 per cent cropped area, which covers paddy, wheat, barley, maize, and moong as principal crops and of these, wheat accounts 33.40 per cent and paddy 13.60 per cent of the total cropped area. The percentage land holdings (number of households) in Kanpur Dehat in terms of marginal and small farmers were found by 64.16 per cent. In Fatehpur district it was found by 88.43 per cent. Canal and tube-wells/pumsets are the major sources, from these 58.47 per cent of total cropped area are irrigated. Of geographical area of Fatehpur, 65.37 percent area is under net sown area. The major sources of irrigated are tube-well which irrigated 69.35 per cent of total irrigated, and rest with canals. The crops grown are: paddy, arhar, bajara, till, urd and moon etc in rainy seasons and wheat, gram, barley, pea, mustard, potato and sugarcane in post rainy seasons. Legumes like mungbean, urdbean and vegetables etc are also grown. The acreage under wheat was reported to be 23.81 per cent and 19.85 per cent in paddy. Other significant crops were reported like barley 15.20 per cent, maize 30.13 per cent to total cropped area. The percentage of marginal holdings was 80.43 per cent.

As regard the analysis on land use pattern of the districts, the study revealed that 90 per cent of cultivated land was found irrigation and only 7.55 per cent come under the rainfed
in Kanpur Dehat. The data indicated that there was a less scope to expend cropping through adding more land into cultivation.

It is well known that natural factors like climate will etc determined the production system in a region, but socio-economic factors- land, holdings, resources situation, market cost, occupation, labour force genders, implements and machinery indebtedness and marginal skill and others institutions have been indispensable components of farming system into a region. In this context, socio-economic aspects associated with farming decisions have been studied accordingly.

As regards general scenario of villages for shelter, there typically kaccha and pakka houses were found. Bricks and cements make houses belonging to well of households. The houses are constructed in hazards manner, the majority of poor farmers possess kuchha houses, made by soils but each villages are connected partially or completely with kaccha/pacca roads. In the houses, the provisions of storages to food grains and tubers crops were seen. The cattle yards are available in most unorganized form almost in all area. Village economy is agrarian; modern adoptions were seen, especially in used of high yielding varieties, livestock-cows, and buffalos and commonly own bullocks with affordable utility wealth’s specially transport. In present days economy is basically traditional but pattern in fast changing to the money economy, in which they combined crop and livestock to make sure their livelihood. The current expanded production of livestock/milk is an example of money economy. The villages lack sanitation; open drainage with dirty water offends overflowing during rainy season.

As regards to characteristics of land holding, the 62 percent and 23 per cent were found as small and marginal farmers. Only 15 per cent households were found under of medium (1-2 ha size group) and large size group (2 & above ha) of land holdings and thus it was articulated that an uneven distribution of land holding is still prevailing upon in the study area. As regards to household characterization according to occupation and caste, which is most pivotal point for socio-economic characterization, indicated that there were wide occupational variations. This is proved by data that the 61 per cent farmers involved in agriculture and 49 per cent farmers involved in off-farm activities in Kanpur Dehat; while 78 per cent in agriculture and 22 per cent in Fatehpur district respectively. The data on caste structure, it was indicated that the proportion of SC/OBC was more than 66 per cent thereby indicated that the majority of weaker section earns the income for livelihood from their hard core of labour input.
As regards to basic element needed for decision-making and adoption of improved technologies, that is literacy, it was found that overall 74 percent population of households were literate. Among districts, the literacy rate was found 70.86 percent on selected households while it was 77.99 percent in Fatehpur. The family structure, general family literacy, land structure were found by-in large common on farm of traditional complex family unit with in same compound in research domain. The family breakup is being occurred affecting fragmentation of land holdings. The data also indicated that between different size groups of land holdings have a wide variation for literacy in Central U. P.

The information on land use pattern in accordance to cropping patterns have supported in developing an understanding for how much area has been used in different crops as sown area. The analysis indicated that out of total net cultivated area, more than 96.43 per-cent of land has already been in farming and there is no scope of further horizontal expansion of agriculture. Only option of further agricultural development is assumed by that vertical intensification in terms of diversification, which can help a lot provided non-traditional crops, may come into. It was found that on an average, of GCA 23.47 percent was under rice and 44.91 per cent area under wheat on sam0le households. However, other minor crops have been grown in kharif and Rabi.

As regards to number of farm implements availability on farms of selected households it was indicated, that overall the number of implements in 167. Of this, the numbers of tractor was 11, thresher being 7; seed –drill (02); tub well being 6 as electric operated and 31 as diesel operated; sprayer/duster (7); modern plough/harrow/cultivator was 47; for transportation the number was 9(truck/trolley); chaff cutter was 35 and most indigenous and traditional items i.e. bullock card was 12. The value of assets in each districts have been found more or less similar, but on per ha basis, the marginal/ small farmers have been keeping more non-land assets in comparison to large size group of farm-households there by indicating that they maintain farming with intensive farming by using affordable implements.

So far animal wealth is concerned; the overall data showed that the highest percent of livestock upkeep was found in case of cow being 26.13 %, followed by buffaloes being 23.42 %, bullock 16.82 % goat (14.11%) and young stock (12.91%) respectively on sample households. The district-wise analysis indicates that in Fatehpur district the highest number livestock was reared for cows being 25.88 %, followed Bullock (18.60%); buffaloes (17.44%) and young stock (17.44%)and reminder for poultry and
goat; while in Kanpur Dehat Cows, buffaloes and goat were noticed with important animal maintained and under up-keep, thereby indicated that the livestock upkeep was an important component of crop-livestock mixed farming system in entire central region. This data may be supported in diagnosis of the current status and future trends of the demands and supply of field crop: evaluate the strength, weakness, opportunity and constraints for expending feed crop in farming system and formulate policy recommendation to promote the sustainable development of feed crop in farming in all district and blocks. Thus, during determination and assessing the prospects of feed crop in the sustainable alternative farming system, the impact of no market or market forces on the production and consumption of feed crop have to be considered, by the crop and farming planners in the Central UP, on the one hand and to the entire state on the other.

The pattern of credit use and its potential could be expected to vary with size and nature of assets, structure and economic flows managed by different households. From study, it is revealed that the entire role-played for lending under various credit programmes, the formal agencies are prominent. The lending was made for different purposes in accordance to the land assets ownership. The lending agencies were scheduled-banks; Gramin Vikas and Land Development Bank; RRBs and Cooperatives institutions.

The Overall picture of cropping systems data indicated that rice-wheat system followed by legume/till-wheat. The rice-wheat system has occupied 39.5 per cent area in GCPA followed by other cropping systems. It was interesting to indicate that due to demand of Kanpur metropolitan city for vegetables, intensive vegetables production is performed, while sugarcane is grown in Fatehpur district particularly in Khajua block at large scale. However, in all four blocks of two districts, the similar type of cropping systems have been found with some variations due to micro production environments.

It is also revealed that a wide range of mixed farming systems, which are vertically, integrated commonly systems and considered as meant for small farmers ("subsistence" +) system, in both the districts and these include utilization of crop residues and by products pose complex business management, socio economic, educational as well as technical issues.

In Central U.P., which comes under Indo-Gangetic plains, major source of household income is farming. It is well known that all development programmes are meant for rural economic up-liftment. The emphases were given on food production by enhancing
productivity per unit area. For knowing economic picture of rural people, of central region, the level of existing income from both farming and non-farm sector have been investigated. It was found that Livestock and crop were the important components of total income. The analysis revealed that income accrued by farmers from livestock was much higher than from crops thereby indicating that livestock has been become a competitive enterprise despite of symbiosis relationship, among them. The percent share of livestock to the total agricultural income was, on an average, 63.55 percent. The marginal and small farms holders have more propensities to contribute in income from livestock as compared large farm.

As regards to share of non-agriculture income to the total income the analysis has also been done. The overall off-farm income accrued by selected households of both districts (Kanpur Dehat and Fatehpur), the data revealed that on an average Rs.23390 was earned from business, services and other wage avenues by a household. The level of off-farm income was found highest being Rs26402.62 per H.H./annum, on farm households of 2 and above size group while Rs22294.82 has been earned by households of 0-1 ha size group, but it was far less to Rs21473.95/H.H./ annum on the farm households of 1-2 ha size group and thus overall of off-farm income have been become complimentary and supplementary to livelihoods to the farm families. The Study is also revealed that non-farm income from business and services have been found common in both districts. Income share from business was 41.99 per cent while 49 per cent from services in Kanpur Dehat while it was 27.02 per cent and 50.79 in Fatehpur respectively. The both districts are adjoining location to the Kanpur metropolitan city (45 lakhs population). Thus it can be visualized that the non-farm income on the domain households has been an outcome of urban effect.

As regards to composition of agriculture and non-agriculture: the study revealed that income from agriculture was found being 58.70 per cent while 41.29 per cent received from non-agriculture (services, business & other) in Kanpur Dehat. The same pattern but with same difference it was found in Fatehpur district, indicated that with drastic enhancement in agriculture supported by rapid development in livestock by 75..95 per cent and non-farm income was limited by 24.4 per cent. This was very interested to generalize that change over for one sector (crop) to another sub-sector with subject of diversification of employment and income. Such practice may need in other district of the Central Region for the sake of desirable development.
To see pattern of livelihoods, the whole range data on income expenditure and saving may reflect the household economic situation of any region. Only National economics could not provide grass root economic picture and thus farm economics is must to analyze for policy delineation. At the household level expenditure on food, expenditure health, social ceremonies and other competencies are the aspects on which for farmers are usually made a preparation of income. On an average, 50 per cent income was comparatively devoted to expenditure on food, while 17.52 per cent income was allocated to education and health, the incurred expenditure was 16.61 per cent, 10.22 per cent on the social ceremonies and rest on miscellaneous. The result also revealed that the marginal households the proportion expenditure on food was found drastic higher being 64 percent and minimum on education in comparison to rest group of household. However overall picture reflect that the expenditure on food baskets have been recognized higher thereby summarizing that in Central U.P. farmers are availing livelihoods in wide disperse manner by allocating income for education, health, social-ceremonies along with food.

One of the crucial linkages between farming/production system and consumption demand composition is changing income and income distribution patterns. The results revealed that the saving was found only 5.27 per cent in 0-1 ha, 18.38 per cent 1-2 ha. and 44.66 per cent in 2 & above ha size group of farms respectively. It can be realized that agriculture is not a profitable venture and thus, farmer were ensuring livelihoods from off-farm opportunities to the possible extent. For the household economy as whole expenditure equals income that equals value of production. In case any gap is found, then special interventions and policy incentives are called for. The results of the study on savings invite and prove the need of social security efforts for livelihoods. Living standard may improve when productivity increasing. By increasing output per household, one enjoy high level of standard living and more goods and services, but implication is only, to increase in productivity that brings and improve the standard of living, while a rise in prices brings higher income in forms of rupees.

The results showed that agriculture was also not profitable in the both districts. Additional incomes received from agriculture could just enough to pay the higher prices not enough to buy more goods & services. This calls for eventually enhance the marginal propensity to save. It is emerged from foregoing analysis that the income from both
existing farming systems and off-farm income could not able to prove minimum enough of livelihood of farm households in the study area.

The Farming systems were distinguished based on selected indicators and locations, which are the aims of the study. The indicators involve the resource basis, cropping pattern, and the major activities including off-farm work. The proposed strategies are suggested in consistence to sustainable agriculture. It has widely considered the following reasons for current interest in sustainable agricultural production system through considering the following points: 1) Problem of high input cost structure; 2) Decreasing production; and 3) Low return from farming system.

Keeping these in view, economically viable alternative, the farming system has been suggested for central U.P. The viable alternative of farms can only be achieved when resources, inputs and technology are within the capability of farmers to own, with out having no adverse effect on the resources base, human life and environmental qualities. In others words, an viable alternative agriculture production system is proven with which the farmers continuously increases productivity at levels that are economically sound, and culturally acceptably through the efficient management of resources and orchestration of inputs in numbers, quantity, qualities, sequences and timing, with minimum loss to environment. All stages of production and those of food systems, up to consumption stage have to be cared into consideration. Therefore, viable alternative production system can best be evaluated by the final food impacts and/or effect on farm income.

The among all cropping systems, the most profitable cropping system is fallow-potato-vegetable, which gave, an average, rate of return by 1.68 rupees per rupee expenditure. Studies show that the less variability in yields under rice wheat has been found and, farmers have thus, adopted this system widely. Another major component of farming that livestock, with potato-vegetable system, gave a highest return of Rs.37089.00 per household in Central Uttar Pradesh. The economics production systems/farming systems do not only reveal profitability of farming, but from utility view points livelihoods along with satisfactions of households matter to the great extent particularly to marginal/ small farmers. The livestock+ crop mixed farming systems are common, and follow-up of this are also very old, with great value attached to farming family. The results on crops + livestock mixed farming systems are always found encouraging in sustainable/perspectives.

The initiatives in balance is only the strengthening of existing farming systems by considering farming system in accordance to sustainability as well as livelihoods of the
farmers. This can be achieved an calls for, through organic components application; alternation in cropping system with legumes introduction; with having good bearing of livestock on farm-land; and optimal use of production resources judiciously. Implicitly, exploratory interviews had been made of scientists and extension agents, for evolving / developing viable farming systems for social gains. The table VI-5 indicated that green manuring in rice-wheat system may prove beneficial to soil fertility and thus enhancing productivity/income. The other short duration legumes like urd-bean; mung bean may also complementary for maintaining production resource base. The combination of livestock with cropping systems is the reflection of symbioses- ness, that could enhance the livelihods on the one hand and enhancement of resource base on the other.

It concluded from foregoing analysis that the existing systems are undoubtedly perfect, only shortcoming is predominance of rice-wheat system, which is based on more mining of soil/land nutrients and water, earning advise effects on heal and environments. However, no other option is available to rice-wheat because of this system provides food security at large due to its yield -stability attribute. The great extent of diversification may create food security problems.