

# Agricultural Production Trends and Cropping Pattern in Uttar Pradesh: An Overview

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**Abstract** – Agriculture is the major livelihood activity of majority of rural population in Uttar Pradesh. Sustained growth in agricultural production and productivity is essential for over all sustainability of the state economy. It is, therefore necessary to study the status of agriculture in Uttar Pradesh. This paper deals with cropping pattern and production trends of agriculture in Uttar Pradesh in seven sections:-I- Introduction, II- growth Rate in Plan Periods, III- Land Use, IV-Cropping Pattern/Coverage, V- Production of different crops in Uttar Pradesh and All India, VI-Productivity of Different Crops and lastly concluded in section VII.

**Keywords** – Cropping Pattern, Remunerative Crops, Total Cultivated Area, Average Productivity, Mechanisation, Technological Improvement and Potential Productivity.

## I. INTRODUCTION

Uttar Pradesh is the largest state of the India in terms of population and second largest in area in the country. The reporting area of the state is 24.2 million ha, out of which cultivated area is 16.68 million ha. The gross cropped area is 25.5 million ha. The cropping intensity in the state is 153 percent. Farming community is dominated by small and marginal farmers. Average size of holding is only 0.83 ha per farmer. However, the average size of holding of marginal farmers is only 0.40 hectare. The state accounts for 11 percent of India's net sown area and contributes more than 41.1 million tonnes of food grain which is about 20 percent of the total foodgrain production of the country. The state produces 38 percent of India's Wheat, 20 percent of Paddy, 21 percent of Sugarcane, 34 percent of Groundnut, 17.5 percent of Rape-seed, 8 percent of Fruits and 16 percent of Vegetables. Uttar Pradesh is the largest potato producer in the country, contributing 43 per cent of the total production. Therefore, agriculture sector of Uttar Pradesh has an important role for national economy in general and economy in particular.

The state is the largest milk producing state of the country with an annual milk production of 11.7 million

kilo litres accounting for 16 percent of total milk production of the country. Keeping in view of vast potential, the state has major role to play in ushering agriculture sector led economic growth of the country.

Despite of largest contribution to agriculture produce of the country and achieving some improvement in the State's growth rate in the Tenth Five Year Plan, it is still lagging behind the national average and consequently, the gap in per capita income is increasing with the passage of time. There is tremendous scope for further development in every sub-sector of the agriculture sector including crops, horticulture, animal husbandry and pisciculture. The major challenges before the State are bridging the gap in per capita income, poverty alleviation, improvement in human development index, improving growth in primary sector specially agriculture and animal husbandry.

The new initiatives like Rashtriya Krishi Vikas Yojana, National Food Security Mission, and National Horticulture Mission are potent options for increasing farm productivity and putting agricultural economy on a sustained growth path. Uttar Pradesh being the most populous state of India has a great influence on the economic growth of the country. For achieving the desired agriculture growth in the country, it is necessary to adopt area specific strategies for improving the agricultural sector growth in the states like UP.

## II. GROWTH RATES IN PLAN PERIODS

The growth rate in agriculture sector was above 5% during the fifth plan and two annual plan periods. This growth rate in the Xth plan was 2.10% in the state, where as, the national growth rate was 1.10% in the same period. The variation of the growth of economy depends upon the rate of growth of agriculture & allied sector due to major contribution of this sector in gross state domestic product. Plan wise growth status has been presented in the following table 1.

Table 1: Agriculture and Allied Sectors Growth Rate in Plan Periods:

	Plan	Agriculture & Allied Sectors (%)		Overall Economy (%)	
		U.P.	India	U.P.	India
1	First Plan(1951-56)	1.86	2.71	2.12	3.60
2	Second plan(1956-61)	1.48	3.15	1.75	3.95
3	Third Plan(1961-69)	(-)0.09	(-)0.73	1.58	2.32
4	Three Annual Plan(1966-69)	0.62	4.16	0.32	3.69
5	Fourth Plan(1969-74)	0.94	2.57	2.23	3.25
6	Fifth Plan(1974-79)	5.23	3.28	5.70	5.30
7	Sixth Plan(1981-85)	2.54	2.52	4.10	4.10
8	Seventh Plan(1985-90)	2.69	3.47	5.70	5.80

9	Two Annual Plan(1990-92)	5.42	1.01	3.14	2.47
10	Eighth Plan(1992-97)	2.70	3.90	3.20	6.80
11	Ninth Plan(1997-02)	0.80	1.90	2.00	5.60
12	Tenth Plan(2002-07)	2.10	1.10	5.30	7.70

Source- Uttar Pradesh Planning Commission

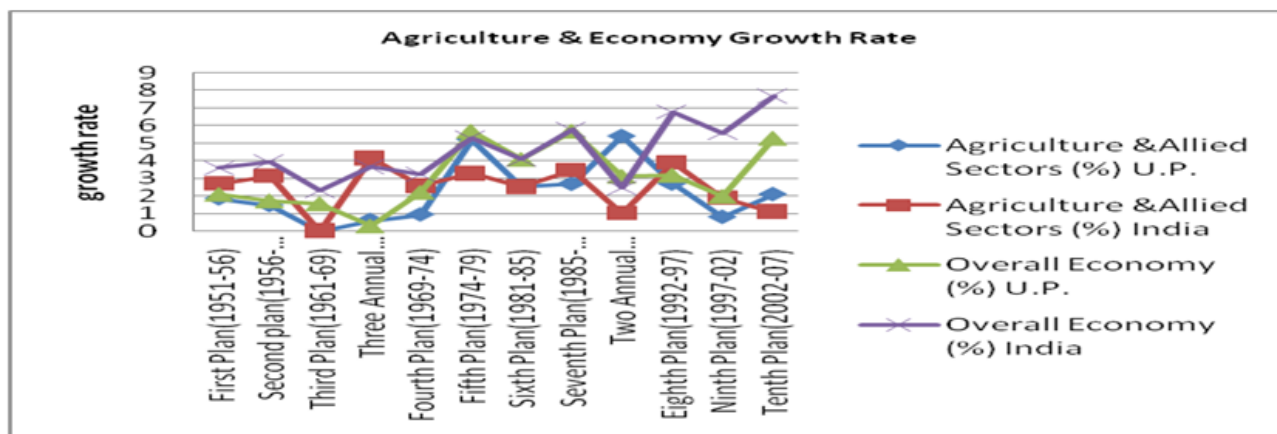


Fig.1

### III. LAND USE

The total cultivated area of the state is 166.83 lakh ha and the gross cropped area is 255.24 lakh ha. The cropping intensity in the state is 153 percent. The area sown during rabi is more as compared to that in kharif. The area under sugarcane which is an annual crop is 0.38 lakh ha. There is possibility of agricultural development through increase in net area sown and intensity because Uttar Pradesh has more area under current follow and other follow (12.17 lakh ha. +5.74 lakh ha. ). It has 78.42 (166.83 – 88.41) lakh hectare area under single cropping in a year as mentioned in table 2. This area can be used for multi cropping to increase agricultural productivity. This study investigates that how can land use pattern be changed according agricultural development. Land use pattern of Uttar Pradesh is given in Table-2.

Table 2: Land Use of Uttar Pradesh-2004-05 (Lakh Ha)

S.No.	Particular	Uttar Pradesh
1	Reporting Area	242.01
2	Forest	16.88
3	Barren Land	5.3
4	Non Agri. Use	6.49
5	Culturable Waste	4.54
6	Pastures	0.64
7	Misc. Trees etc.	0.44
8	Current Follow	12.17
9	Other Follow	5.74
10	Net Area Sown	166.83
11	Area Sown more than Once	88.41
12	Gross Cropped Area	255.24
13	Cropping Intensity	153
14	Kharif	118.57
15	Rabi	128.39
16	Zaid	7.91
17	Sugarcane	0.38

Source: Official website of Govt. of India and Uttar Pradesh

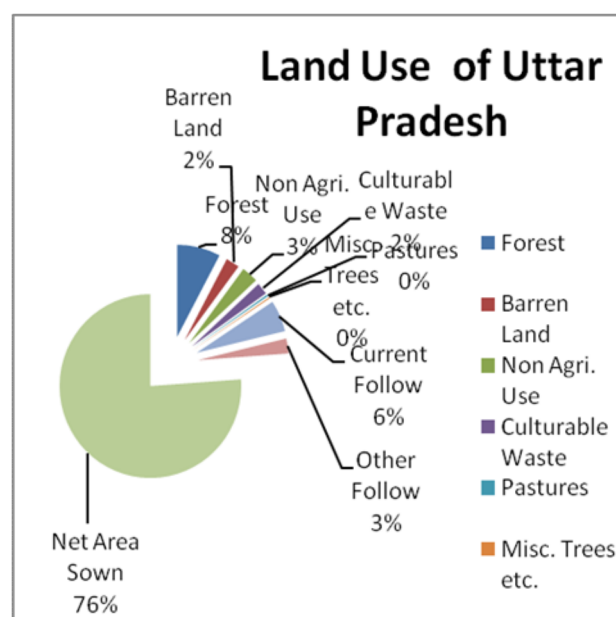


Fig.2

### IV. CROPPING PATTERN/COVERAGE

Uttar Pradesh agriculture is highly diversified. It produces numerous crops due to its comparative advantage of wide range of agro-climatic variability. It is one of the major foodgrain producing states in the country. Paddy and Wheat are the most important crops of the State. Maximum area is being used for cultivation of food grains of which only 13.8% is covered under pulses. Approximately 79.8% of the gross cropped area is devoted for the production of food grains. Other important crops grown in the State are sugarcane, potato, mustard, groundnut, gram, pea and lentil. The sunflower and soybeans have also been introduced successfully in the State during past. The cropping pattern in various agro-

climatic zones and agro-economic regions in the State, however, differ significantly in terms of commodities and seasonal crops. With the development of appropriate technology, suitable for various agro-climatic conditions and the new varieties, coupled with the changing needs of

the people, there is a slight deviation in cropping pattern in the State. The area under coarse cereals is gradually decreasing giving way to other remunerative crops. There is a tendency in reduction in the area under oilseed and pulses crops.

Table 3: Cropping Pattern of Uttar Pradesh

Crop	Area ('000 ha)			Share in GCA (%)		
	TE 1982/83	TE 1991/92	TE 1999/2000	TE 1982/83	TE 1991/92	TE 1999/2000
Rice	5266.02	5587.81	5791.45	21.33	21.92	22.5
Wheat	8046.46	8783.13	8991.46	32.6	34.45	34.93
Sorghum	614.15	509.25	372.58	2.49	2	1.45
Pearl Millet	977.09	807.71	839.21	3.96	3.17	3.26
Maize	1203.02	1128.92	1141.76	4.87	4.43	4.44
Other Coarse Cereals	1253.67	729.75	1408.93	5.08	2.86	5.47
<b>All Cereals</b>	<b>17360.41</b>	<b>17546.57</b>	<b>18545.39</b>	<b>70.33</b>	<b>68.82</b>	<b>72.04</b>
Chickpea	1498.24	1160.11	813.79	6.07	4.55	3.16
Pigeon Pea	505.22	485.09	428.24	2.05	1.9	1.66
Other Pulses	879.25	1108.92	1561.97	3.56	4.35	6.07
All Pulses	2882.71	2754.12	2804	11.68	10.8	10.89
<b>All Foodgrains</b>	<b>20243.12</b>	<b>20300.69</b>	<b>21349.39</b>	<b>82.01</b>	<b>79.62</b>	<b>82.93</b>
Groundnut	257.66	146.46	110.15	1.04	0.57	0.43
Sesamum	45.53	67.08	94.22	0.18	0.26	0.37
Rapeseed and Mustard	425.34	673.59	692.15	1.72	2.64	2.69
Linseed	72.66	73.65	135.66	0.29	0.29	0.53
Sunflower	4.9	9.53	72.16	0.02	0.04	0.28
Other Oilseeds	55.25	76.64	105.25	0.22	0.3	0.41
All Oilseeds	861.34	1046.95	1209.59	3.49	4.11	4.7
Sugarcane	1679	1882.04	1888.03	6.8	7.38	7.33
Potato	271	326.82	440.28	1.1	1.28	1.71
Onion	20.11	29.26	48.09	0.08	0.11	0.19
<b>All Vegetables</b>	<b>466</b>	<b>577.06</b>	<b>627.09</b>	<b>1.89</b>	<b>2.26</b>	<b>2.44</b>
Misc. Crops	1160.49	1351.28	137.62	4.7	5.3	0.53

Source (Basic Data): Uttar Pradesh Ke Krishi Ankare (Agriculture Statistics of UP) (Various issues).

Note: \*The statistics refer to Uttar Pradesh prior to bifurcation.

#### A. Foodgrains

Area under foodgrain crops confined around 20 to 21 m ha between 1980 and 2000. This was 83 per cent of the total cultivated area in Uttar Pradesh in the TE 1999/2000 (Table 3). It was exceedingly ahead of the national level area under foodgrain crops, which was about 66 per cent in the same period. About one-fifth (42 m tonnes in TE 1999/2000) of country's foodgrain production comes from Uttar Pradesh. Rice and wheat are the principal foodgrain crops. Their relative share in the gross cropped area (GCA) was about 23 per cent and 35 per cent respectively in the TE 1999/2000. Uttar Pradesh is the largest wheat producing state in the country. About one-third of total wheat produced in the country in 1999/2000 was contributed by the state. In case of rice production, the state ranked second, next to West Bengal. Among all the cereals, area under wheat were increased by 0.95 m ha and of rice by 0.53 m ha between 1980 and 2000. Rice mainly replaced sorghum, pearl millet and

maize, while wheat substituted barley and to some extent chickpea. Area under all coarse cereals was declined by 0.3 m ha during the same period. Their relative share in GCA has marginally come down from 16 per cent in TE 1982/83 to 15 per cent in TE 1999/2000.

#### B. Agricultural production

There is no doubt that crops production of Uttar Pradesh have been increasing continuously since 1951 as presented in table 4 for different crops. The rice production has increased from 1998.5 thousand tons in 1951 to 14030 thousand tons in 2011. The wheat production has also increased 2721.1 to 30290 thousand tons and sugar production noted increase from 2949.8 to 128820 thousand tons in the same period. Potato is a major commercial crop of this state. There is no attractive change in production of pluses, and oilseeds as revealed from the following table from 2001 to 2011.

Table 4: Agricultural production ('000 tone) & Productivity (quintal per hectare)

Year	Production(000T)		Productivity(00Kg)	
	Rice	Wheat	Rice	Wheat
1951	1998.5	2721.1	5.19	8.21
1952	1549.6	2573.7	4.44	7.66
1953	1881.9	2869.4	5.26	8.5
1954	2291.6	3155.6	6.25	8.45
1955	2190	3336.7	5.95	8.87
1956	2587.9	3090.1	6.88	7.66
1957	2322.4	3164.9	6.02	7.84
1958	2337.9	2749.5	6	7.34
1959	3032.3	3085	7.34	7.97
1960	2464.4	3293.7	5.94	8.5
1961	3150.9	3293.7	7.53	10.01
1962	3345	4155	8.02	10.13
1963	3134	3211	7.33	7.95
1964	3278	2715	7.54	6.93
1965	3323.4	4117.9	7.47	10.38
1966	2342.1	3754.7	5.57	9.12
1967	2013.1	4230.3	4.53	9.63
1968	3262.1	5840.7	7.42	11.75
1969	2922.1	6086.8	6.46	11.62

1970	3532.9	6314.3	7.79	11.74
1971	3700.9	7689.5	8.11	13.02
1972	3776.5	7550.1	8	12.49
1973	3273	7515.2	7.48	12.25
1974	3858.8	5878.8	8.63	9.78
1975	3523.4	7175.6	7.78	11.66
1976	4294	8552.5	9.29	13.57
1977	4290.9	8939.9	9.22	13.5
1978	5141.8	9711	10.65	14.29
2002	12856	25856	21.17	27.55
2003	9587	23748	18.41	25.91
2004	12495	26350	22.34	27.9
2005	10783	23430	18.13	25
2006	11741	24090	19.95	25.86
2007	11120	25030	20.55	27.99
2008	11884	26312	21.71	30.02
2009	13097	28554		28.46
2010	11938	30001	21.2	31.13
2011	14030	30290		

Source-Directorate of Economics and Statistics, Ministry of Agriculture

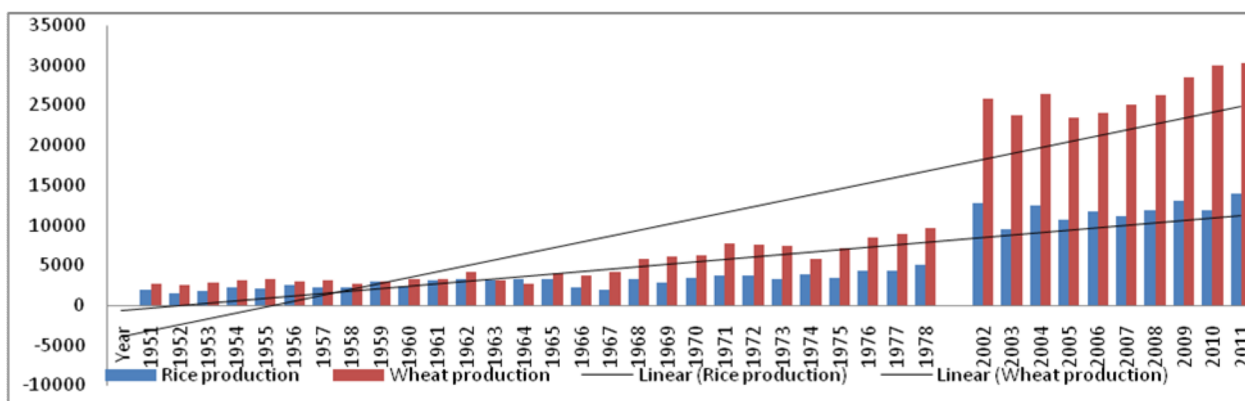


Fig.3. Agricultural productions

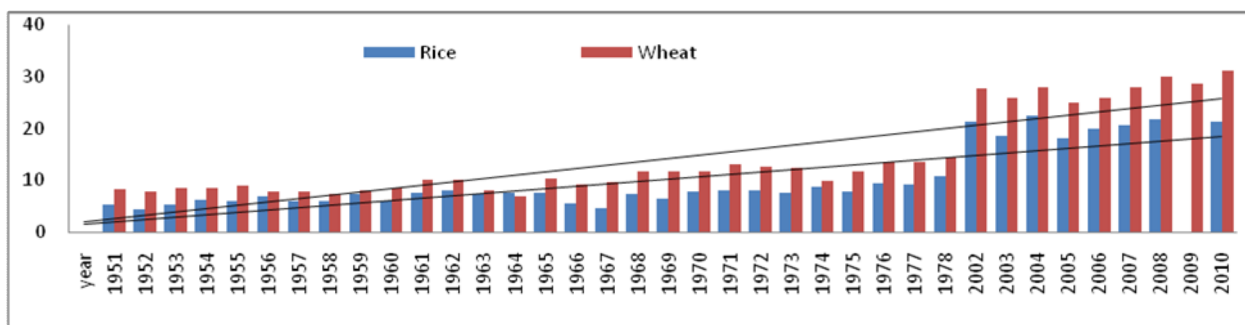


Fig.4. Productivity

### C. Agricultural Productivity

The average productivity of food grain for Uttar Pradesh in 1951 was 689 kg/ha while for India it was 522 kg/ha. The average productivity increased to 2054 kg/ha (2005-06) and 1715 kg/ha (2004-05) for UP and India respectively. U.P. is better placed in this respect, yet potential exists to improve the productivity substantially. The Table(4) depicts that the total food grain production

has been fluctuating over time and considerably decreased in 2004-05 compared to previous year. However the production increased marginally during the year 2005-06. The productivity of rice and wheat has increased approx 4 times in 2010 as compared to year 1951. But productivity of pluses and oilseeds has remained constant due to change in cropping pattern and low fertile land under these crops. There is more scope to increase productivity with

the help of farm mechanisation, using High Yielding Variety of seeds and other agriculture inputs. There is need of intensive use of agriculture inputs and change in cropping intensity to get the potential productivity because at present, actual productivity of all the crops is ½ of potential productivity. On the basis of food security, development of agriculture is most essential for India in general and Uttar Pradesh in particular.

## V. PRODUCTION OF DIFFERENT CROPS IN UTTAR PRADESH AND ALL INDIA

There are different types of agriculture crops in Uttar Pradesh and India. The major crops have been taken for the purpose of trend analysis. These are foodgrains, cereals, wheat, rice, oilseeds, pulses, and potato etc.

### A. Foodgrains and Cereals

Foodgrains productions of Uttar Pradesh were 11.775 MT in 1950-51 and 42.320 MT in 2011-12. It increased 4.5 times during six decades but share of Uttar Pradesh decreased from 21% to 20% in India's foodgrains production.

The production of foodgrains is illustrated in figure 5 with the help of bar diagrams and trend line. Cereals were produced 8.751MT in 1950-51 and 45.210MT in 2011-12 at Uttar Pradesh level while it was 42.414MT and 242.234MT at India level during the same period. These production increased approx 5 times due to extensive and intensive agriculture technique. The share of Uttar Pradesh in cereals production also decreased. These productions are shown in figure 6 with its data.

### B. Wheat and Rice

Wheat and rice are the main foodgrains of Uttar Pradesh. The production of wheat was 2.721MT in U.P. and 6.462MT at all India level in 1950-51. It was 30.292MT and 94.882MT respectively in 2011-12. Western region of Uttar Pradesh has more covered area under this crop. Its performance was quite impressive during 1950-51to-2011-12 (Figure-7). The production of rice in Uttar Pradesh increased from about 1.999MT in 1950-51 to 14.022MT in 2011-12. Similarly, it went up from 20.576MT to 105.311MT during the same period at all India level (Figure-8). This crop covers more agriculture area in eastern region due to better irrigation facilities and sufficient rain fall.

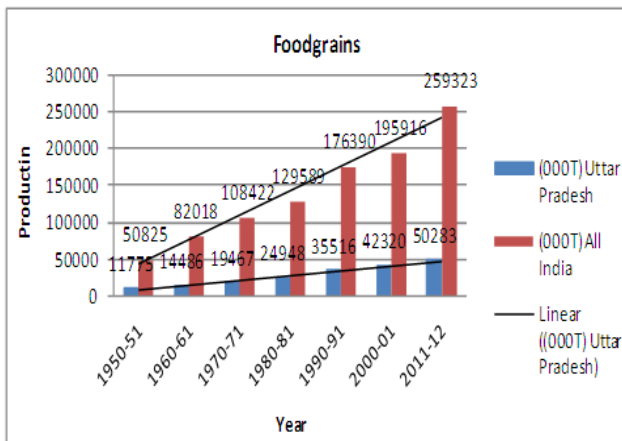


Fig.5

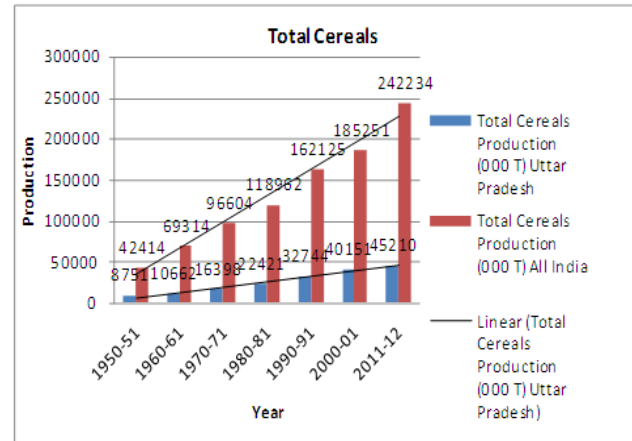


Fig.6

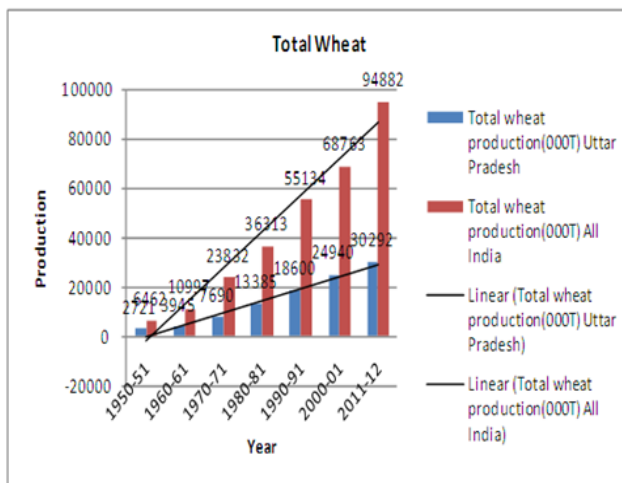


Fig.7

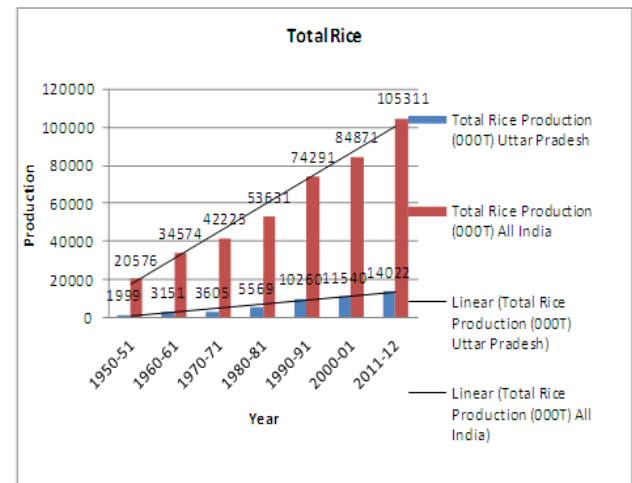


Fig.8

### C. Pulses and Oilseeds

Pulses are the main source of protein for the weaker section of the society in the state of Uttar Pradesh and India but its production has reduced both in U. P. and India. This is not good sign for nutritional food security of human being. There are 9 types of Oilseeds. These are also needed for nutritional requirement of people but its production has also decreased during the above mentioned period because of low productivity area under these crops and inappropriate prices. Related data of these crops are shown in figure 9&10.

### D. Potato

Potato is also a main cash crop of Uttar Pradesh especially in western region. The annual compound rate of potato was slightly higher after 1970s, production of this crop increased from 0.641MT in 1950-51 to 8.497MT in 2001 in Uttar Pradesh. While it was 1.660MT and 22.143MT at all India level during the same period (figure 11). It increased almost 13 times in both U.P. and India. The share of U.P. in total potato production was constant (7.5%).

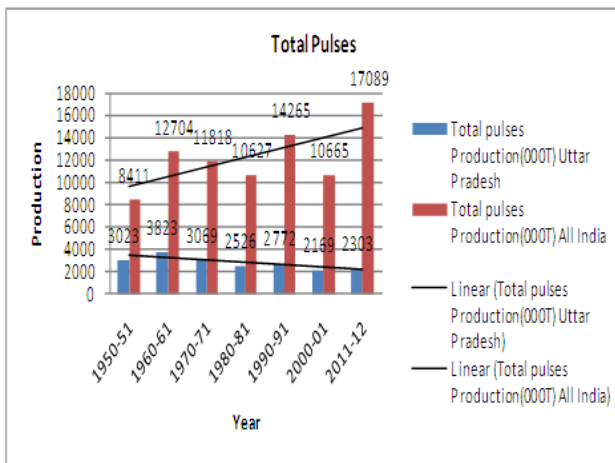


Fig.9

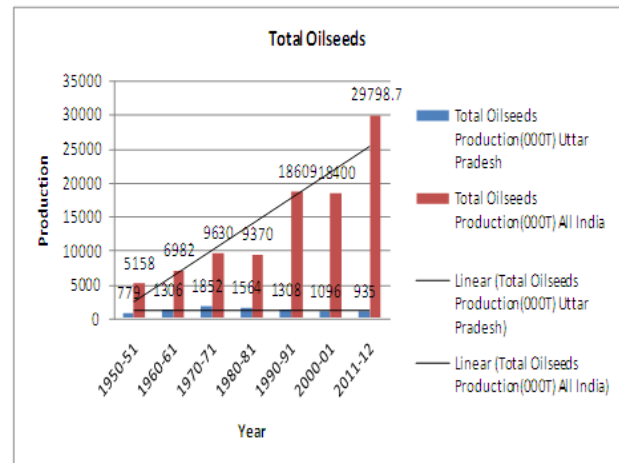


Fig.10

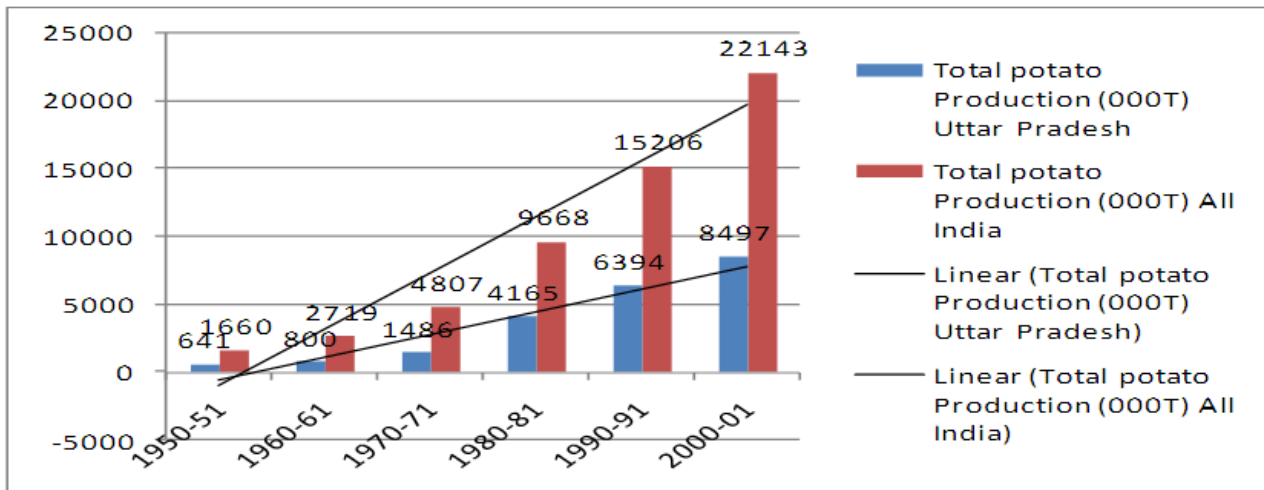


Fig.11

## VI. PRODUCTIVITY OF DIFFERENT CROPS

There is no doubt that productivity of different crops increased due to intensive agriculture technique. The impact of Green Revolution on agriculture productivity was noticeable in Uttar Pradesh. The average yield of foodgrains increased from 689 Kg/Ha in 1950-51 to 2498 Kg/Ha in 2011-12. This productivity is higher than India level. The average yield of cereals in Uttar Pradesh is also higher than India. The yield of wheat and rice increased from 821Kg/Ha & 519Kg/Ha in 1950-51 to 3113Kg/Ha &

2358Kg/Ha in 2011-12 respectively. These yields were still lower than the neighbouring state of Haryana. The change in yields of pulses and oilseeds were not attractive during the same period. The productivity of potato went up from 7808Kg/Ha in 1950-51 to 21295Kg/Ha in 2001, which was 3 times increased (Figure-12). The increment in yields of wheat and potato were much higher than other crops due to special impact of Green Revolution. There is possibility to increase yield of crops because actual yield of all crops are half of potential productivity.

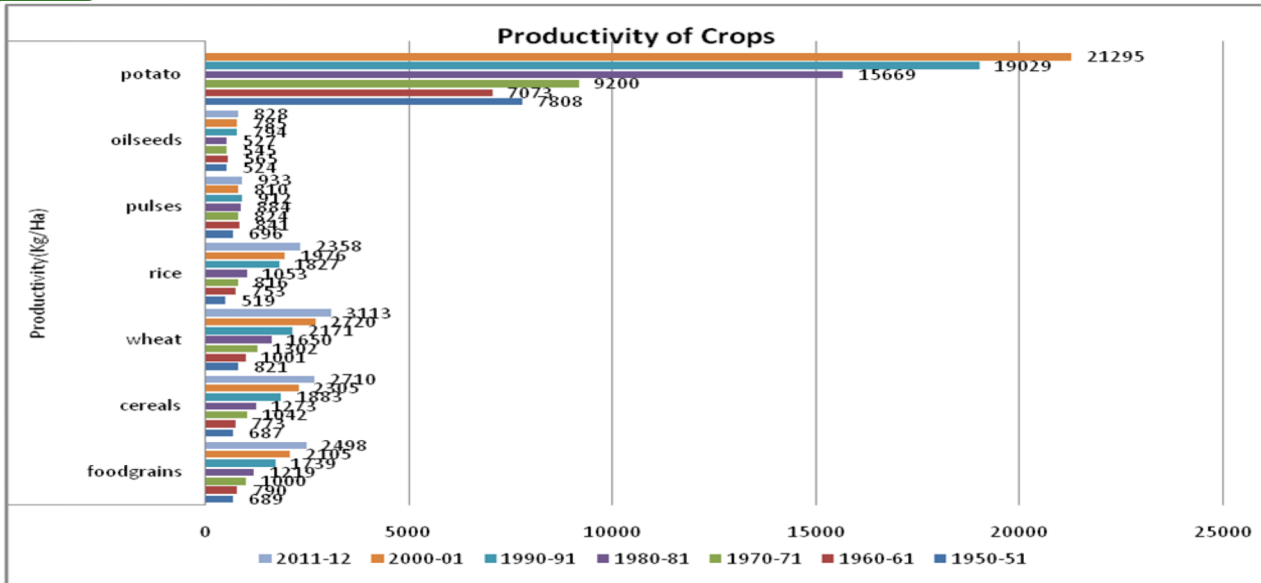


Fig.12

## VII. CONCLUSION

The period 1950-51 to 2011-12, production of wheat has increased by about 11 times. The production went up from a meager quantity of 2.7 MT in 1950-51 to 30.2 MT in 2011-12. Production of rice increased from 2.0 MT in 1950-51 to 14 MT in 2011-12. . Production of pulses shows a negative trend during the entire period. It went down from 3.0MT in 1950-51 to 2.3 MT in 2011-12. Production of oilseeds has decreased in the recent years. Production of potato shows a rising trend throughout the period, though some fluctuations are noticeable across the years. Area under all coarse cereals has declined by 0.3 m ha during the same period. . Among all the cereals, area under wheat increased by 0.95 m ha and rice by 0.53 m ha between 1980 and 2000. Their relative share in the gross cropped area (GCA) was about 23 per cent and 35 per cent respectively in the TE 1999/ 2000. This was 83 per cent of the total cultivated area in Uttar Pradesh in the TE 1999/ 2000. Overall for period 1950-51 to 2011-12, the production has increasing trend for major crops. Productivity has increased and state agricultural growth rates are more satisfactory than national averages. Cropping pattern has improved in the state, which is good for an agricultural based state. But still there is scope for better progress. Huge quantity of water could be saved by diversification of cropping pattern from these crops to less water consuming crops. Technological improvement and change in the agricultural practices in general and irrigation practices, in particular, could also help to reduce the water consumption in rice, wheat and sugarcane.

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