



# A study of growth in food grains production due to increase in area and productivity of major crops in the state of Uttar Pradesh

Dr. Anju Sharma,

MA-Economics, M.Phil.-Economics, PhD  
CCS University, Meerut (Uttar Pradesh) India.

## Abstract

Ever increasing population has put unexpected pressure on the productivity and production of food grains. The state of Uttar Pradesh which is seen a strong contributor to overall food grains production has always been at the fore front to contribute. In this study it is tried to know how the agricultural output on different parameters is in the period starting from 2011-12 to 2018-19. These parameters are area under production, average change and actual production of crops under cereals, pulses, oilseeds, and other crops like potato & sugarcane. It has been observed that on almost all parameters there has been a pattern of upward change. Production has increased significantly, so is the productivity of almost all major crops. The good part is that the area under agriculture has not changed much during the study period bur actual production & productivity has jumped manyfold. The study reveals that all round efforts by governments and farmers in the state are responsible for this achievement.

## Key words:

Area under cultivation, acreage, productivity, yield, Uttar Pradesh, percentage change

## 1. Introduction

The state of Uttar Pradesh is one of the most populated states in the country. There is humongous pressure on agriculture production to feed growing population. Simultaneously, people at large are looking for ways and means to increase their earnings. These two factors are somewhere responsible for governments and people to keep increasing not only production of various crops but also to increase average production per hectare. It can be observed that year by year, more and more land is being brought under agriculture. Although, it may have serious repercussion as well, as in some parts even forest land is being tilled. However, in short run, it is helping governments to provide food to people.

In this study, efforts are made to look at area under different crops in the state and is there any change in it during the study period. Likewise, data has been collected from different sources to find out increase or decrease in average yield of different crops. Most critically, it has been studied that increase in area or productivity are adding any effective value to overall production of different major crops under cereals, pulses, oilseed and other crops like sugarcane and potato.

There are few crops which are high in demand in the market due to food habits and earning capacity. In the cereal category focus is to study wheat and paddy; gram, urd, arhar and moong in pulses category; mustard, rapeseed and groundnut in oilseed category and among other crops, sugarcane & potato are the major crops of interest to study and

find out any growth in their overall production due to increase in area of their cultivation or increase in yield per hectare or due to both. Following these study objectives, the study has following objectives.



## 2. Objectives of the paper

- i. To study growth in production due to any change in cultivation area in the state of Uttar Pradesh.
- ii. To study change in productivity of different crops in the state.
- iii. To find growth pattern in the cultivation area, productivity, and production among various crops.

## 3. Materials & Methods

The paper has studied growth pattern on account of area under cultivation, percentage change, actual production, and yield per hectare for different major crops in the state of Uttar Pradesh for the period of 2011-12 to 2018-19. The entire research is carried out based on secondary data as collected from different but reliable sources. Primarily these sources are government published reports. Analyses is based on percentage changes observed for accepted variables during the study period.

4. Results & Discussion

The study has been divided among:

1. Area under cultivation of Cereals, Pulses , Oulseeds & Other crops & percentage change in area
2. Actual production of Cereals, Pulses , Oulseeds & Other crops & percentage change in production
3. Average yield of Cereals, Pulses , Oulseeds & Other crops & percentage change in average yield

Keeping in view above mentioned different study outlines, the study & its findings are presented below:

1. Area under cultivation of Cereals, Pulses , Oulseeds & Other crops & percentage change in area

CEREALS: Paddy and wheat are the main cereals which have covered the maximum area under cultivation. Wheat being the crop having maximum area under it. In the year 2011-12, wheat was having 9793 thousand hectares area under it whereas area under paddy ws 5903 thousand hectares. In the 2018-19, there was negligible increase in the area under wheat & paddy in the state. Area under wheat saw an increase by 0.6% to 9856 thousand hectares and paddy by 0.4% to 9793 thousand hectares. Decline in area has been seen for juar, barley, bajra & maize. Area under barley which was 166 thousand hectares in 2011-12 reduced to 151 thousand hectares with the percentage decline of 9.0% in 2018-19. For juar area decreased by 21.4%, the highest among cereals. Similarly, area under bajra and maize declined by 4.0% and 3.2% from 2011-12 to 2018-19. Other crops under cereals, also saw major decline in their area under cultivation, although actual area under them was very negligible, just 8 thousand hectares in 2011-12 and 6 thousand hectares in 2018-19. Table nos 1 to 3 give details of the study on cereals.

Table-1: Area under different Cereals

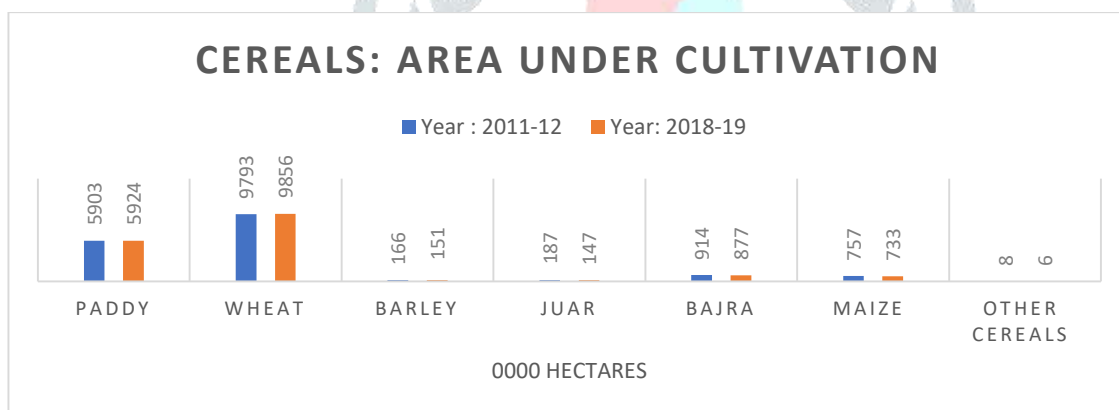


Table-2: Change in total area under Cereals cultivation in percentage

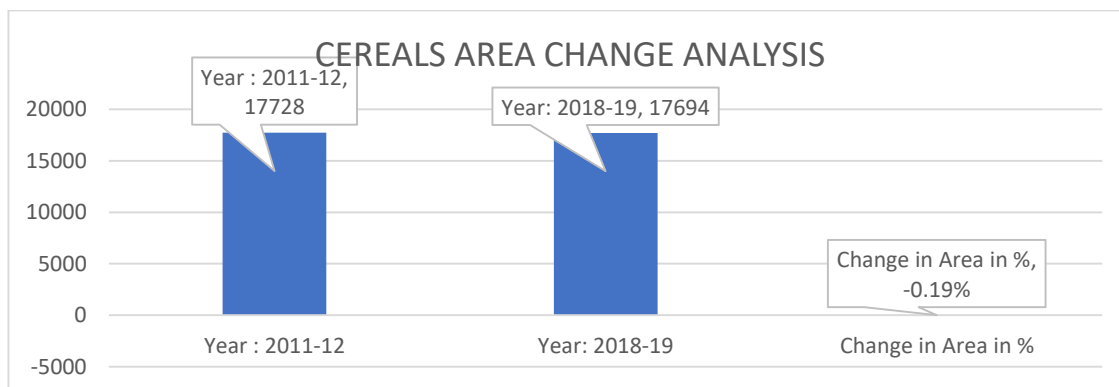
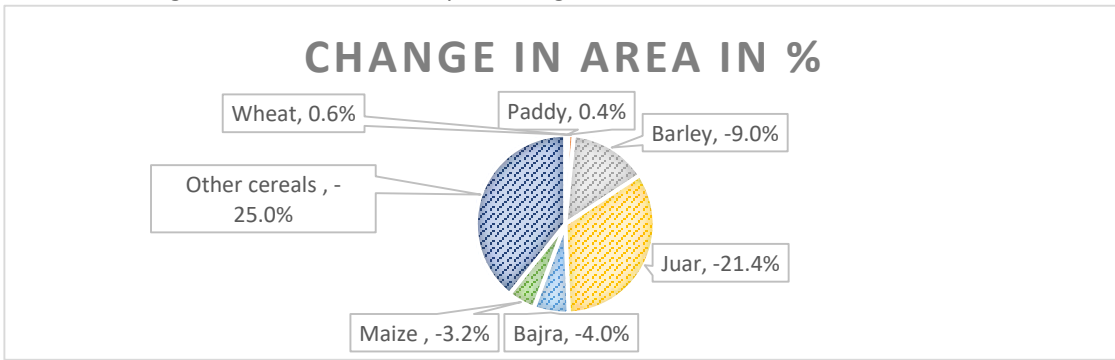


Table-3: Change in area of Cereals in percentage



PULSES: Gram, arhar, urd & moong are the major crops grown in the state. Cumulatively, area under these crops was 2416 thousand hectares in 2011-12 which was decreased by 5.2% in 2018-19. Major decline in area of production was for arhar and gram. Moong has seen increase in its area as shown in the Tables-4,5 & 6.

Table-4: Area under different Pulses

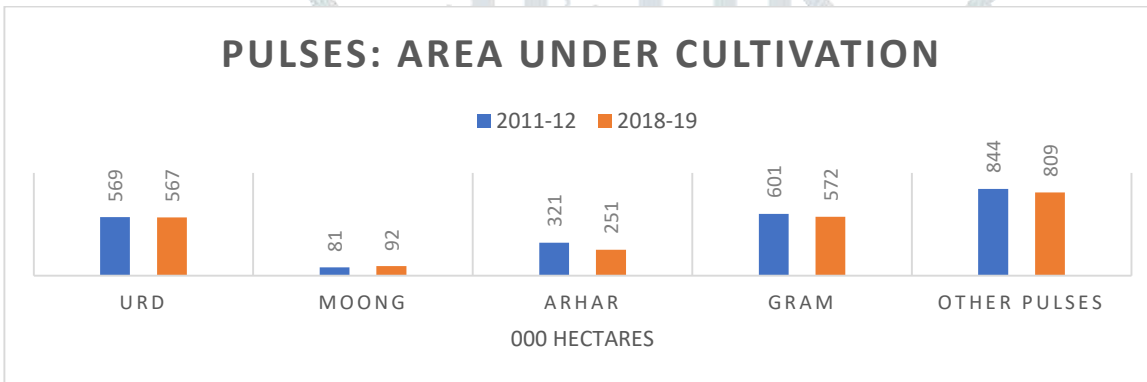


Table-5: Change in total area under Pulses cultivation in percentage

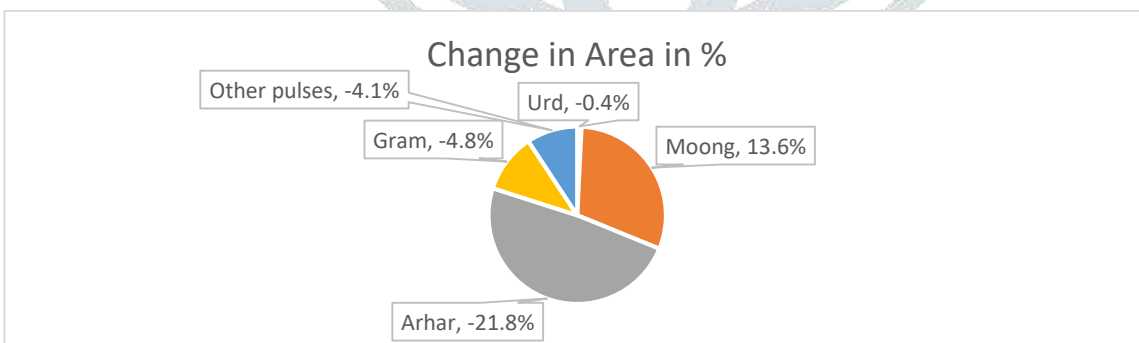
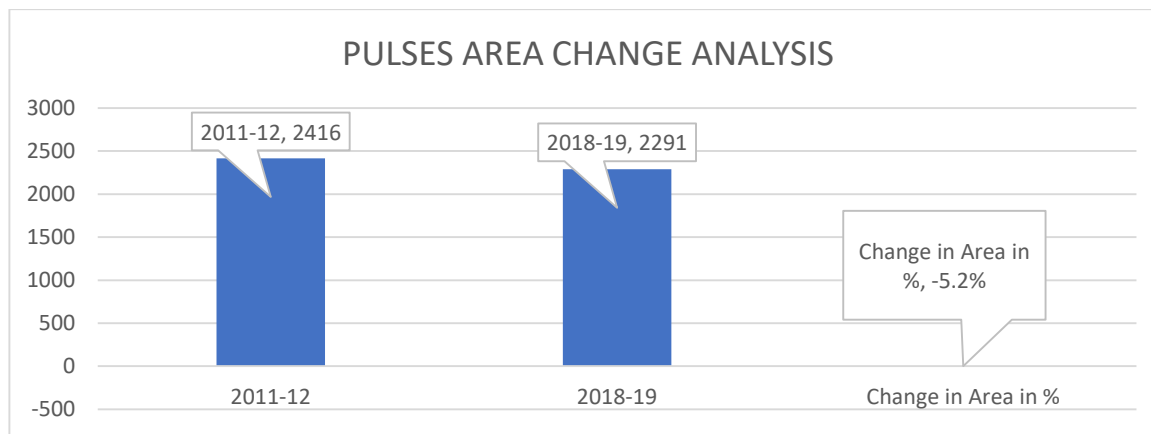


Table-6: Change in area of Pulses in percentage



**OILSEEDS:** Rapeseed, mustard and ground nut were main oilseeds crops which are grown in the UP. There are few other oilseed crops which are cultivated in the region. While rapeseed & mustard was having the highest area of cultivation under them; groundnut although at second place but in absolute terms has very less area under it. Area in the year 2011-12 was 604 thousand hectares under rapeseed & mustard and just 95 thousand hectares under groundnut. Both the major crops have seen increase in their area from the year 2011-12 to 2018-19. Other crops in the category also have seen increase in their area of cultivation. Overall area under oilseeds has increased from 1063 thousand hectares in 2011-12 to 1233 thousand hectares in 2018-19; increase being 16% as given in tables 7, 8 & 9 below.

Table-7: Area under different Oilseeds

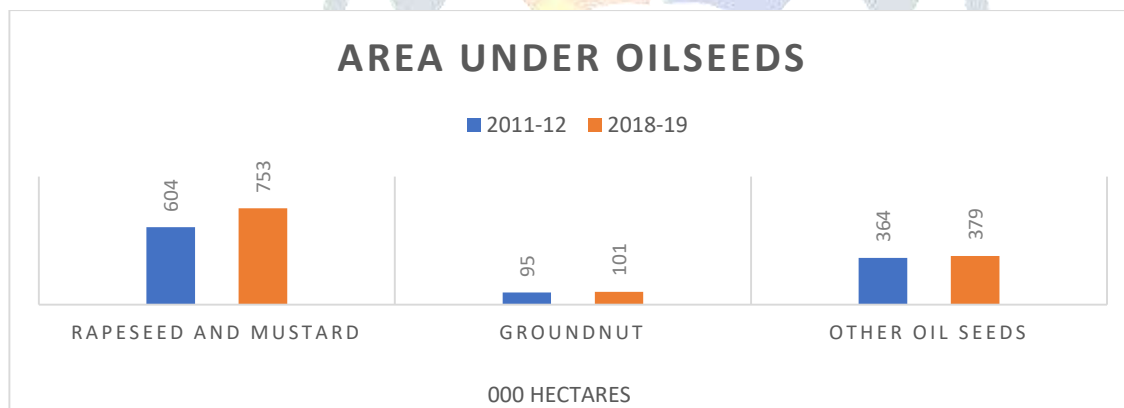


Table-8: Change in area of Oilseeds in percentage

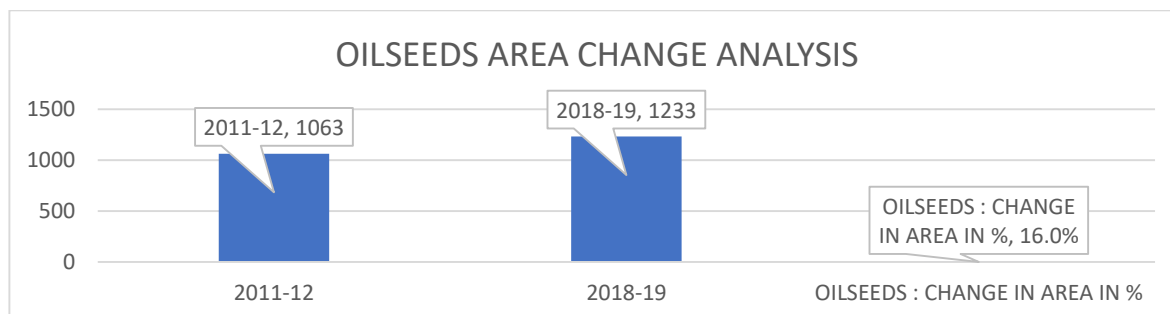
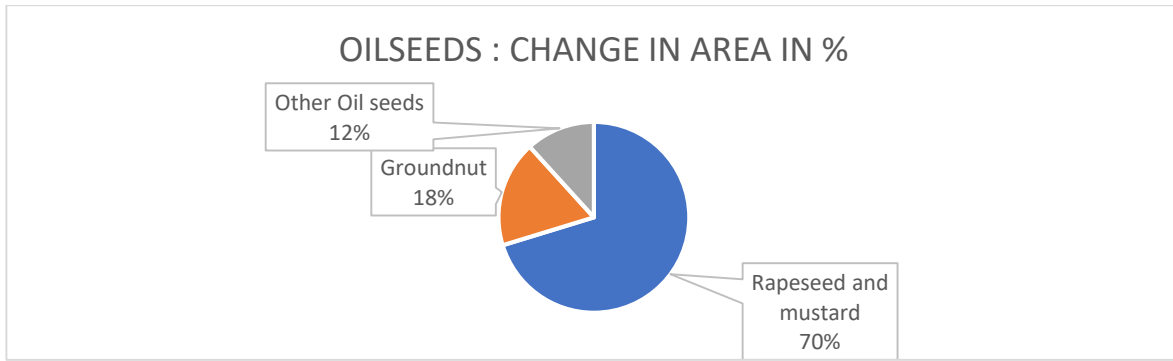


Table-9: Change in total area under Pulses cultivation in percentage



OTHER CROPS: Sugarcane and potato are the major other crops in the state. Tobacco, cotton and jute are scatterly grown in some parts of the state. Sugarcane is the crop which is the third last crop in the state after wheat and paddy in terms of area under cultivation. Area under the crop of sugarcane was 2117 thousand hectares in 2011-12 which increased to 2224 thousand hectares in 2018-19. Increase in percentage was 5.1%. Potato also has seen increase in its area by 6.1%. Cotton though has very small area under cultivation from the hectares point of view but increase was from 3 thousand to 6 thousand hectares from 2011-12 to 2018-19. Area under jute remained same that is 2 thousand hectares. Details are given in tables -10, 11 & 12.

Table-10: Area under different Other Crops

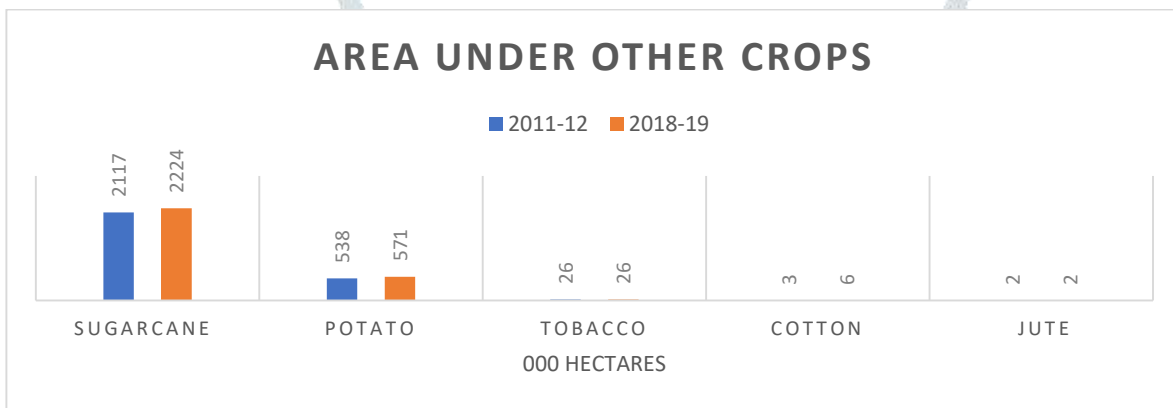


Table-11: Change in area of Oilseeds in percentage

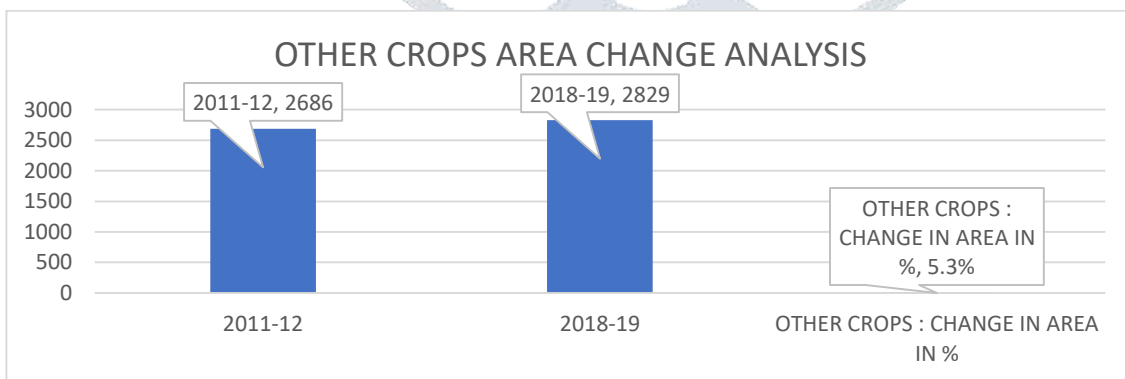
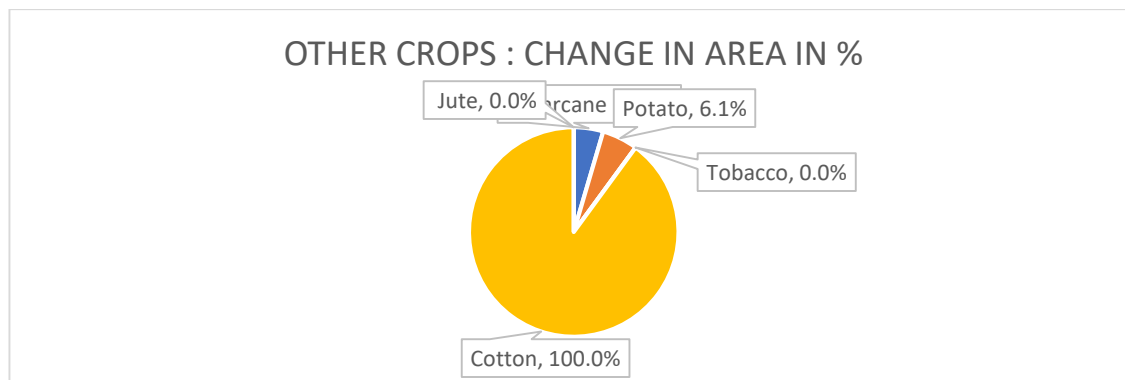


Table-12: Change in total area under Pulses cultivation in percentage



**2. Actual production of Cereals, Pulses , Oilseeds & Other crops & percentage change in production**

CEREALS: As the area under wheat and paddy is comparatively higher than any other single crop in the state, that could be the reason of the highest actual production among all crops. Production of wheat was 32150 thousand tonnes in 2011-12 to 38040 thousand tonnes in 2018-19. Likewise, paddy/rice production increased by 13% in 2018-19 to 16020 thousand tonnes. Most of other cereals also have seen increase in their production from the year 2011-12 to 2018-19. Juar was one crop whose production decreased. The decrease was by 13%.

Overall increase in production of cereals was by 16.8%. Total production of cereals which was 49660 thousand to 58008 thousand tonnes. Production related analyses are given in three tables nos -13, 14 & 15.

Table-13: Production of Cereals

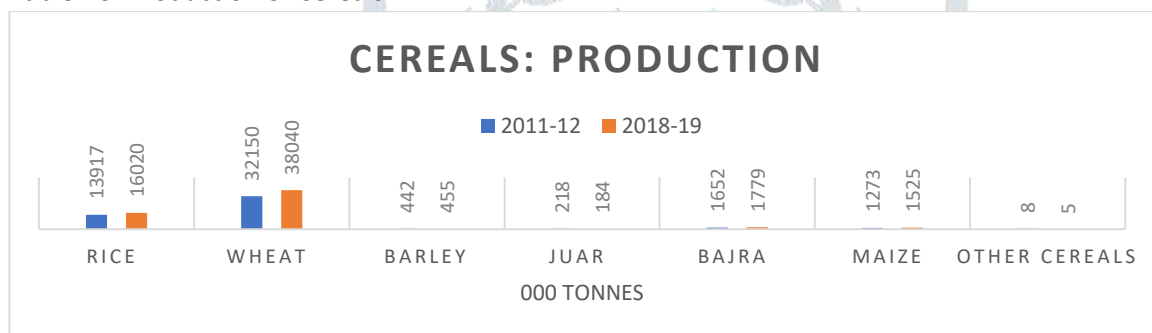


Table-14: Cereal production analysis

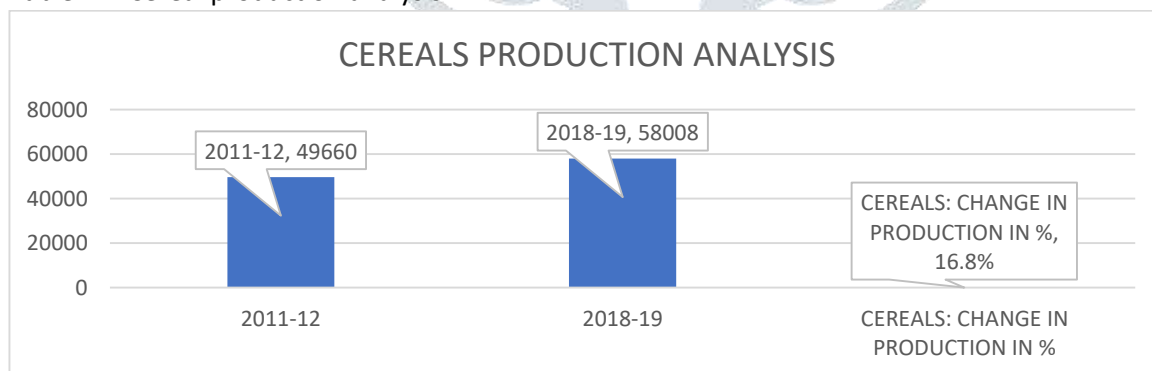
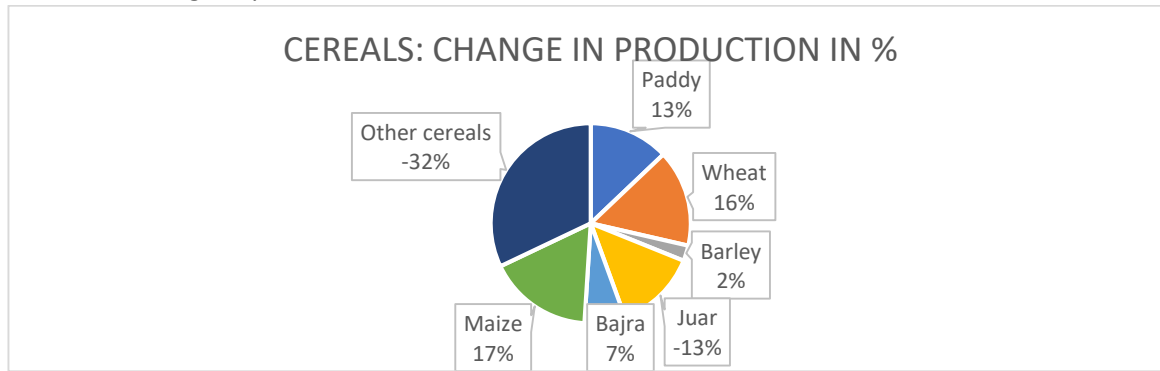


Table-15: Change in production of Cereals



PULSES: Except urd & arhar, all pulses have seen increase in their production. Production of urd in real terms decreased from 382 thousand to 325 thousand tonnes from 2011-12 to 2018-19 and for arhar, decrease was by 32% to 272 thousand tonnes from 331 thousand tonnes in the year 2011-12. On the other hand, gram saw increase by 5% and moong by 17%. Production of other pulses was increased from 923 thousand to 1027 thousand tonnes in the state during the study period.

Overall production of pulses in the state remained mostly static. It was 2397 thousand in 2011-12 which marginally increased by 0.46% to 2408 thousand tonnes in 2018-19. Analyses are given tables, nos-16, 17 & 18.

Table-16: Production of Pulses

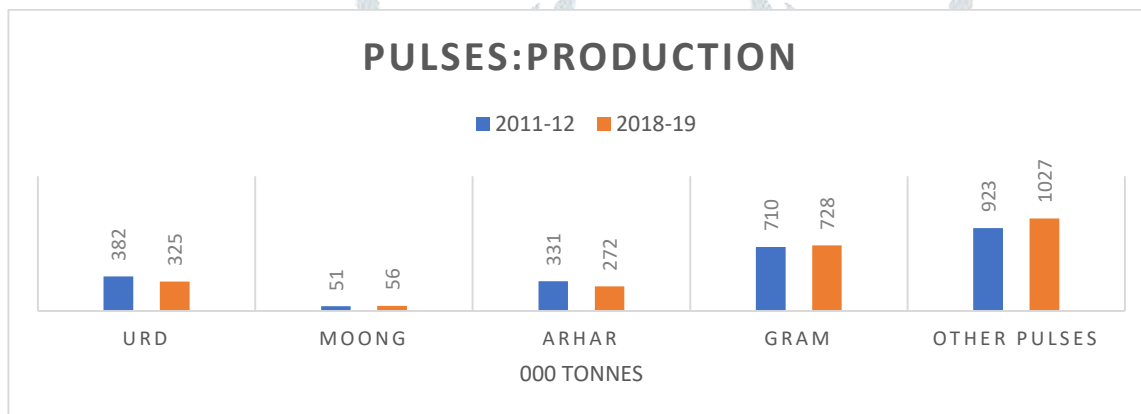


Table-17: Pulses production analysis

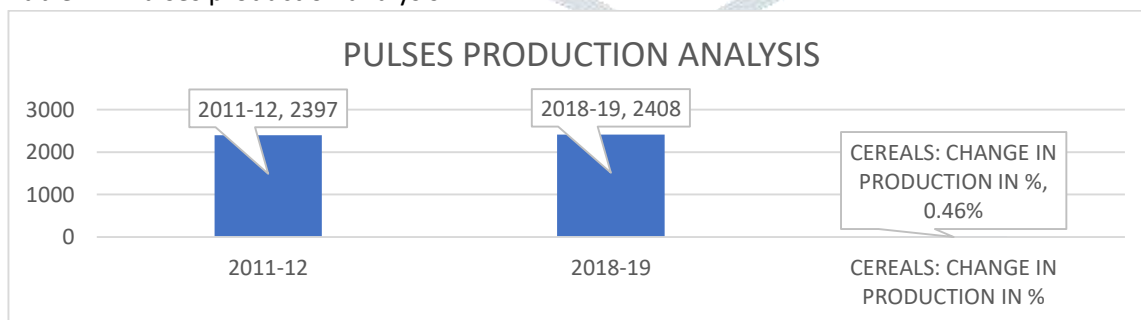
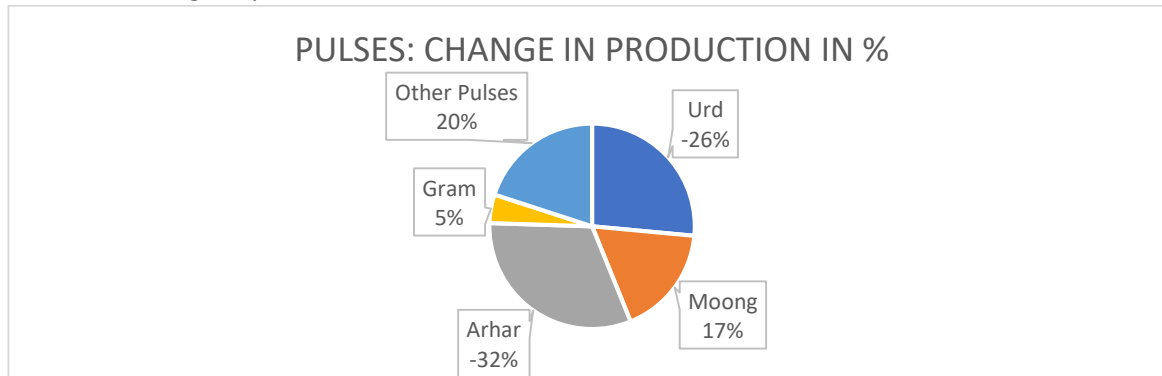




Table-18: Change in production of Pulses



OILSEEDS: Oilseeds have observed increase in their total production in the state from 2011-12 to 2018-19. Main crop that is rapeseed and mustard increased to 1117 thousand tonnes in 2018-19 from 685 thousand in 2011-12. A jump of 5%. Likewise other major crop of the state under oilseed, groundnut also increased to 100 thousand tonnes in 2018-19. Other oilseeds also saw increase. Overall increase by 49.7% in oilseed production can be construed to reason of of focus by governments and farmers. Details are given in tables, nos -19, 20 & 21.

Table-19: Production of Oilseeds

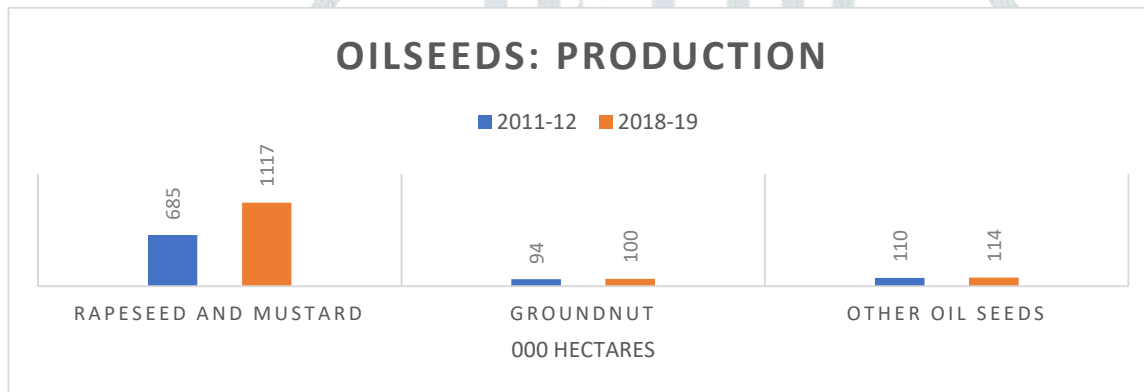


Table-20: Oilseeds production analysis

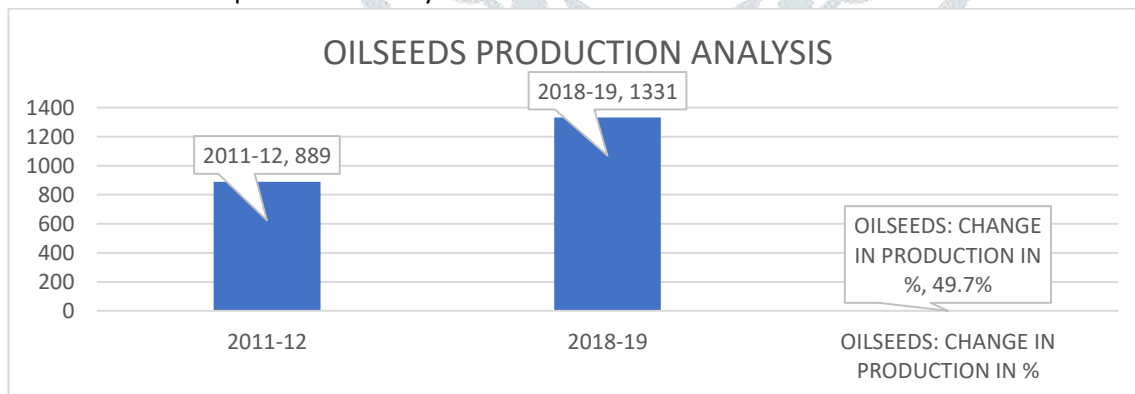
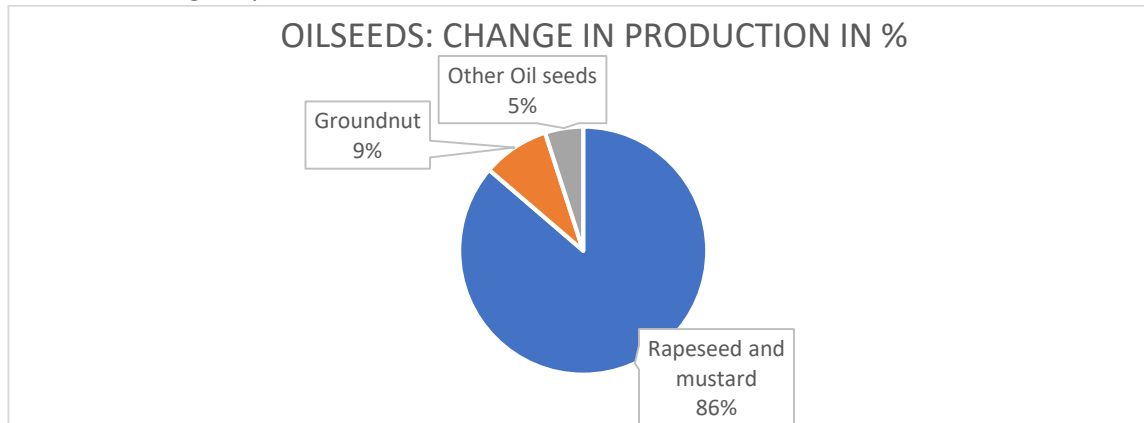


Table-21: Change in production of Oilseeds



OTHER CROPS: Under other crops , sugar cane is the main crop which is extensively grown in the state. Production of sugarcane increased to 179698 thousand tonnes in 2018-19 from 126110 thousand in the year 2011-12. Likewise potato also increased to 17057 thousand in 2018-19 from 11997 thousand. Crop like production of tobacco gone down to 57 thousand tonnes from 133 thousand tonnes. Cotton and jute are not the crops which have much liking in the state. Analyses of production relted for other crops are given in tables-22, 23 & 24 below.

Table-22: Production of Other Crops

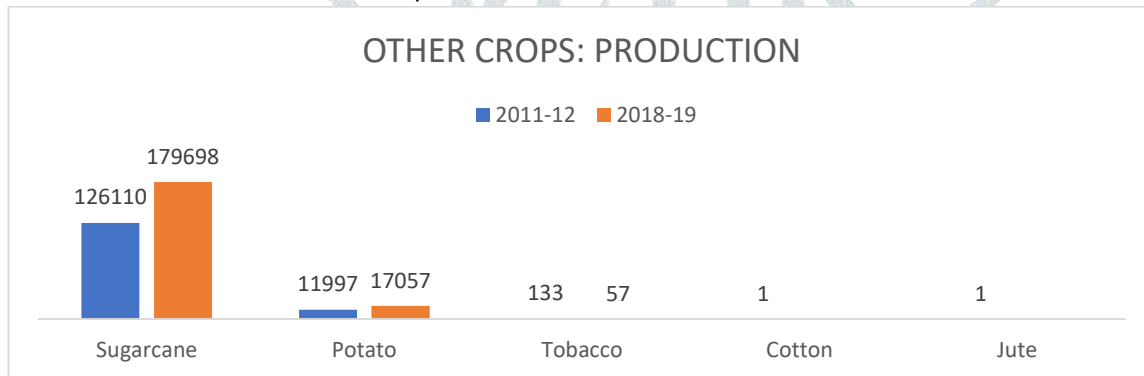


Table-23: Other crops production analysis

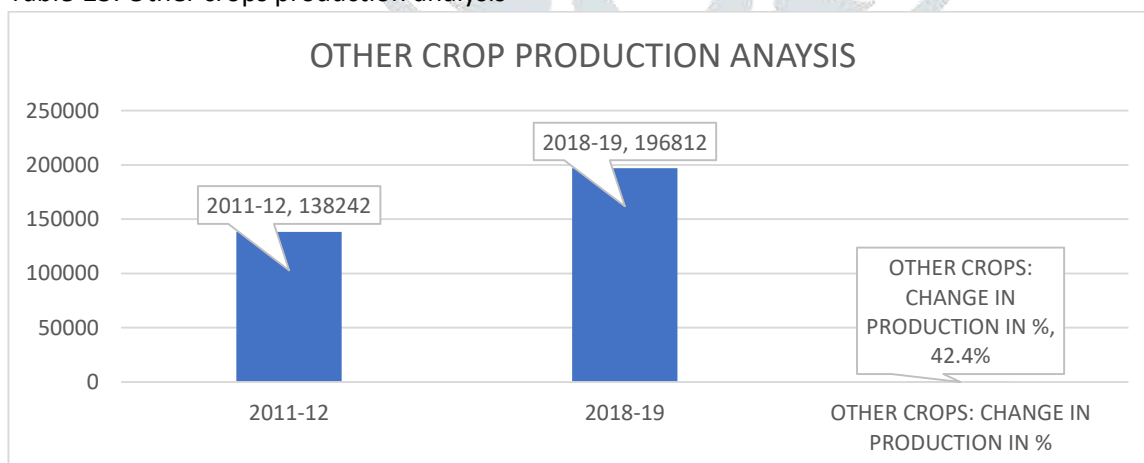
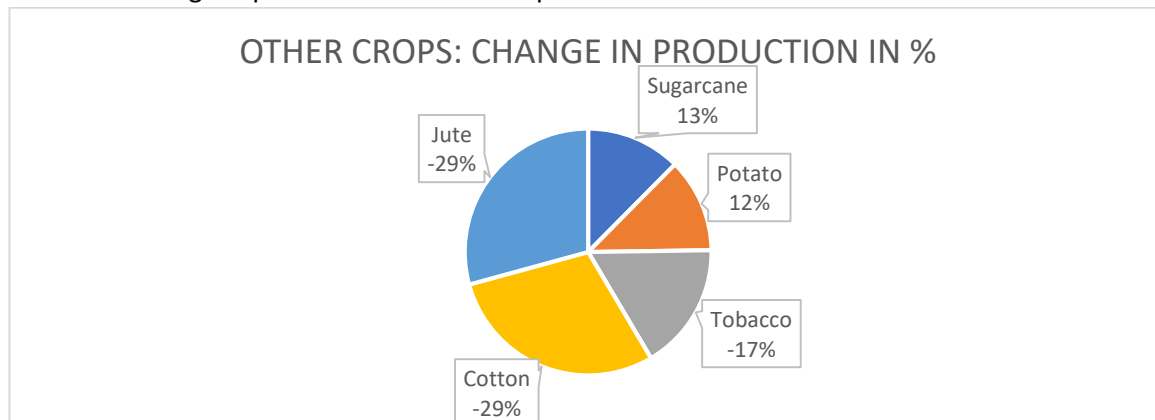


Table-24: Change in production of Other crops



**3. Average yield of Cereals, Pulses , Oilseeds & Other crops & percentage change in average yield**

CEREALS: All cereals have seen increase in yield per hectare. The highest increase is in maize, followed by wheat, paddy, barley, bajra and juar, as shown in Table-25 & 26. Yield of all crops in the year 2018-19 has increased. Average production of rice/paddy per hectare has increased to 27.04 quintal per hectare; for wheat 38.6, barley 30.16, juar 12.47, bajra 20.29 and for maize 20.8 quintal per hectare in the year 2018-19.

Table-25: Average production of Cereals

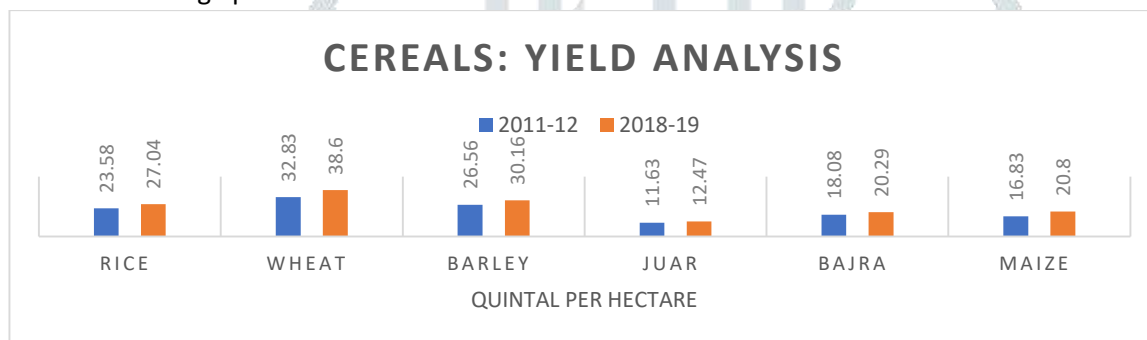
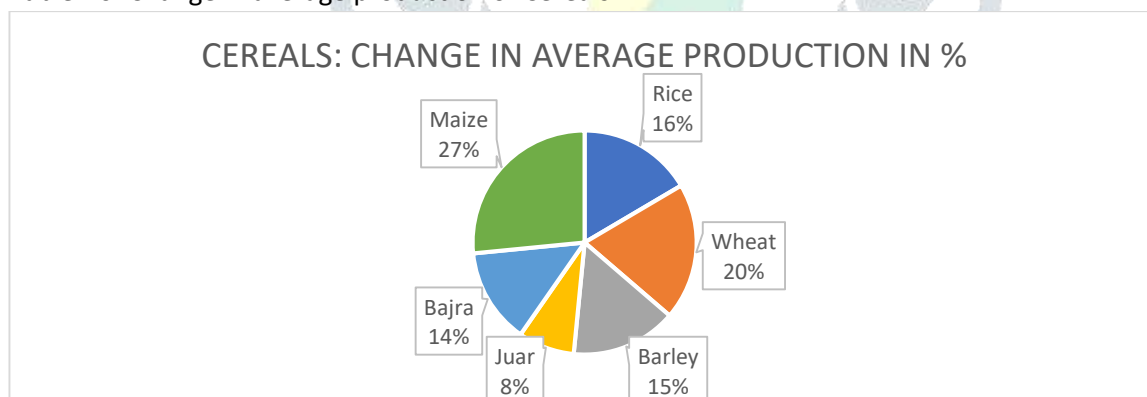


Table-26: Change in average production of Cereals



PULSES: Urd and moong saw drop in average production per hectare. Urd has seen drop by 14.6% and moong by 3.8%. On the other hand , average production of arhar increased by 5% and that of gram by 7.5% from the year 2011-12 to 2018-19. Details are in table 27 & 28.

Table-27: Average production of Pulses

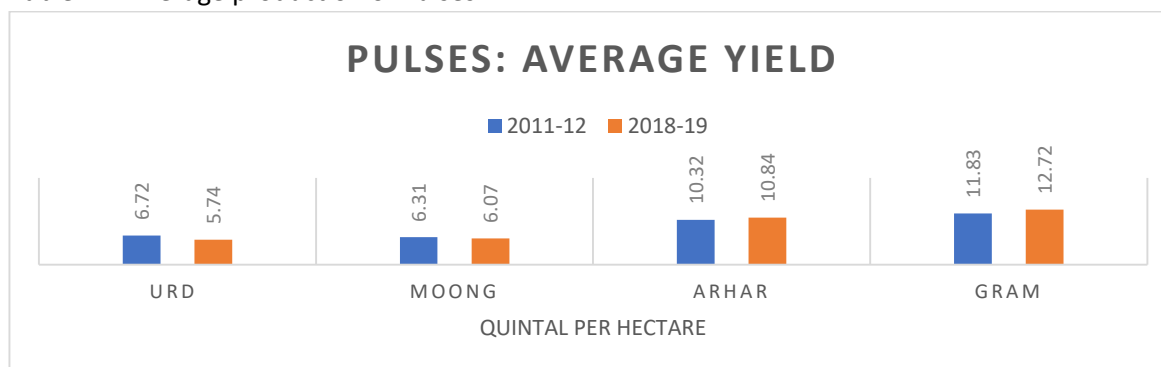
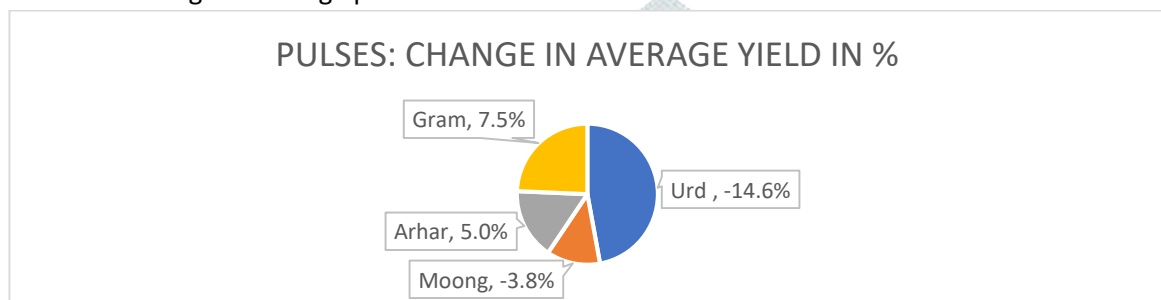


Table-28: Change in average production of Pulses



OILSEEDS: Both the main crops have seen increase in average production per hectare. Yield of rapeseed & mustard has increased from 11.35 quintal per hectare to 14.83 quintal per hectare. For groundnut, yield has increased for groundnut from 9.91 to 9.94 quintal per hectare. Rapeseed and mustard’s yield increased by 30.7% whereas that of groundnut by 0.3% only. Refer tables 29 & 30.

Table-29: Average production of Oilseeds

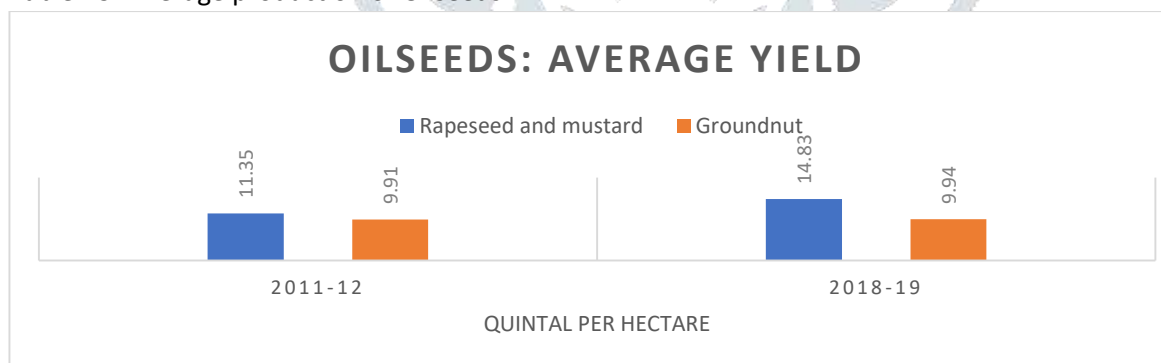
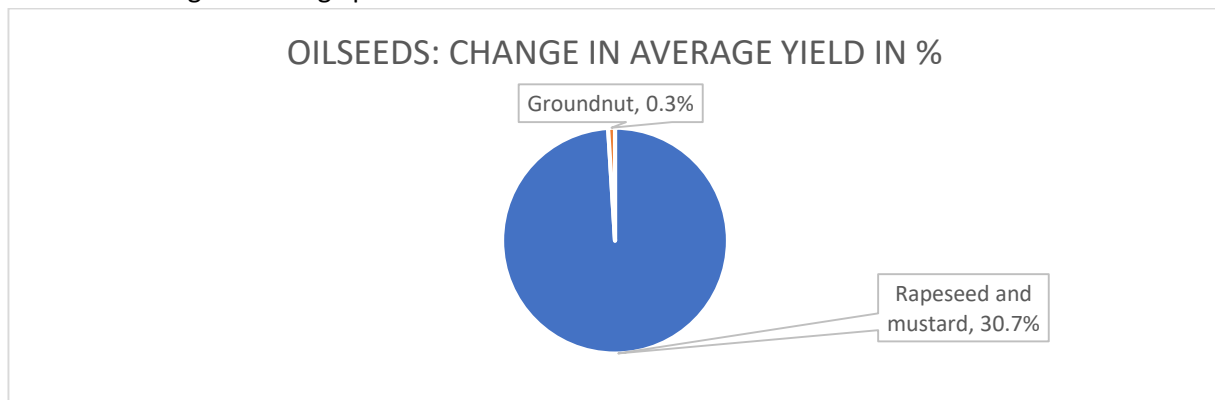


Table-30: Change in average production of Oilseeds



OTHER CROPS: As for most of the crops under different categories like cereals, pulses and oilseeds, have seen increase in their average production per hectare, so is the case with other remaining crops in other categories. Sugarcane being one of the most grown crop of the state. The average production of sugarcane can increased to 808 quintal per hectare in 2018-19 from 595.7 quintal per hectare. Other major crop whose yield increased was of potato. Potato’s average yiled increased from 223 to 298.5 quintal per hectare.

Crops, namely tobacco, cotton and jute are marginal crops in Uttar Pradesh. Jute and cotton increased and that of tobacco decreased as shown in the tables-31 & 32 below.

Table-31: Average production of Other crops

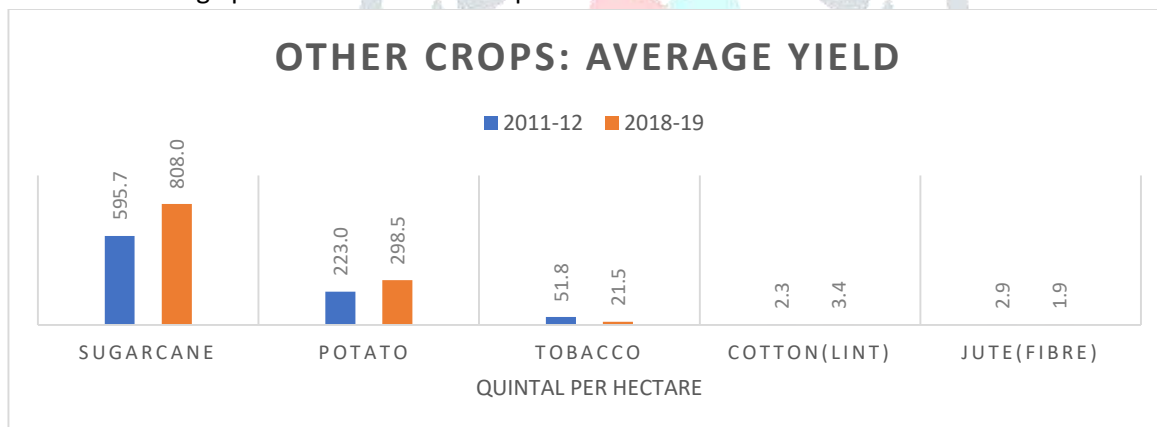
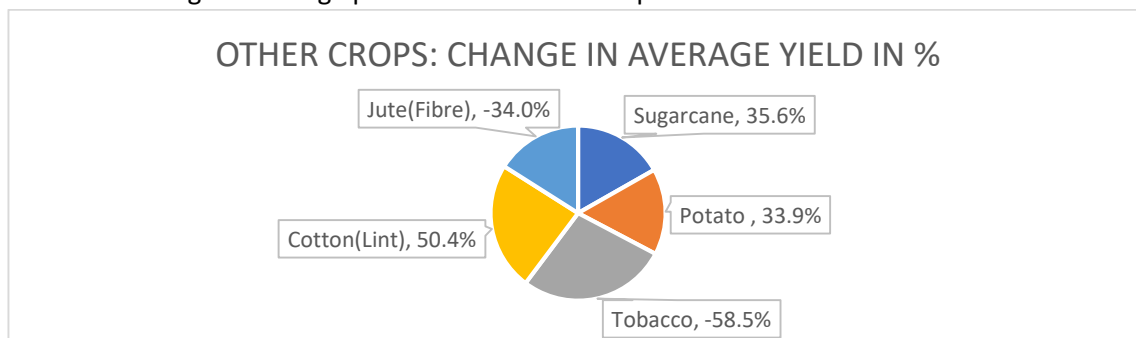


Table-32: Change in average production of Other crops



## 5. Conclusion

Data as collected and studied have given a definite pattern as described below

- a. Growth has been observed in almost all the known and primary crops grown in the state of Uttar Pradesh. There are few crops whose production has decreased but it can be attributed to farmers general attraction missing for them. Additionally, these crops do not have climatic conditions favourable to them. Like Jute and Tobacco could be few examples to cite here. Total area under cultivation of various crops in Uttar Pradesh has increased to 24047 thousand hectares in 2018-19 from 23893 thousand hectares in 2011-12.
- b. In terms of productivity, yield per hectare of all major crops primarily grown in the state has increased.
- c. Due to increase in cultivation area and acreage per hectare have increased, resultantly, actual production of almost all crops in the state have seen increase during the study period.
- d. Total food grains production in the state has increased from 52057 thousand tonnes in 2011-12 to 60415 thousand tonnes in the year 2018-19.
- e. It can be concluded from the above facts that the agriculture land in the state although has remained same with marginal increase but significant upward change in total production of various crops shows that new age agricultural practices along with better agricultural means are the main reasons of this positive change.
- f. Factors as mentioned in clause-e above are responsible for increase in yield per hectare.

## 6. Suggestions

1. To keep the momentum going, government and local administrative should continue their focus on providing new ways and means to farmers of the state.
2. Agriculture department should give more attention to spreading knowledge about modern day agriculture practices. Agriculture Extension should be an area of focus.
3. As farmers are willing to earn more money from cultivation, this can be exploited by the governments to provide food to growing population of state & the country.
4. Government should keep an eye of urbanisation happening in major cities of the state. Urbanisation should not happen on agriculture land. The state has very limited land parcel to use for agriculture. Any decrease in land under agriculture will eventually lead to decrease in production and may a reason of starvation of poor in future.
5. Naturally, western UP is blessed to better means to take care of agriculture needs. Still there should be efforts to strengthen them further.
6. The eastern UP is having its own challenges to take care of. Government machinery should look into them regularly as being the reason of increased production in this part as well.
7. Governments at state as well as at the centre should increase spending on agricultural research so that better quality seeds are given to farmers which may add up to total production.
8. Likewise, research on wastage of opportunity due to insects and pests should be give due importance.
9. These all means and ways will help in sustainable growth in the field of agriculture.

## 7. References

1. An empirical study: Economics of Irrigation in Agriculture- a case study in Meerut district. A thesis submitted to CCS University, Meerut for the degree of PhD by Dr. Anju Sharma.
2. Agriculture Development in Uttar Pradesh; a project submitted for the degree of M.Phil. by Anju Sharma to CCS University, Meerut.
3. Uttar Pradesh Development Report, Planning Commission, Government of India; Chapter 1: agriculture, pp 27-59.
4. Statistical Diary, Uttar Pradesh-2020; Economic & Statistics Division, State Planning Institute, Planning Department, Uttar Pradesh.
5. Pocket Book of Agricultural Statistics-2017; Govt of India, Ministry of Agriculture & Farmers Welfare, Deptt. of Agriculture, Cooperation, Farmers Welfare, Directorate of Economics & Statistics, new Delhi
6. Thakur, J. and Kumar, P. 1984. A comparative study of economic efficiency of different irrigation in Western Uttar Pradesh. Indian Journal of Agricultural Economics 39(3): 521
7. Rosin, T. (1993). The tradition of groundwater irrigation in Northwestern India. Human Ecology 21(1):51-86
8. Census of India 2011, Uttar Pradesh: District Meerut, series 10, part XII A
9. A. Gulati (B) · P. Terway · S. Hussain: chapert-7, performance of agriculture in Uttar Pradesh, p175-208
10. M. Ishq: Article in Journal of Agricultural Research · January 2016, Irrigation of quality status of tube well waters and management for sustained crop production in canal command areas of district Sahiwal; J Agric. Res., 2016, Vol. 54(3):383-393
11. Central ground water board, Ministry of water resources, river development & Ganga rejuvenation, Govt of India; report aquifer mapping & ground water management plant, part of NCR, Uttar Pradesh, Northern region, Lucknow.
12. NABARD All India Rural Financial Inclusion Survey (NAFIS) 2016–17. Mumbai: National Bank for Agriculture and Rural Development. Water and Related Statistics. (2015). New Delhi: Central Water Commission.
13. Central Water Commission (CWC) 2015. Water and related statistics. Directorate of Information System Organisation, water planning and projects wing Report, New Delhi.
14. Central Water Commission (CWC) 2017. Reassessment of Water Availability in India Using Space Inputs. Basin Planning & Management Organisation, New Delhi.
15. Govt of India. Irrigation and Power Projects, Ministry of Irrigation and Power, New Delhi 1970.
16. Govt. of India. Irrigation Atlas of India, New Delhi 1971.
17. Report of the Irrigation Commission. Vol. I, Ministry of Irrigation and Power, New Delhi 1972. ~ 993 ~ International Journal of Applied Research <http://www.allresearchjournal.com>
18. Husain M. Systematic Agriculture Geography, New Delhi 2002, 360-364, 403-416.
19. Pant Niranjana. "Trends in Groundwater Irrigation in Eastern and Western Uttar Pradesh", Economic and Political Weekly, July 2004, 3463-3468.

## Websites

20. [http://updes.up.nic.in/esd/reports\\_publication\\_Elib\\_public.htm](http://updes.up.nic.in/esd/reports_publication_Elib_public.htm)
21. <https://books.google.co.in/books=Irrigatedareainmeerut2011-12>
22. <https://meerut.nic.in/>
23. [https://www.researchgate.net/figure/Map-showing-location-of-Meerut-District\\_fig2\\_325992663](https://www.researchgate.net/figure/Map-showing-location-of-Meerut-District_fig2_325992663)
24. [https://commons.wikimedia.org/wiki/File:India\\_Uttar\\_Pradesh\\_districts\\_2012\\_Meerut.svg](https://commons.wikimedia.org/wiki/File:India_Uttar_Pradesh_districts_2012_Meerut.svg)