Abstract

Agricultural development of any region depends mainly upon the availability of water resources for irrigation along with the favorable quality of land and soil resources and other technological inputs. Irrigation is a prominent input which plays a permanent role of insurance against the vagaries of rainfall and drought and helps farmers in adopting new agricultural innovations. It promotes the spatial change in land use, intensity of cropping, swing in cropping pattern and crop regionalization. The availability of adequate irrigation facilities transforms the subsistence agricultural landscape gradually into commercial one making agrarian economy market-oriented.

The district of Azamgarh has been selected as a study area in which agriculture has been the major source of livelihood for its inhabitants. The district is irregular in shape lying south of the Ghaghara river, between the parallels of 25°38' and 26°27' north latitudes.

The main objective of the study are firstly; to determine the extent to which the impact of increased irrigation facilities has transformed the position of agriculture in Azamgarh district; secondly, to examine the growth of net, total and source-wise irrigated area and their changes; thirdly, to analyse the spatial variations in the levels of irrigation and cropping intensity, fourthly to scrutinize the spatial variations in the levels of agricultural development and finally, to find out the interrelationship between irrigation and agricultural development.
The present study is based on both primary and secondary sources of data, which were collected from the published and unpublished records of various offices and extensive field survey. For the analysis of the data various statistical methods have been applied.

The present research work is deliberated under seven chapters with the elimination of findings and recommendations. First chapter is related to the conceptual background, introduction, objectives, hypotheses and methodology along with review of literature on selected problem. The second chapter comprising of two parts, is devoted to the general description of the study area. In the first part an attempt has been made to assess how the physical factors such as relief, drainage, climate, water resources and soils are crucial for the development of irrigation. This is followed by an analysis of relevant socio-economic factors. Third chapter consists of two parts which deals with the development of irrigation. Part one is devoted to the general description of development of irrigation in India and Utter Pradesh while part two focuses the development of irrigation in the study area. In this part the spatio-temporal growth and changes of irrigated area (net and total), cropping intensity, and source-wise irrigated area have been examined. The association of irrigation with mechanical and biochemical inputs is analyzed in chapter fourth. The focus of attention of chapter fifth is to highlight the impact of irrigation on agricultural land use. In this chapter changes in general land use, cultivated area, cropping pattern and intensity of cropping is dealt with. Apart from this, crop combination and crop ranking are also assessed. In the sixth chapter of the thesis, an attempt is made to measure of the levels of irrigation and agricultural development at two points of time. It is also devoted to analyse the relationship
between irrigation and agricultural development in the area under study followed by analysis of correlation between irrigation and agricultural development. Some of the emerging features of irrigation and agricultural development at micro level are given in chapter seven. Finally, the summary of findings of the entire research work followed by meaningful and viable recommendations have been given.

The present research work reveals some outstanding characteristics on the basis of which certain conclusions can be pinched. The main finding points out that it was the availability and development of irrigation facilities which has brought agricultural transformation in Azamgarh district.

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.

As for as the source wise irrigation is concerned, 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. Thus there was an increase of 7.76 per cent in tube well irrigated area and 24.37 per cent in canal irrigated area.

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. High changes are observed in the northern portion of the district while the low changes are recorded in southern part of the district. 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.

Irrigation has exercised 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.

There are mainly two crops grown in the study area, namely, wheat and rice, contributing a land area of 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.

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. Moreover, there is also some regional disparity in the levels of irrigation development vis-à-vis levels of agricultural development in the study area. Some blocks having high level of irrigation development has medium level of agricultural development such as Ahraula and Lalganj.
Besides other blocks which have differentiated region are Tahbarpur and Martinganj. Two northern blocks, namely, Haraiya and Maharajganj are integrated having low level both irrigation and agricultural development during the study period

Correlation analysis concludes that variables of irrigation development such as irrigated area (net, double and total) and cropping intensity play greater influence on agricultural development. However, means of irrigation in the form of tube wells and pump sets is highly correlated with consumption of fertilizers.

Micro level study through the field survey shows that the sampled villages posses 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 having both canal and tube well irrigation. Tractorization coupled with traditional implements is 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 Anjanshahid.

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 (73.04 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 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.

The present study despite the paucity of data and other limitations has succeeded in demonstrating regional variations at block 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 the thesis. This would help to enhance the level of agricultural development in the Azamgarh district.