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## Changes in cropping pattern in shahjahanpur district- Uttar Pradesh

**Nida Bee and Dr. Fazlur Rahman**

### Abstract

Agriculture plays a vital role in the economic development of the country where about 70 percent of the population is directly or indirectly depends on agricultural activities. The agriculture sector is still the major source of livelihood for the population of Shahjahanpur district. With the advancement of new agricultural strategy, there has been a complementary relationship between the commercialization and cropping pattern of the state. The present study aims that understanding the dynamics of agricultural development by utilizing the secondary sources of data which is collected from various government publications. The area under different crops has been analyzed and interpreted through tabulation and simple percentage method. The aim of this paper is to find out the changes in the cropping pattern in Shahjahanpur district. The initial analysis of the data reflects that the farmers are gradually diversifying their farms and intended to shift towards cash crops for the sake of higher returns. The area under commercial crops in the district has been increasing at a higher rate as compared to other food crops.

**Keywords:** Shahjahanpur, cropping pattern, food crops, commercialization

### Introduction

Cropping pattern means the share of area under different crops at a particular period of time. A change in cropping pattern refers to a change in the proportion of area under different crops. Cropping pattern is not static concept it changes over space and time. The cropping pattern of an area is closely associated with the climatic condition, socio cultural, historical, economic and political factors (Hussain M, 2000). Besides these technological factors are also very crucial which govern the cropping pattern of any region. The introduction of Green Revolution in India has modified the cropping pattern by the efficient irrigation system and correct use of fertilizers to boost the crop.

Uttar Pradesh is well known for food grains production for a very long time. The change in cropping pattern is basically due to the adoption of new crops and the intensification of cultivation through multiple cropping. Nowadays farmers prefer to move more profitable crops. Shahjahanpur district of Uttar Pradesh is famous for wheat, rice, sugarcane, potato. There was a shift of cropping patterns from food grains to commercial crops which may be attributed to the development of infrastructures like irrigation, roads and other facilities (Chinky Sangral, 2015) [2]. For the sake of high-profit farmers are diversifying their cropping system. The diversification of agriculture is an alternative way to enhance productivity and to meet the ever-increasing demand for food grains vegetables fruits etc. It aims to maintain soil health, to promote technological innovation and sustainable agriculture (Bidyut Kumar Ghosh, 2011) [1].

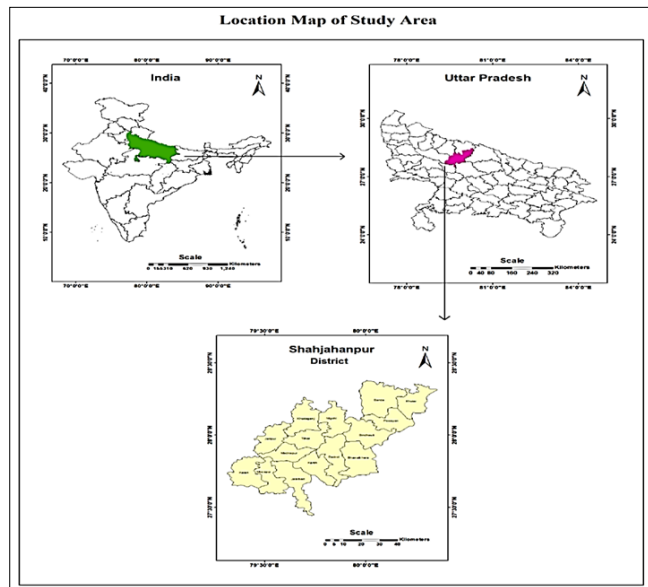
### Objectives of the study

- To find out the changes in cropping pattern to Shahjahanpur district
- To give some suggestions to improve the cropping pattern of the district.

### The study area

Shahjahanpur district is a part an of Bareilly division which is situated in south-east of Rohilkhand division. The district lies in 27°35' to 28° 29' N and 79°37' to 80°23' E. It is bounded by Kheri in the east, Hardoi and Farrukhabad in the south, Badaun and Bareilly in the west and Pilibhit in the north. The total area of the district is 4575 sq. km (Survey of India, 2011) and total population is 3006538 persons, according to 2011 census. The district

Has been divided into four tahsils (subdivisions) namely Powayan, Tilhar, Shahjahanpur, and Jalalabad. These tehsils are further subdivided into 15 community development blocks. The district consists of a narrow plain tract running from the Ganga River to the Himalayas. The region enjoys a tropical monsoon type climate. Major crops of the district are wheat, sugarcane, rice, potato, etc.



**Fig 1:** Location Map of Study Area

**Database and methodology**

The present study is based on secondary sources of data. The data were obtained from the District Statistical Handbook, Census of India, Sankhyakiya Patrika, Different Journals, Magazines, Articles, Books, etc. The relevant data available on different websites were also incorporated into the study. For showing the changes in cropping pattern simple percentage method and different pictorial diagrams are used. Maps are prepared with the Arcview GIS.

**Review of Literature**

Falguni P. and Sarbeswar M. (2017) [4] in their paper “Changes in cropping pattern in Odisha agriculture in neo-liberal period” observed that due to low level of fertilizers, poor irrigation facilities, low level of infrastructure, poor technology in the state resulted the slow shift in cropping pattern towards no food grains crop. The slow process of the cropping pattern changes means most government efforts to diversify agriculture have failed to take off.

Vishwanath A. and Talwar S. (2017) [6] in their study “Scenario of Cropping Pattern and Crop Diversification: A Study of Gokak Taluk in Belgaum District, Karnataka, India” found that some technical aspects and Government policies are influenced to increase production capacity and diversification of crop combinations. Rational farmers take all benefits and grown the multiple crops in a year. With the advancement of technology, modernization, and changes in consumption the major shift occurred in the recent past,

moving from cereal crops to commercial crops.

Mahesh V. (2016) [3] in his study related to cropping patterns found that the area under food crops has been decreasing after the introduction of new agriculture technology but the areas under cash crops are comparatively high. The farmers prefer higher-value crops. Furthermore, the development of the livestock sector is more inclusive and can result in a sustainable agriculture system.

Akhter R and Acharya R. (2015) [5] in their work examine that The real difficulty in adopting a better cropping pattern is that farmers may not have enough knowledge about new technology, still, they are applying the traditional methods of agriculture. Another problem is that they do not have adequate amount of capital to invest their crops. The government should take initiatives to solve this problem in better way.

Ghost Kumar B. (2011) [1] in his study “Determinant of the changes in cropping pattern in India” has observed that in India there is an urgent need for the introduction of an extension and development package to develop the untouched potential of agriculture in intensification the diversification process of agriculture activities in India.

Das (2001) [7] his study “Cropping Pattern (Agriculture and Horticulture) in Different Zones, their Average yields in Comparison to National Average/Critical/reason Identified and yield Potential” studied that cropping patterns of an area is influenced by a number of factors, mainly decided by climatic condition, soil condition. The decision about the choice of crops and cropping systems is further narrowed down under the influence of various other factors related to infrastructure development, socio-economic factors, and technological innovation. It has been noticed that more than 250 double cropping are followed all over the country and based on rationale of spread of crops in each district in the country 30 cropping systems have been identified.

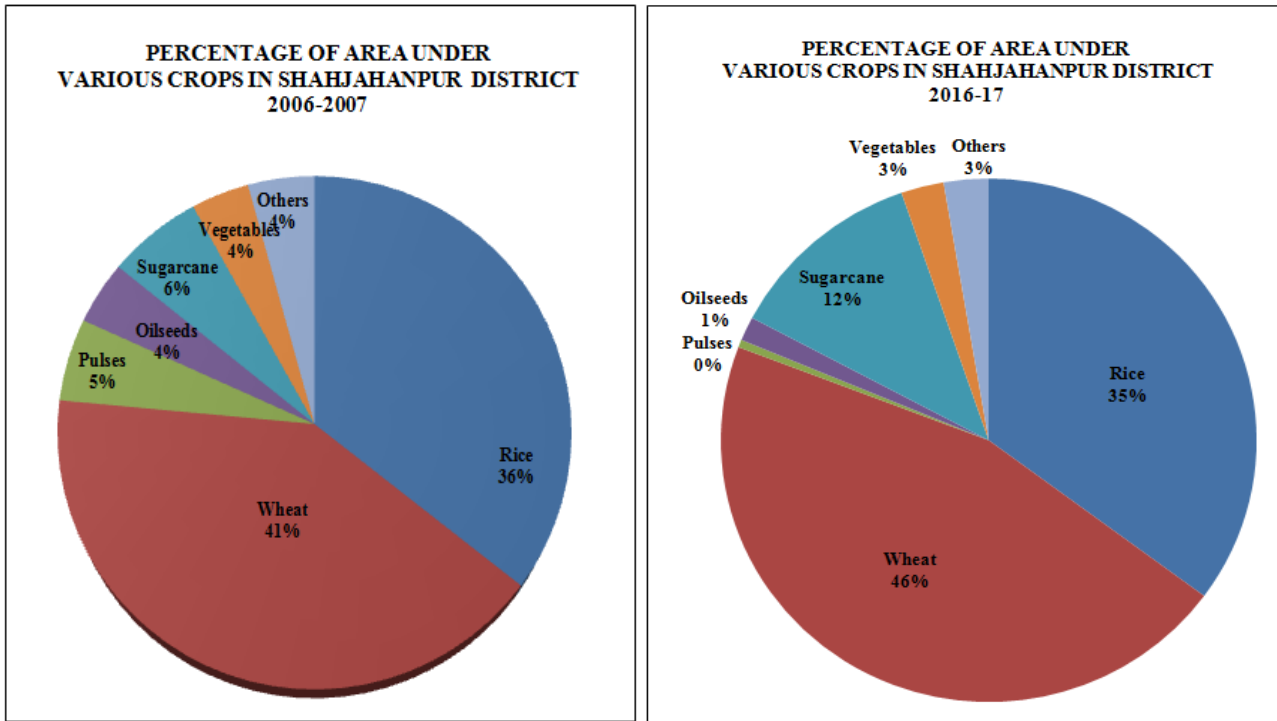
**Result and Discussion**

A number of crops are grown in district depending upon the agro-climatic conditions of that area. The size of land holdings is also crucial to determine the cropping pattern of an area. In order to understand the changes in the cropping pattern that have been taking place from 2006-07 to 2016-17, the proportion of the area under crops grown during ten years has been calculated that is presented in table -1.

**Table 1:** Crop-wise Percentage of Area in Shahjahanpur district during 2006-07 and 2016-17

Crops	2006-07	2016-17	Changes
Rice	35.58	35.11	-0.47
Wheat	40.90	45.67	4.78
Pulses	5.24	0.47	-4.78
Oilseeds	4.05	1.48	-2.57
Sugarcane	6.14	11.97	5.82
Vegetables	3.77	2.59	-1.18
Others	4.32	2.71	-1.60
Net Area sown	606626	542693	-64233

**Source:** Calculated by authors, data obtained from District Statistical Handbook



**Fig 2:** Crop wise percentage of area in Shahjahanpur district in 2006-07 and 2016-17

It is clear from the above table and figure that the net area sown in Shahjahanpur district is declining during the study period from 2006-07 to 2016-2017. The total area sown in 2006-07 was 606626 hectares which remain 542693 hectares in 2016-17. It is observed from the table that rice, wheat, and sugarcane are dominating crops in the district. The area under rice cultivation in 2006-07 was 216736 hectares which accounted for 35.82 percent of total sown area of the district. But in 2016-17 the area under rice cultivation has decreased and during 2016-17 it was 190662 hectare. The area under rice cultivation has decreased -0.47 percent in study period. Wheat is another dominating crop of the district, the area under wheat cultivation during 2006-07

was accounted 40.90 percent of total area sown of the district. In 2016-17 the area under wheat has increased i.e. 45.67 percent of total area of the district. In case of pulses there is drastic decrease from 2006-07 to 2016-17. The sugarcane crop becomes much more prominent as occupying 11.97 percent of the area in 2016-17 and that was only 6.14 in 2006-07. Positive Change has been taken place in case of sugarcane crop i.e. 5.82 percent. The area under vegetables and oil-seeds is also declining. From above table it observed that farmers moving mainly from cash crops. The area under cash crops is increased at very fast rate as compared to other food crops.

**Table 2:** Block wise Percentage of Area under different crops to total cropped Area, 2006-07

Block	TCA (in hectares)	Rice	Wheat	Sugarcane	Oilseeds	Pulses	Vegetables	Others	Total
Banda	77579	51.24	37.84	3.37	1.85	2.52	1.31	1.87	100
Khutar	36047	34.90	34.25	12.25	6.54	5.06	4.09	2.90	100
Powayan	49253	40.79	38.75	7.52	4.68	3.93	2.11	2.21	100
Sindhauri	44602	42.00	43.00	2.34	2.34	4.61	3.01	2.71	100
KhudaganjKatra	29709	35.60	44.44	2.05	2.84	6.83	4.93	3.30	100
Jaitipur	33356	31.43	45.31	7.82	2.86	5.88	3.53	3.17	100
Tilhar	28444	36.66	27.11	15.57	3.31	7.45	6.12	3.78	100
Nigohi	32922	32.19	45.74	5.10	3.15	5.39	5.02	3.41	100
Kanth	36515	27.71	38.48	10.34	5.52	8.82	4.06	5.07	100
Dadrol	43467	36.50	41.08	6.75	3.07	4.80	3.49	4.31	100
BhawalKhera	43456	31.45	36.11	15.50	2.61	4.67	4.59	5.07	100
Kalan	37900	34.79	42.27	1.34	3.93	5.68	4.75	7.24	100
Mirzapur	31728	34.77	38.71	1.73	2.85	7.44	5.27	9.23	100
Jalalabad	44458	20.90	51.89	1.20	7.56	6.14	4.55	7.76	100
Madanapur	37190	25.35	48.57	3.03	9.23	4.25	3.95	5.63	100
Total cropped Area	606626	35.58	40.90	6.14	4.05	5.24	3.77	4.32	100

**Source:** Calculated by authors, data obtained by District Statistical Magazine, 2008

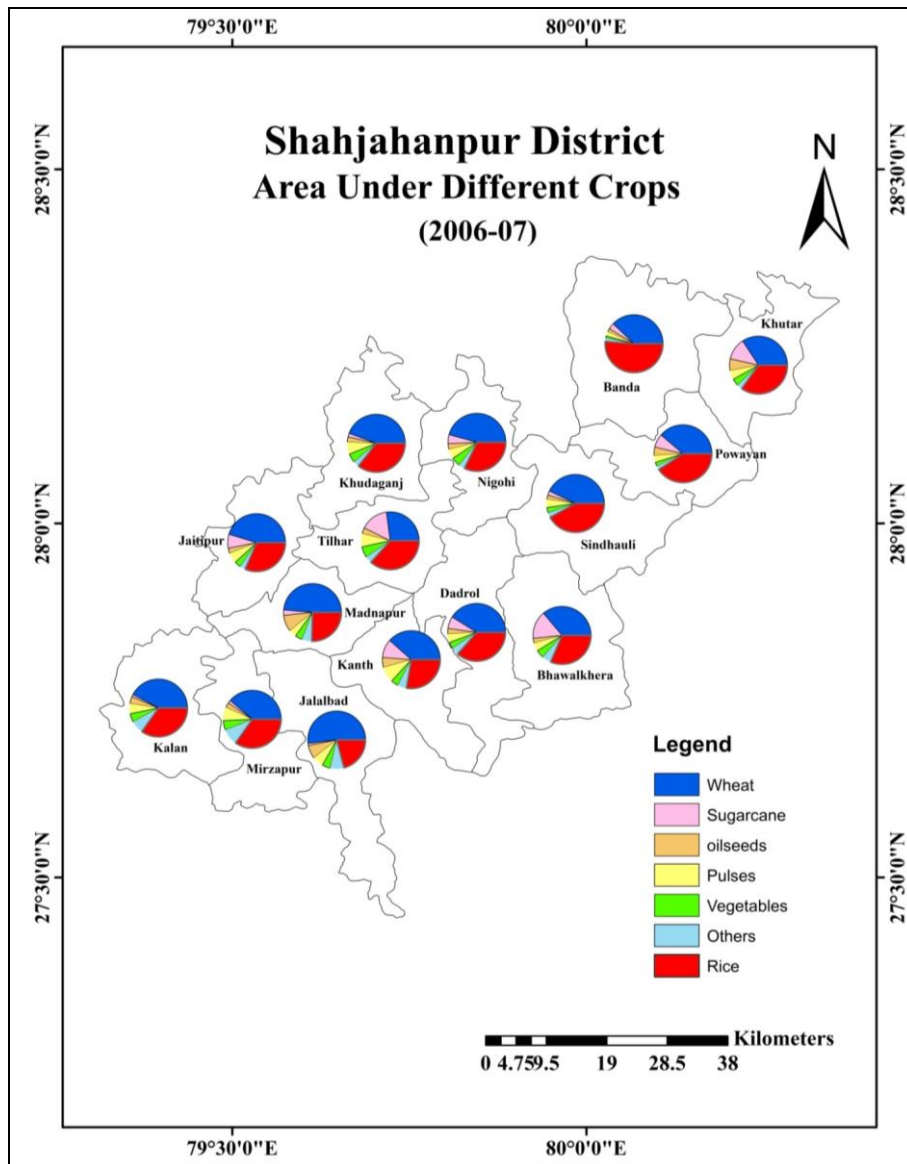


Fig 3: Area under different crops in Shahjahanpur district, 2006-07.

Table 2 shows the block-wise area under different crops in Shahjahanpur district during 2006-07. The total cropped area of Shahjahanpur district during 2006-07 was 606626 hectare. Banda block had highest total cropped area in 2006-07 followed by Powayan, Sindhauli and Jalalabad blocks. In case of Rice Banda block had highest area i.e. 51.24 to total cropped area. Jalalabad and Madanapur Block had lowest area under rice cultivation. The area under rice cultivation in Shahjahanpur district was 35.58 percent to total cropped area. Wheat occupied the largest area of the Shahjahanpur district during 2006-07. The total cropped area under wheat cultivation was 40.90 in Shahjahanpur district. Jalalabad block has highest area under wheat cultivation i.e. 51.89 to total cropped area during 2006-07. Other blocks namely Madanapur, KhudaganjKatra, Nigohi, Jaitipur also had high concentration of wheat. The lowest area under wheat cultivation was found in Tilhar and Khutar blocks. Sugarcane was third important crop grown in Shahjahanpur

district. The highest area under sugarcane cultivation was found in Tilhar and BhawalKhhera blocks followed by Khutar and Kanththe blocks. The lowest area under sugarcane cultivation was found in Jalalabad block. The reason might be that wheat was the main crop of Jalalabad Block. Shahjahanpur district comprised 4.05 percent area under oilseeds to total cropped area. Madanapur and Jalalabad blocks had highest percentage area under oilseeds followed by Kanth block. In case of Pulses Kanth block rank first in area under Pulses i.e. 8.82 percent. The low area under pulses was found in Banda and Powayan block. Other Vegetables are mainly grown in Nigohi and Kanth block during 2006-07. It is clear from above discussion that blocks namely Banda, Jalalabad, Sindhauli, KhudaganjKatra had highest area under cereal crops and blocks namely Tilhar, BhawalKhhera and Kanth had highest area under cash crops during 2006-07.

Table 3: Block wise percentage of Area under different crops to Total Cropped Area 2016-17

Block	TCA (In hectares)	Rice	Wheat	Sugarcane	Oilseeds	Pulses	Vegetables	Others	Total
Banda	56934	40.49	45.35	8.63	2.21	1.21	1.27	0.84	100.00
Khutar	48004	39.46	43.32	12.96	1.11	0.20	1.42	1.53	100.00

Powayan	36909	39.01	39.43	14.94	1.56	0.25	2.18	2.62	100.00
Sindhauri	40833	41.84	45.59	6.90	1.44	0.14	2.20	1.88	100.00
KhudaganjKatra	33174	41.68	38.19	13.32	1.40	0.12	3.10	2.20	100.00
Jaitipur	31746	27.51	45.92	19.65	1.70	0.13	2.36	2.73	100.00
Tilhar	34850	33.51	48.25	10.01	2.45	0.49	2.92	2.38	100.00
Nigohi	34002	34.85	42.83	16.42	0.15	0.19	2.85	2.72	100.00
Kanth	29803	28.59	45.35	15.98	1.19	2.22	2.99	3.67	100.00
Dadrol	33714	27.39	39.52	25.38	1.86	0.38	2.51	2.96	100.00
BhawalKhera	27653	33.16	47.59	8.39	2.40	0.30	4.05	4.10	100.00
Kalan	34845	38.56	47.32	6.78	0.99	0.33	3.16	2.86	100.00
Mirzapur	27056	34.31	47.13	8.67	1.16	0.40	3.72	4.62	100.00
Jalalabad	37441	22.82	60.20	7.85	1.38	0.28	3.69	3.80	100.00
Madanapur	35429	35.78	49.48	6.84	0.98	0.21	2.41	4.30	100.00
Total cropped Area	542393	35.11	45.67	11.97	1.48	0.47	2.59	2.71	100.00

Source: Calculated by authors, data obtained by District Statistical Magazine, 2018

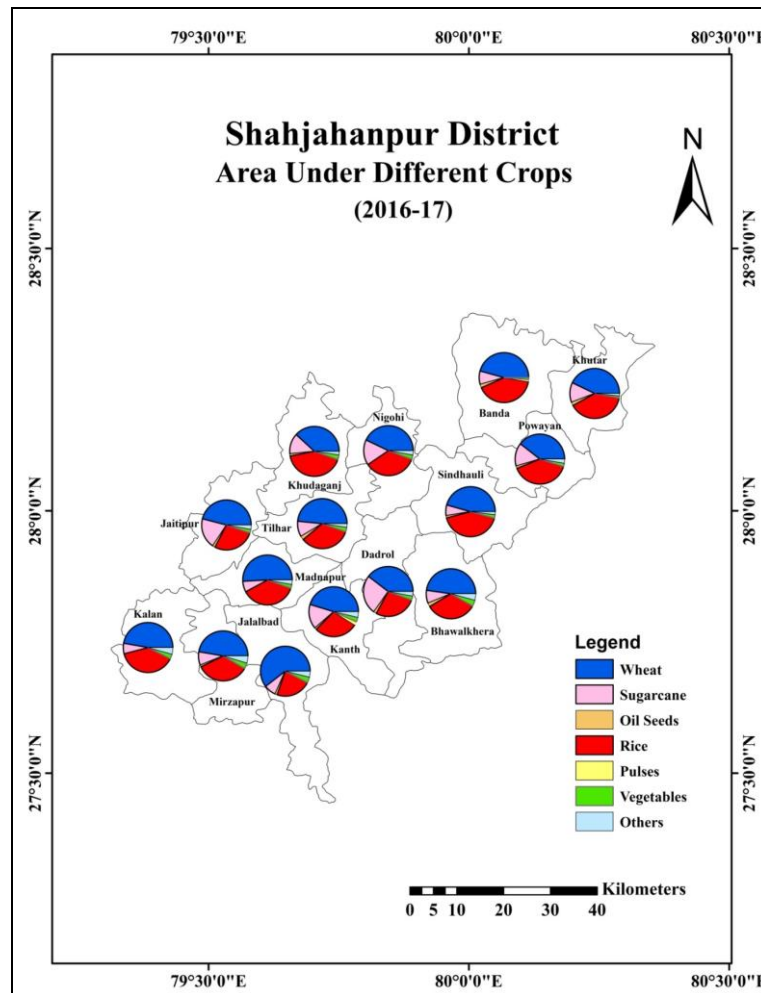


Fig 4: Area under different crops in Shahjahanpur district, 2016-17

Table 3 explains the block-wise cropping pattern under various crops in the Shahjahanpur district in 2016-17. The total cropped area in Shahjahanpur district during 2016-17 was 542393 hectares. Wheat was the major crop of Shahjahanpur district had 45.67 percent area during 2016-17. Tilhar and Jalalabad blocks had the highest area under Wheat cultivation. The lowest area under wheat cultivation was found in Khudaganj Katrablock i.e. 39.43 percent. In case of rice the highest area was found in KhudaganjKatra and Sindhauri blocks followed by Khutar and Powayan blocks. In 2016-17 the area under sugarcane cultivation is

11.97 percent. In the block wise study the highest area under sugarcane crop was found in Dadrol, Jatipur and Nigohi blocks. It is clear from this table that the area under Sugarcane block is increasing as compare to 2006-07 study. In case of pulses the highest area was found in Banda block i.e. only 1.21 percent. The area under vegetables in Shahjahanpur was 2.59 percent during 2016-17. The highest area under vegetables was found in BhawalKhera block i.e. 4.05 percent and the lowest area under vegetable was found in Banda block. Besides these crops the percentage of other crops in Shahjahanpur district was only 2.71 percent.

**Table 4:** Changes in Area under different crops in Shahjahanpur district from 2006 -07 to 2016-17

Block	TCA (In hectares)	Rice	Wheat	Sugarcane	Oilseeds	Pulses	Vegetables	Others
Banda	-20645	-10.74	7.51	5.26	0.36	-1.31	-0.04	-1.03
Khutar	11957	4.55	9.07	0.71	-5.44	-4.86	-2.67	-1.38
Powayan	-12344	-1.77	0.67	7.42	-3.13	-3.68	0.08	0.41
Sindhauri	-3769	-0.16	2.60	4.56	-0.90	-4.47	-0.80	-0.83
KhudaganjKatra	3465	6.08	-6.25	11.26	-1.44	-6.71	-1.84	-1.10
Jaitipur	-1610	-3.92	0.61	11.83	-1.16	-5.75	-1.17	-0.44
Tilhar	6406	-3.15	21.14	-5.57	-0.86	-6.96	-3.20	-1.40
Nigohi	1080	2.66	-2.91	11.32	-3.01	-5.20	-2.17	-0.69
Kanth	-6712	0.89	6.87	5.64	-4.33	-6.60	-1.07	-1.40
Dadrol	-9753	-9.10	-1.56	18.63	-1.21	-4.42	-0.98	-1.35
BhawalKhera	-15803	1.71	11.48	-7.11	-0.21	-4.37	-0.54	-0.97
Kalan	-3055	3.77	5.05	5.44	-2.94	-5.35	-1.59	-4.38
Mirzapur	-4672	-0.46	8.42	6.93	-1.69	-7.04	-1.55	-4.61
Jalalabad	-7017	1.92	8.31	6.65	-6.18	-5.86	-0.87	-3.96
Madanapur	-1761	10.44	0.92	3.80	-8.25	-4.03	-1.54	-1.33
Total cropped Area	-64233	-0.47	4.78	5.82	-2.57	-4.78	-1.18	-1.60

**Source:** Calculated by authors, data obtained by District Statistical Magazine,

Table 4 analyzes the change in cropping patterns in Shahjahanpur district between 2006-07 to 2016-17. The total cropped area of Shahjahanpur district has decreased in 2016-17 as compared to 2006-07. The total cropped area has decreased in blocks Banda, Powayan, Sindhauri, Jaitipur, Kanth, Dadrol, Bhawal Khera, Kalan, Mirzapur, Jalalabad and Madanapur blocks. Out of 15 blocks of Shahjahanpur District there are only 4 blocks in which the total cropped area is increasing in 2016-17. In case of rice cultivation in Shahjahanpur district -0.47 percent area has been decreasing in 2016-17. In Banda block the area under rice cultivation has increased 10.74 percent. The area under rice cultivation in blocks namely Khutar, KhudaganjKatra, Nigohi, Kanth, BhawalKhera, Kalan, Jalalabad, and Madanapur has also increased from 2006-07 to 2016-17. It is clear from the study that in Dadrol block the area under rice cultivation has been decreasing at faster rate. Wheat was the major crop of Shahjahanpur district in 2006-07 and it also has highest total cropped area in 2016-17. In 2016-17 only 4.78 percent area has increased under wheat cultivation to its total cropped area. The highest area has been increasing in Tilhar block i.e. 21.14 percent. There are only 3 blocks out of 15 blocks in which the area under wheat cultivation has been decreasing in 2016-17. The Sugarcane crop is showing significant position in 2016-17. The area under sugarcane crops has been increasing at much faster rate as compared to other crops. In Dadrol block 18.63 percent area has increased under sugarcane crop from 2006-07 to 2016-17. The total 5.82 percent area has increased under sugarcane crop in Shahjahanpur district. Other blocks namely Khudaganj Katra, Jaitipur, Nigohi, etc is also showing the increasing trend under Sugarcane crop. Only three blocks in the district in the area under sugarcane crop has decreased from 2006-0 to 2016-17. The area under Oilseeds has decreased in 2016-17. i.e. -2.57 percent. There are almost all blocks except Banda block in which the area under oilseeds has been decreasing from 2006-07 to 2016-17. In case of Pulses -4.78 area has been decreased in 2016-17. All blocks of the Shahjahanpur district have been showing decreasing trend under vegetables. The other crops of the district have also decreased from 2006-07 to 2016-17.

### Conclusion

From the overall analysis of the cropping pattern changes from 2006-07 to 2016-17, it is found that cropping pattern

of the district is moving slightly towards the commercial crops. The main crops of the district are wheat, rice and sugarcane. In case of wheat and sugarcane the area during study period is increasing but in case of rice the area has been decreased. There are 11 blocks in which the total cropped area has decreased from 2006-07 to 2016-17. And there are only 4 blocks in which the total cropped area has increased during study period. Among all crops the area under sugarcane has increased at very fast rate, the blocks namely Dadrol, Jaitipur, Khudaganj katra, Nigohi has shown the high area under sugarcane crop. The total cropped area of the district is tremendously decreasing during 2016-17. The main difficulty in adopting a better cropping pattern is that farmers may not have enough money to invest their agricultural fields, therefore, the farmers should know the new agricultural technology. However, the diversification is not in sustainable manner, there should be balance between the production of cereals crops and non-cereals crops, and the mechanization of agriculture is the need of hour.

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