FINDINGS AND RECOMMENDATIONS

In the present study an attempt is made to examine the relationship between irrigation and agricultural development in Azamgarh district. The main finding that arises from the foregoing analysis is that due to massive expansion and intensive utilization of irrigation facilities, Azamgarh district has made rapid strides in agriculture. It was the availability and development of irrigation facilities which has brought agricultural transformation in Azamgarh district. The findings of the study may be summarized as follows:

- Azamgarh district, geographically extend from 25°38' to 26°27' north latitudes and 82°40' to 83°52' east longitudes, comprising of an area of 4,054 sq. km.

- It is apparently a level plain with some local variations. It is a part of vast Indo-Gangetic alluvial plain, formed by the alluvial deposits of the rivers-Ghagahara, Chotti-Sarju, Tons and their tributaries.

- The district has a vast reservoir of surface and ground waters, fertile soils and good climatic conditions which have favored both irrigation and agricultural development.

- The demographic aspects are also responsible, to some extent, influencing the growth of irrigation facilities. The rural population of the study area is 3.6 millions (2001 census) which is unevenly distributed. The average density of the population of the district is 972 persons/sq. km., varying from 719 persons/sq.km. in Haraiya block to 1506 persons/sq.km. in Palhani block. The sex ratio is 1020 and the general literacy rate is 45.44
per cent. Cultivators and agricultural laborers account for 1745 and 548 per 1000 ha of irrigated area respectively in Azamgarh district.

- The spatial variations in the physical and demographic setting have lead to the regional imbalances in the development of irrigation facilities. As such it is evident from chapter third that in 2004 tub wells share about 79.71 per cent of the net irrigated area followed by canals which contribute 19.75 per cent and the other sources 0.54 per cent, while their share during 1984 were 17.97 per cent, 15.88 per cent and 10.15 per cent of the net irrigated area respectively. The analysis of growth of source wise irrigated area shows that during the study period (1984-2004) there was an increase of 7.76 per cent in tube well irrigated area and 24.37 per cent in canal irrigated area. A decrease in area under other sources of irrigation was also recorded.

- The role of tube well irrigation also becomes more important in areas of canal irrigation facilities because it remains directly under the control of farmers and provides water ‘whenever’ and in ‘whatever’ amount is needed. While in case of canals this is not possible because the flow of water varies season-wise and fields get water turn-wise. The supply of water is in the hands of inefficient and often corrupt bureaucrats, so the farmers do not get adequate and timely supply of water. In case of wells and tanks, it does not provide sufficient volume of water needed and loss from absorption and evaporation further restricts long feeding channels. Only close fields can be irrigated by this source of irrigation.

- With the extension of canal irrigation supported by the development of tube well irrigation, the net irrigated area rose from 69.53 per cent to 90.01
and gross irrigated area from 51.54 per cent to 78.19 per cent during the study period.

- The intensity of irrigation has increased from 108.00 per cent in 1984 to 142.74 per cent in 2004. During the study period (1984 to 2004), 31.92 per cent increase has been recorded in the intensity of irrigation. However, block level analysis exhibits much variation in it, ranging from 12.77 per cent in the block of Lalganj to 62.02 per cent in Rani-ki-Sarai. Higher changes are observed in the northern portion of the district while the lower changes are recorded in southern part of the district.

- Irrigation has exercized sufficient impact on the mechanical and biochemical inputs of agriculture, although its magnitude varies from place to place. The result of correlation analysis confirms that the irrigated area is highly correlated with consumption of chemical fertilizers, use of tractors and electrified tube wells. The low positive correlation is observed between irrigation and the use of iron ploughs, improved threshing machines and oil engine pump sets show that irrigation does influence the use of these inputs, but there are some other factors as well, which, to some extent, determine the use of these implements and irrigation is not the sole determinant. Thus, the use of these inputs or an increase in their use is not everywhere commensurate with the use of irrigation facilities or an increase with them.

- The study of the influence of irrigation on general land use reveals that irrigation exercises negative influence on the extension of forested area which has decreased slightly. The fallow land and other uncultivated lands have recorded increase whereas the net area sown, occupying largest share
has surprisingly decreased which is due to increase in the area of other categories such as area put to non-agricultural uses (settlements and roads) and current fallow. The cultivated land of the district occupies 82.21 per cent of the total geographical area which is slightly increased during the study period. The impact of irrigation on the extension of cultivated area shows that the scope for bringing new land under plough is limited. The extension of irrigation facilities had led to the expansion of double and gross cropped area.

- The impact of irrigation on the intensity of cropping is very significant, which is generally high in the areas of high irrigation intensity and vice-versa. Both have increased, although not equally, i.e. the increase in the cropping intensity has lead to the increase in irrigation intensity.

- There are mainly two crops grown in the study area, namely, wheat and rice, together have a crops land area more than 85 per cent of total cropped area. The significant increase in area and yield of wheat and rice is mainly because of beneficial impact of expansion in irrigation facilities. A qualitative change is due to an overwhelming preference of wheat and under irrigated conditions can be attributed to a variety of factors such as price support, massive procurement by the Government and more successful technological advance witnessed in wheat and rice crops.

- The regionalization of agriculture is also equally influenced by the irrigation facilities. An analysis of the changes in pattern of crop combination reveals that the number of crops in crop combination has decreased. In 2004, the crop combination reduced to two crops of wheat and rice.
• There are found strong contrasts in the levels of agricultural development between the blocks of the district. The high level of agricultural development is observed in the east-central and north-western parts of the district. By contrast the low level of agricultural development is confined to north-eastern and south-western blocks, namely, Haraiya, Maharajganj, Thekma and Martinganj. In general, the agricultural developments are commensurate with the degree of development of irrigation.

• It is observed from the correlations analysis that irrigation has a significant role in the development of agriculture in the study area. Among the variables of irrigation development, variables of irrigated area (net, double and total) and cropping intensity play greater influence on agricultural development. However, means of irrigation in the form of tube well and pump set is highly correlated with consumption of fertilizers. It is analytically revealed that intensity of irrigation is the main factor which determines the cropping pattern in the district.

• The sampled villages possess different irrigation and agricultural level. Tube wells irrigation is common in all the villages. Besides, some villages are also facilitated by canal irrigation. Of the six sampled villages, Sonwara and Mainpur are located in the canal irrigation tract. The introduction and expansion of irrigation facilities have influenced the use of mechanical and biochemical inputs. But their use is high in those villages, facilitated by both canal and tube well irrigation. Tractorizations coupled with traditional implements are still in use in all the villages. The application of chemical fertilizers is used in all the villages but its application is more in Govindpur, Sonwara and Anjansahid.
It has been found out that the major portion of land in the sampled villages is under cultivation. The net sown area occupies almost two-third (73.03 per cent) of the total reported area. The gross cropped area of the six sampled villages taken together is 987.18 ha; intensity of cropping being 150.59 per cent and the total cultivated area which include the fallow land is 756.72 ha.

There are two main crops grown in the sampled villages, namely, wheat and rice which account for more than 78 per cent of the gross cropped area. Some hectarage is devoted to cash crops like sugarcane and potato.

Recommendations

In the context of the findings stated above some viable recommendations for improving irrigation facilities and agriculture have been made as under –

• Although 90.01 per cent of the net sown area is irrigated, still there is scope for bringing additional area under irrigation. This can be achieved by extending the facilities of irrigation by introducing water management practices and by improving the existing facilities.

• It has been observed that the net irrigated area in the study region varies from 69.23 to 96.62 per cent. The increases in the irrigation potential and its optimal utilization are to be so planned that all the cultivated land is judiciously benefited.

• Lining of canals should be done to prevent the water losses through seepage. The extension of the lined irrigation channels upto the farm edges would perhaps be more useful.
• In order to materialize the modern concept of irrigation that water should be at the command of the farmers, supply of water should be such as farmers can use it according to their wish and requirement.

• The misuse of water, especially in tube well irrigation region is caused due to the improper rates charged for irrigation water. Therefore, instead of charging the rates based on crop grown. It would be much economic to calculate the water charges on hourly basis or on meter basis.

• For proper functioning of tube wells, energy sources (diesel and electricity) should be made available on demand. It has been noted that in the areas depending primarily on tube well irrigation unreliable water receipts by farmers, which is greatly due to the insufficient and erratic supply of power, has adverse effect on their adopting new agricultural innovations. This warrants the tackling of the energy problem by ensuring the equitable supply of hydro-electricity and diesel.

• As regards the general land use, the region has recorded poor proportion (0.02 per cent) of forest cover with considerable deforestation in almost all the blocks. Therefore, it requires special attention and the land should be reclaimed for social forestry after proper water management. Similarly the area under wasteland and fallow land (The later has increased due to defective water management) can be brought under plough by adopting suitable measures, i.e. application of improved technology for extending cultivation, mainly of fruit culture or bringing them under forest.

• Although there seems limited scope to bring additional land under cultivation, hence to feed the growing population, intensity of cropping
needs to be enhanced, particularly in those areas where, sugarcane is the third or fourth ranking crop.

- The cropping pattern has also to be altered and crops like pulses, oil seeds, fruits, vegetables, fodder crops and sugarcane should be given due importance with crop rotation.

- Proper and judicious use of chemical fertilizers, pesticides and HYV seeds should be encouraged.

- There is utmost need to modernize agriculture in the under developed and medium developed regions of the district by giving loans on liberal interest and providing considerable subsidy in the purchase of inputs particularly to small and marginal formers. It was noted that on account of low income farmers were hardly in a position to meet their both ends together. In fact quite a lot of them have to take a consumption loan. Under the circumstances some arrangement has to be made to provide them credit at cheaper rate. The existing institutions, mostly, co-operatives, have ceased to be any use. Specially the landless labourers, small and marginal formers, have no access to the cooperatives. The money-lenders and big cultivators are the only sources to whom the farmers can turn for loans in the area.

    In view of this the cooperatives should be vitalized and restructured. The Small Farmers Development Agency should be activated so that the small and marginal farmers and landless agricultural households, who constitute the majority of households in the area, may receive the loans and other benefits from the agency.

- The rural banks or rural branches of commercial banks may also engage in long term loans to farmers although these institutions are not inclined to
making long term advances. The commercial banks and rural banks should also give loans to the landless labourers, marginal farmers and small farmers for starting subsidiary occupations like dairy farming, poultry farming and bee keeping.

- There should be proper development of marketing, godowns, and cold storage and banking facilities.

- Lack of other supporting infrastructure facilities like good roads is restricting the farmers’ incentive to increase productivity. Only 30 per cent of the villages in the study area are connected with metalled roads. Efforts should be made to connect all the villages by all weather roads. Post offices, telephone and telegraph facilities should also be provided.

- At present 90.02 per cent villages are electrified. The efforts to electrify all the villages in feasible phases should be made.

- Educational facilities should also be extended in accordance with the national norms. Thus the primary, junior high schools, high schools and higher secondary schools should be provided within a range of 1, 3, 5 and 8 kilometers respectively.

- Serious efforts have to be make to develop agro-processing industries at the service centers of the district, for which there is enough scope. The promising units are those of sugar, rice, oil-seeds, rice barn oil, flour, bakery and straw board. Similarly, there is scope for the development of animal based and forest-based industries.

As a consequence of these steps there would be overall development of the region in which agriculture as well as the industrial sector of the regional
economy will develop and prosper simultaneously. The incomes obtained from
the development of agriculture and industrial sector would be used on education,
health facilities and leisure resulting in social as well as cultural development.
However, it should be noted that main stimulations to this process of general
development will flow from modernization of agriculture of the study area.

The present study despite the paucity of data and other limitations has
succeeded in demonstrating regional variations at micro level in irrigation and
agricultural development. It has also succeeded in confirming the hypothesis of
interrelationship between irrigation and agricultural development. However, it is
felt that further agricultural plans of the study area need to be formulated
keeping in view the problems and recommendations narrated at length in
preceding pages. This would help to enhance the level of agricultural
development in the Azamgarh district.