CHAPTER VII

SUMMARY AND CONCLUSION

This chapter summarises the main findings of the study and mentions important conclusions derived therefrom.

7.1 Introduction:

The nature of agriculture experienced a sea-change during the mid sixties when the New Agricultural Technology was introduced in India. Initially the hybrid seeds of wheat were used in those areas which already had a strong base of irrigation. The beginning of the Seventies was marked by the high yielding variety of paddy and thus the Indian agriculture ushered in an era of agricultural modernisation. The overall impact of the New Agricultural Technology was an unprecedented increase in agricultural production. For the first time agricultural production in India crossed the mark of 100 million tonnes.

The New Agricultural Technology has two components namely, biological - chemical and mechanical. However, its critical input has been assured irrigation. This proved to be, and is still a limiting factor in the sense that
only those areas were selected for adaptation of the New Agricultural Technology which had an infrastructure of irrigation like Punjab and Western Uttar Pradesh. In case of the latter, eastern and central parts could not venture into farming based on seed-fertilizer technology where irrigation is a constrain. However, these areas soon realised the need for modernisation of agriculture. A modest beginning in this direction was made by the use of pump sets and tube wells. The district of Shahjahanpur was provided Government tube wells as well. This initiated the process of modernisation in agriculture in this backward region of Uttar Pradesh. Its two tehsils namely, Shahjahanpur and Powayan took the lead in adopting the New Agricultural Technology, the former because of, inter alia, its relatively developed infrastructure and the latter due to energetic, dynamic and innovative Sikh farmers (See Chapter V). Hence transformation from traditional to modernised agriculture began in the region.

The main objectives of the present study are:

1. to evaluate the structure and organisation of farms in a backward area;

2. to study the effect of modern inputs on agricultural production; and
3. to make a comparative study of two blocks with different socio-economic backgrounds.

The criterion which led to the selection of area for the present study may be listed as follows. The two tehsils chosen for an indepth study fall in a backward district. Secondly, the area has been experiencing transformation with respect to agricultural technology and, lastly the area, its dialect, traditions and practices were familiar to me. The acquaintance with area and its people is a pre-requisite for any researcher intending to base his study on primary sources.

The distinctive features of these blocks namely, Bhawalkhera and Banda may be summarised in the following manner. Total population is not much different since the former block has 95000 while in the latter it is around 80000. The density of population in these blocks comes to 300 and 189 per square Km. The literacy rate is somewhat similar. Bhawalkhera has a rate of 14.4 per cent while the rate of literacy in Banda is 15.4 per cent. These two blocks differ with respect to infrastructural facilities like transport, communication, veterinary and health etc. Bhawalkhera is relatively more developed in this regard; while Banda block has an advantage over other blocks of the region in the matter of assets pertaining to mechanical component of the New Agricultural Technology.
Of the two blocks, Bhawalkhera is smaller in area and the important source of irrigation is canal. While Banda largely depends on privately owned sources of irrigation and thus has the advantage of assured irrigation (See Chapter II). As far as the cropping pattern is concerned, it is similar in these blocks. Among the crops grown in the area, three crops namely, wheat, paddy and sugarcane are important in terms of area and production (See Chapter II).

Keeping in view the purpose of study, data collected from the primary source has helped in classifying the farms into three categories viz. modernized, semi-modernised and traditional farms. An attempt at classifying the farms by size has also been made (See Chapter IV). Data collected from the field and classified as per objective of the study facilitated the identification of variables to be included in fitting the production function.

The impact of modernisation on structure and organisation of farms in the block concerned is analysed in Chapter V. The pattern of land use in both blocks shows that there is a scope for increasing the net area sown (See Chapter V).
In both the blocks, average size of modernized farms is larger as compared to semi-modernized and traditional farms. Comparing the modernised farms in these blocks, the size of farms was larger in Banda than Bhawalkhera. The reason could be a greater use of mechanical component of the New Agricultural Technology on these farms. Moreover, the analysis of crops by farm size reveals that the average size of wheat and paddy farms is larger than any other crop. The cultivation of sugarcane, a cash crop is less preferred since the area had no sugar mill at the time of survey conducted. This accounts for more area under wheat and paddy and less assigned to sugarcane.

7.2 Main Findings:

The farms pertaining to larger, medium and small category accord priority to wheat to paddy to sugarcane. However, interesting facts are: (i) per cent share of wheat and also of paddy in total cropped area varies inversely with the size of farms; (ii) per cent share of sugarcane in total cropped area moves directly with the size of farms in Bhawalkhera.

Capital structure by farm category shows that the modernised farms are better equipped with as compared to traditional farms. Secondly, asset distribution for Banda
is better than that of Bhawalkhera. Similarly, per acre distribution of agricultural machinery is higher for modernised farms than it is on traditional farms. Moreover, Banda block has, once again, an edge over Bhawalkhera in the matter of per acre distribution of agricultural machinery (See Chapter V).

It may sound astonishing that the per acre expenditure on fertilisers in Banda is as high as it is in Punjab. The reason which may be attributed to it is that the block of Banda has a large population of Sikhs migrated from West Punjab as well as from Punjab in India. They have maintained the level of fertilisation on their farms. However, the per acre expenditure on fertilisers on different categories is quite different where modernised farms spent much more as compared to traditional farms. The same may be said about the pesticides (Chapter V).

Among non-economic factors off-farm employment is generally higher for modernised farms. Since modernised farms use labour-saving technology, there is no surprise that these have higher average off-farm employment (See Chapter V). However, traditional farms using labour-intensive techniques are not capable of releasing much labour thereby lowering the average off-farm employment.
One interesting feature comes to surface when family size on different categories of farms is analysed. The modernised farms support a smaller family while traditional farms bear the burden of larger family. This could be accounted for by the mode of cultivation used by the farmers belonging to modernised and traditional categories. Since the former category is capable of employing labour-saving technology, it releases more of its family labour. While the latter category using labour-intensive mode of cultivation cannot afford to do so.

Other significant non-economic factor affecting agricultural modernisation is the caste of farmers. It is found that the high castes have a dominance over the low castes in the case of possessing modernised farms. This may be because the high caste farmers have more exposure and access to technological information. Since the average size of holdings belonging to high caste farmers is large, they are inspired to use modern mode of cultivation to reap scale economies. On the other hand, low caste farmers owning relatively small and usually traditional farms are not in a position to adopt scale biased technology. Moreover, their social backwardness and distances rather force them to remain content with age-old customs and practices.
In case of agricultural machinery, low caste farmers could manage to have pump sets in a significant number while they lag behind in the use of tractors and tube wells etc.

Another interesting feature is noticed regarding the use of fertilisers etc. on various categories of farms by the farmers of different castes. As per acre distribution of agricultural machinery shows a relatively better position of high caste farmers vis-a-vis low and medium castes. But per acre expenditure on fertilisers shows that the medium caste farmers use more fertilisers and pesticides. Low caste farmers are lagging behind in the use of modern inputs. Hence, caste demarcations prevalent in the society have their reflections on the process of agricultural modernisation in the area concerned.

7.3 Some Conclusions:

The analysis based on fitting production function brings out some important results:

Considering regression coefficients for the inputs used on different categories of farms, one may notice that the coefficient for area is generally positive in case of traditional farms while it is negative for modernised and semi-modernised farms (See Chapter VI). It may be indicative of
the fact that the process of modernisation reduces the relative importance of land.

Analogously, coefficients for human labour on semi-modernised and traditional farms are statistically more significant as compared to modernised farms. This again supports statistical evidence that the labour-saving technology on modernised farms may yield better results.

Another significant conclusion is related with the returns to scale. These are the medium farms in both blocks generally showing increasing returns for all the three crops taken into account. Large and small farms do not show the same for all the crops (See Chapter VI). It also signifies the importance of vertical expansion rather than horizontal expansion. Large farms have chosen the former while the latter approach is being followed by the medium farms.

Education, by and large affects all the farms irrespective of their category and size, in a similar manner. The returns judged by the sum of regression coefficients on every category of farms are relatively better for the educated farmers than their uneducated counterparts (See Chapter VI). Hence the argument that education gives not only access to technological information but also helps in agricultural modernisation which, in turn, leads to better yields. This non-economic factor has affected all categories of farms and farmers without any exception.
The exercise regarding alternative equations, that is changing the input - mix used in these blocks leads to:

1. changing input - mix on modernised and semi-modernised farms makes marginal impact on returns to input. The same cannot be said about the traditional farms. Better returns to inputs are obtained for all the crops on traditional farms while dropping insignificant variables (See Chapter VI).

Agricultural modernisation in this backward region has a positive and significant impact on production and yield of the crops grown in the area. Modernised farms generally show high production than the traditional farms in these blocks. Moreover, the relatively less importance of land in the production process, as it is in the case of modernised farms, suggests that the new technology helped the farmers in experimenting with the new inputs for better results. Education has played an important role since educated farmers are invariably in a better position than the uneducated farmers. Strange is the fact that the latter have not recognised yet the importance of educating themselves.
Certain progress has been made in agricultural transformation as the foregoing discussion reveals. But the area still requires a number of facilities for the rapid progress in this direction: (1) The foremost requirement is infrastructural in nature; (2) Banda block in particular needs roads, communication and irrigation facilities; (3) the area also require storage facilities which are, at present, minimal; (4) the area in general is badly in need of non-erratic supply of electricity especially during the peak seasons; (5) canals generally provide inadequate and untimely supply of water for irrigation; (6) Government tube wells are usually out of order and shape.

Certain industries especially sugar mills have to be provided with for encouraging the cultivation of cash crops. Otherwise, modernisation process may not continue its onward march. Extension services for dissemination of new technology and inputs are another critical input required in the area.

7.4 Suggestions for Further Research:

Since the area of study could not catch the attention of researchers, a number of problems and aspects may be suggested for further research. But here it would remain confined to only two areas which seem vital in the case of agricultural
transformation. Since some villages like Dhaka Ghan-
shyampur have been 'adopted' by certain agencies, and the
'adopted' village have succeeded in transforming tradi-
tional agriculture into modernised farming, a strong case
is there to make an indepth study of 'adopted' village.
One may take up the impact of the diffusion of technologi-
cal knowledge poured into an 'adopted' village on other
villages or blocks. Such studies would throw light on the
viability of such adoption as well as their role as nodal
points in transforming traditional agriculture.

Another area which may be suggested for further
research is social distances and agricultural modernisa-
tion, particularly in Banda block, where Sikh farmers have
settled down. Their cultural and agricultural diversity,
if studied thoroughly may lead to certain important results
which, in turn, could be used to change the perception of
local farmers. Such studies may also help the planners in
formulating component plans for individual areas.