CHAPTER-VI

SUMMARY AND CONCLUSION

The present work is concerned with the spatio-temporal analysis of agricultural landuse in Nandurbar tahsil and the evaluation of the influence of physical and economic factors on the agricultural productivity at micro-level. It is very difficult to explain the occurrence of crops and variations in agricultural productivity within the scope of this study, but the approaches made in that direction, observations, analysis and findings are summarized here.

1) The temporal variations in general land utilization reveals that the net sown area has increased by two per cent during the period of ten years i.e. from 2001-02 to 2009-10. Similarly area under forest and fallow has declined by two per cent and area not available for cultivation is remain constant while, area under other categories i.e. settlements, roads, buildings etc. has increased by three per cent.

2) The spatial variation in general land utilization shows that physiography particularly relief has influenced more in land utilization. The proportion of net sown area is relatively less in the southern hilly tracts while, it has increased in the northern part, which is characterised by gently sloping land and fertile soil in the Tapti valley. The proportion of area not available for cultivation and area under forest is less in the northern part, although some of the patches in north-eastern and eastern part have more than six per cent of area. Area under fallow is mostly concentrated in the north-eastern part of tahsil i.e. above eight per cent. But, most of the area of the tahsil has fallow less than four per cent.

3) The analysis of crop landuse data for the years 2001-02, 2005-06 and 2009-10 indicates that jowar has reached at the first rank in 2009-10. Area under pulses has declined and reached from first rank to the second. Similarly, cotton, which was at the seventh rank, has increased...
at the third. Bajra, a kharif crop, also decreased the rank from second to the fourth rank. Besides this, more or less variation in all other crops is observed during the period of ten years.

4) The spatial distribution of crops is largely influenced by relief, soil, reainfall and irrigation. The central belt of the tahsil has occupied mostly by the jowar i.e. above 95 per cent and northern and southern belts have just fifteen per cent of jowar. There are certain pockets in the eastern part of the tahsil which have bajra above fifteen per cent. Cotton, a cash crop is distributed in all over the tahsil and occupied most of the area above thirty per cent. The increase in the area of cotton indicates the trend of farmers towards the cash crop. In most part of the tahsil has less significance for the wheat a rabi crop but even though the area under wheat has increased slightly due to increase in irrigation facilities.

5) The analysis of the soils of the four villages viz. Khondamali, Talwade Bk., Waghale and Nandpur reveals that, in village Khondamali and Talwade Bk. pH is more than eight in some of the patches and on the contrary it is at useful level in village Waghale and Nandpur. Ece values and organic compound shows the useful level in the soils of all villages. Per centage of nitrogen and phosphorous (kg/hectare) is at low to medium level, while, potassium (kg/hectare) is above the limit in few patches and all micro-nutrients i.e. ferrous, zinc, copper, manganese are more than the require limit etc. are the observations in all villages.

6) The spatio-temporal analysis of general and agricultural landuse of the selected villages shows the following facts.

a) In village Khondamali - i) Net sown area has increased slightly by two per cent during the period of ten years. ii) Area under fallow remains constant i.e. five per cent. iii) Area under forest has declined by two per cent and among the cash crops, - i) Cotton, a cash crop, has increased tremendously from 39.47 per cent to 77.66 per cent. ii) Among the cereals jowar and bajra has declined
by fifty per cent during the period of ten years. iii) Corn has declined rapidly from 9.33 per cent to 1.35 per cent and that of pulses has occupied 10.83 per cent area of the villages.

b) In village Talwade Bk. - Net sown area has declined by one per cent and area under fallow has increased by one per cent while NAC and forest area remain constant during the period of ten years. But, area under the crops like cotton, vegetables and wheat has increased upto ten per cent and on the contrary area under bajra and jowar has declined and pulses remain more or less constant.

c) In village Waghale - Net sown area has increased slightly while area under fallow, forest and NAC has declined. Among the crops area under jowar, wheat and pulses has decreased and area under cotton, bajra and corn has increased considerably.

d) In village Nandpur, net sown area has increased from eighty per cent to ninety four per cent and area under fallow and forest has declined i.e. fallow has decreased from fifteen per cent to four per cent and forest from five per cent to two per cent respectively, during the period of ten years.

7) The correlation analysis brings out the importance of some variables indicating soil and economic characteristics and their association with the productivity of selected crops.

a) Jowar - i) In village Khondamali, the physical factor like zinc and manganese and economic factors like total income and family size show significant relationship with the yield of jowar. ii) In village Talwade Bk. manganese, potassium, Ece, zinc, organic compound play a significant role in the yield of jowar, while economic factors are less significant. iii) In village Waghale, Ece, organic compound, nitrogen, phosphate, and copper are the physical elements that show significant correlation with the yield of jowar.
iv) In village Nandpur, copper, nitrogen, manganese and Ece are important elements affect the yield of jowar.

b) Bajra - i) In village Khondamali economic factors like total income, size of holding and number of fragments and phosphorous a physical element show a significant correlation with the yield of bajra. ii) In village Talwade Bk., Waghale and Nandpur the economic factors like total income, size of holding, number of fragments and expenditure show a positive and significant correlation with the yield of bajra. But, Nandpur has physical elements i.e. nitrogen, zinc, potassium, ferrous etc. which have significant correlation with the yield of bajra.

c) Corn – i) Yield of corn has positive correlation with the economic factors like expenditure, number of fragments, size of holding and nitrogen, potassium and organic compound are the physical elements. ii) In village Talwade Bk., total income, expenditure, phosphate, copper and manganese have significant correlation with the yield of corn. iii) In village Waghale, size of holding, number of fragments and expenditure has significant correlation with the yield of corn. iv) In village Nandpur, nitrogen, phosphate and organic compounds and as well as expenditure, total income, number of fragments play a significant role with the yield of corn.

d) Cotton - i) Yield of cotton is mostly influenced by physical factors like phosphate, copper, zinc, pH and manganese and economic factors like total income and expenditure in village Khondamali. ii) In village Talwade Bk. manganese, total income, expenditure, organic compound, nitrogen and pH influences the yield of cotton. iii) In village Waghale expenditure, total income, micro-nutrients and size of holding play a significant role with the yield of cotton. iv) In village Nandpur, manganese, potassium, phosphate, Ece and
organic compound has significant correlation with the yield of cotton.

e) Wheat - i) In village Khondamali the yield of wheat is influenced by pH, zinc, phosphate, expenditure and total income. ii) In village Talwade Bk. total income, expenditure, the economic factors and manganese, phosphate, potassium, nitrogen, organic compound influences the yield of wheat. iii) In village Waghale expenditure, family size, total income, manganese, zinc, Ece play a significant role with the yield of wheat. iv) In village Nandpur total income, expenditure, number of fragments, size of holding, copper and zinc influences the yield of wheat.

Thus, various physical and economical factors that influences the yield of crop in the selected villages, but there is variation according to the nature and type of the soil.

8) A survey of economic condition of the agriculturist in all villages reveals the following facts.

a) The size of holding in village Khondamali has maximum of 4.98 hectares and minimum of 0.41 hectares and the proportion of large landholders are 27.91 per cent. In village Talwade Bk. the maximum size of holding is 2.74 hectare and minimum of 0.22 hectares where medium land holders are more and their proportion is 15.88 per cent. Similarly, in village Waghale the maximum size of holding is 4.73 hectares and minimum is of 0.28 hectares where proportion of large land holders are 34.26 per cent. While, in village Nandpur the maximum size of holding is 5.20 hectares and minimum is of 0.20 hectares. Here, proportion of large land holders is 8.44 per cent.

b) In the surveyed villages cultivators share the highest per centage of total income i.e. Khondamali (74.24 per cent), Talwade Bk. (68.79 per cent), Waghale (71.19 per cent) and Nandpur (68.17
per cent). Similarly the large land holder shares the highest percentage of total income i.e. Khondamali (38.07 per cent), Talwade Bk. where there is no large land holder but medium land holder shares 31.47 per cent of total income while in village Waghale large land holder contributes 38.16 per cent and in Nandpur they share 39.34 per cent of total income. Similarly the economic condition of the surveyed families (25 of each village) shows that, in Khondamali ten families (40 per cent), in Talwade Bk. twenty one families (84 per cent), in Waghale, five families (20 per cent) and in Nandpur twelve families (48 per cent) are in surplus.

9) Circlewise crop concentration index can be summerised as -

a) Nandurbar has higher concentration index of cotton (165) in 2001-02, oilseeds (325) in 2005-06 and corn (200) in 2009-10.

b) Korit has higher concentration index of corn (366) in 2001-02 and (2sixty) in 2005-06 while in 2009-10 wheat has high concentration index (200).

c) Ranale has higher concentration index of oilseeds (1sixty) in 2001-02 and (775) in 2005-06, but in 2009-10 the index is higher of pulses (133).

d) Dhanora has chilly, a vegetable crop, reveals higher concentration index (125) in 2001-02 and pulses (130) in 2005-06, while cotton (225) in 2009-10.

e) Ashte has higher concentration index of jowar (158) in 2001-02, oilseeds (325) in 2005-06 and cotton (250) in 2009-10.

f) Khondamali has higher concentration index of bajra (209) in 2001-02, oilseeds (450) in 2005-06 and (242) in 2009-10 respectively.
Circlewise crop diversification index shows the following facts (from 2001-02 to 2009-10).

a) Nandurbar - The crop diversification index has increased from 0.76 to 0.84 during the period of ten years in Nandurbar circle.

b) In circle Korit the crop diversification index has declined from 0.82 to 0.78.

c) In circle Ranale the index has tremendously declined from 0.81 to 0.67.

d) The crop diversification index has declined from 0.84 in 2001-02 to 0.66 in 2005-06 and again it has increased upto 0.74 in 2009-10 in circle Dhanora.

e) The circle Khondamali has increased the crop diversity index from 0.74 in 2001-02 to 0.82 in 2009-10.

10) It can be concluded on the basis of the observations made and the results of the analysis that the landuse pattern of Nandurbar tahsil and that of the sample villages is influenced by relief, soils rainfall and irrigation. The study of agricultural productivity at micro-level identifies the role of physical and economic factors. The use of correlation analysis is useful in finding out the association between different independent variables and the yield of selected crops. The concentration of crop has changed from 2001-02 to 2009-10 mostly wheat and corn has low concentration. Crop diversification index reveals a positive change in taking the variety of crops which also support the new trend in the agriculture. It is hoped that such studies at micro-level should help us in understanding the influence of various factors upon landuse and productivity of crops and may further help us in planning the agricultural development of a given region.