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Inter-District variation of output use in Haryana agriculture

[1] Shobha Vati, [2] Surender Alhawat

[1] Research Scholar, Department of Economics, JJT University, Jhunjhunu, Rajasthan, India
[2] Assistant Professors, Department of Economics, Ch. Devi Lal University, Sirsa, Haryana, India

Abstract
The analysis of growth is usually used in economic studies to find out of compound growth rates of area and production of many crops. The present paper also studies this analysis as an inter-district disparity of area and production during the period 1991-92 to 2013-14 in different districts of Haryana State. It is based on the secondary data. The data has been taken from various years Statistical Abstracts of Haryana. The finding of the study shows a significant positive growth in area under the Cereal. It is positive in all districts of study except few districts. The area under pulses and oilseeds has found a negative growth rates. Both are negative in all district of the present study. The production of cereal and oilseeds has reported a positive growth rate in all districts of the study except few districts, whereas, production of pulses has found negative growth rate of the study.

Keywords: Agriculture; Development; Production and Growth

Introduction

Agriculture occupies a key position in the Indian economy since the Independence and more particularly in accelerating the process of rural development. Its role is unique as a stimulating the rural development. It contributes to overall economic growth through the supplies of food for sustenance, raw materials for industries, and earning valuable foreign exchange. It is a source of livelihood for a majority of the rural population and provides a large market for non-agricultural goods and services. Geographically, Haryana is one of the small State of India, but it is considered as a leader in the fields of agricultural production, irrigation, power, transport etc. since the last 35 years, Haryana is counted among the progressive states of India. The Economy of Haryana is predominantly by agricultural sector. Agriculture has made an important continuation to the development of Haryana and every aspect of the economic life of the state is influenced by the agriculture sector. Thus, credit of making Haryana as one of the rich state of the country goes mainly to the development of its agricultural sector. Haryana is now a leading contributor to the country's production of food grains and milk. Agriculture is the principle occupation of the residents of the state. The flat arable land is irrigated with ground water extracted with submersible pumps and tube wells, and by surface water through the extensive canal system. Haryana's contribution to the Green Revolution made India self-sufficient in food production in the 1960s and onwards.

Haryana is one of the wealthiest states of India and has the third highest per capita income in the country with per capita GDP at Rs. 109227 (2011-12). Haryana is also one of the most economically developed regions in South Asia and its agricultural and manufacturing industry has experienced sustained growth since the 1970s. Haryana is India's largest manufacturer of passenger cars and two-wheelers.

Haryana is extremely hot in summer at around 45 °C and mild in winter. The hottest months are May and June and the coldest December and January. The climate is arid to semi-arid with an average rainfall of 354.5 mm. Around 29% of rainfall is received during the months from July to September, and the remaining rainfall is received during the period from December to February.

The crops of Haryana are mainly divided into Kharif and Rabi crops. The main Kharif crops are Sugarcane, ground nut, paddy and maize. Minor Kharif crops are chillies, bajra, jowar, pulses and vegetables. The Main Rabi crops are gram, wheat, barley and oil seeds. Minor Rabi crops are massar, barseen, methi, onion and winter vegetables. Paddy is grown in the districts of Ambala, Yamunanagar, Karnal, Kurukshetra, Kaithal, Jind, Panipat, Sonipat, Fatehabad, Sirsa. Cotton is grown in the districts of Hisar, Sirsa, Fatehabad, Bhiwani, Jind, Rohtak and Jhajjar. Sugarcane is grown mainly in the Yamunanagar, Ambala, Kurukeshetra, Kaithal, Jind, Sonipat, Rohtak, Hisar, Sirsa and Fatehabad districts of the State. Bajra is mainly grown in the districts of Hisar, Fatehabad, Sirsa, Bhiwani, Jind, Jhajjar, Rohtak, Gurgaon, Rewari, Mahendergarh and Faridabad. Maize is mostly grown in the Ambala, yamunanagar, Panchkula, Kurukshetra and Rohtak.

There is no significant trend found in the mean maximum temperature and minimum temperature shows an increase of about 1.00 C to 1.20 C. Similarly trends in observed seasonal precipitation is negligible in many parts of Haryana, parts of Bhiwani, Faridabad, Fatehabad, Gurgaon, Jhajjar, Jind, Karnal, Kurukshetra, Mahendragarh, Rohtak, Sirsa, Sonipat show decreasing trend in the monsoon rainfall. Impact on Agriculture: Likely Impacts of Climate Change on Agriculture projects that with short periods of exposure of wheat crops to temperatures of 28 ºC to 32ºC result in significant decrease in yield by 20% or more. Unpredictable moisture deficits during crop growth are a

major constraint to productivity, Sclerotinia stem rot may become a serious threat to the successful cultivation of Indian mustard. The climate of Haryana is very hot in summer and cold in winters. The hottest months are May and June and the coldest being December and January. Rainfall is varied, with the Shivalik Hills region being the wettest and the Aravali Hills region being the driest. About 80% of the rainfall occurs during the monsoon season during the months of July and September. Rainfall is varied with Shivalik Hills region being the wettest and the Aravali Hills region being the driest. Haryana is very hot in summer and cold in winters. The temperature falls to the lowest in January and reaches up to 50o C during the months of May and June. Winter months have average temperatures in the range 3o C to 9o C and the summer months temperatures are higher in the range of 48o C to 58. The hilly areas of the State are limited. Most of the terrain is used for agricultural production. Rivers of the area bring fertile soil along with them from the mountains and deposit it in the plains. This soil is very useful for cultivation.

Specific Objective of the Study

The specific objective of the study is:-

1) To analyze the inter-district variation of output use in Haryana Agriculture in terms of the area, production in respect of some major crops such as cereals, pulses and oilseeds.

Methodology

The present study measures the growth variation in area and production of major crops such as total cereals, total pulses and total oilseeds. The secondary data has been used for the purpose of obtaining results. The data have been taken from various years statistical abstract of Haryana published by Department of Economic and Statistical Analysis, Government of Haryana, Chandigarh. The growth rate in the area and production under different crops was estimated using the compound growth function of the form:

$Y = a\ (1+r)^t$

Where *Y* stands for output (area, production)

r is compound growth rate

a is constant

t denotes time

Result and Discussion

In this section, the furnished results related to the inter-district variation of output use in Haryana agriculture in terms of the area, production and productivity in respect of some major crops have been analyzed and presented through following heads

Table 1: Analysis of Inter-District variation in Area of Cereal (000 hect.)

Sr. No.	Districts	Area of Cereal	CGR
1	Ambala	3720	0.5%
2	Panchkula	615	0.6%
3	Yamunangar	3048	1.6%
4	Kurukshetra	5101	0.4%
5	Kaithal	7566	0.5%
6	Karnal	7589	1.5%
7	Panipat	3581	-0.8%
8	Sonipat	5167	3.5%
9	Rohtak	4331	-2.4%
10	Jhajjar	2952	1.0%
11	Faridabad	3368	-5.3%
12	Palwal	866	0.6%
13	Gurgaon	3542	-3.1%
14	Mewat	1120	-1.4%
15	Rewari	2481	-0.1%
16	Mahendergarh	3174	0.4%
17	Bhiwani	7223	0.7%
18	Jind	7623	1.7%
19	Hissar	7817	-0.7%
20	Fatehabad	4690	1.3%
21	Sirsa	6876	2.7%

Source: Statistical Abstract of Haryana (Different Issue)

Table No. 1 reveal the inter-district variation in the area of cereal. The compound growth rate ranges from 3.5 percent to -5.3 percent. It is positive in all districts of the study except districts Panipat, Rohtak, Faridabad, Gurgaon, Mewat, Rewari and Hisar. The district Sonepat has noticed highest growth rate 3.5 percent per annum area of cereals and lowest was recorded to be -5.3 percent per annum by the district Faridabad. We conclude that those districts who have negative compound growth rate should improve the position that will help the growth rate in the agriculture sector.

Table 2: Analysis of Inter District variation in Area of Pulses (000 hect.)

Sr. No.	Districts	Area of Pulses	CGR
1	Ambala	121	-11.6%
2	Panchkula	43	-7.4%
3	Yamunanagar	115	-9.5%
4	Kurukshetra	37.8	-4.9%
5	Kaithal	31.9	-6.4%
6	Karnal	51	-6.1%
7	Panipat	33.3	-7.1%
8	Sonipat	222	-9.9%
9	Rohtak	349	-13.8%
10	Jhajjar	122	-9.2%
11	Faridabad	126.2	-10.3%
12	Palwal	7	-12.9%
13	Gurgaon	116.3	-13.6%
14	Mewat	22	-12.8%
15	Rewari	77.6	-16.3%
16	Mahendergarh	334	-6.0%
17	Bhiwani	2225	-9.6%
18	Jind	156	-16.2%
19	Hissar	1219	-11.4%
20	Fatehabad	75	-15.6%
21	Sirsa	696	-12.2%

Source: Statistical Abstract of Haryana (Different Issue)

Table No. 2 shows the compound growth rate of the area under pulses. It is negative in all districts of the present study. The district Rewari, Fatehabad and Rohtak have registered lowest growth rate per annum. We conclude that negative growth rate values indicate that it is not a good signal for the economy. We should improve and more focus the area of pulses.

Table 3: Analysis of Inter District variation in Area of Oilseeds (000 hect.)

Sr. No.	Districts	Area of Oilseeds	CGR
1	Ambala	114	-7.8%
2	Panchkula	39	-5.9%
3	Yamunanagar	82	-1.3%
4	Kurukshetra	179.2	1.9%
5	Kaithal	66.7	-7.4%
6	Karnal	47.4	0.5%
7	Panipat	25.6	-3.1%
8	Sonipat	118	-6.1%
9	Rohtak	697	-7.9%
10	Jhajjar	609	0.4%
11	Faridabad	140.5	-18.7%
12	Palwal	20	-5.6%
13	Gurgaon	905	-6.2%
14	Mewat	271	-5.1%
15	Rewari	1492	1.0%
16	Mahendergarh	2001	0.7%
17	Bhiwani	2865	4.7%
18	Jind	298	-7.1%
19	Hissar	1564	-1.3%
20	Fatehabad	249	-4.2%
21	Sirsa	1284	-0.3%

Source: Statistical Abstract of Haryana (Different Issue)

Table No. 3 indicates that the compound growth rate of the area under the oilseeds is negative in all the districts of the study except districts Kurukshetra, Karnal, Jhajjar, Rewari and Mahendergarh. The district Kurukshetra has registered the highest growth rate 1.9 percent per annum area of oilseeds and lowest was recorded to be -18.7 percent per annum by the district Faridabad. District Karnal and Mahendergarh show the same growth rate to be 0.5 percent and 0.7 percent per annum in the area of oilseeds. It can be said that we should improve the position of the area of oilseeds.

Table 4: Analysis of Inter District variation in Production of Cereal (000 tones)

Sr. No.	Districts	Production of Cereal	CGR
1	Ambala	12397	2.3%
2	Panchkula	1608	1.8%
3	Yamunanagar	10689	3.10%
4	Kurukshetra	19628	-0.40%
5	Kaithal	26485	1.50%
6	Karnal	27232	2.50%
7	Panipat	12273	0.20%
8	Sonipat	16191	4.80%
9	Rohtak	11407	-0.90%
10	Jhajjar	8222	3.10%
11	Faridabad	10468	-3.40%
12	Palwal	3393	1%
13	Gurgaon	9158	-0.40%
14	Mewat	3306	1.10%
15	Rewari	6581	2.50%
16	Mahendergarh	7089	3.80%
17	Bhiwani	15332	5.30%
18	Jind	24472	2.90%
19	Hissar	27535	0.40%
20	Fatehabad	18758	2.70%
21	Sirsa	28119	4.10%

Source: Statistical Abstract of Haryana (Different Issue)

Table No. 4 shows the variation of production of cereals. It is noticed to be positive growth rate in all districts of the study except Kurukshetra, Rohtak, Faridabad and Gurgaon. The district Bhiwani has noticed highest growth rate 5.3 percent per annum in the production of cereals and district Faridabad shows the lowest growth rate i.e. -3.4 percent per production of cereals. District Karnal and Rewari show the same growth rate i.e. 2.5 percent per annum in the production of cereals. This position of production of cereals may be enhanced the growth of the economy.

Table 5: Analysis of Inter District variation in Production of Pulses (000 tones)

Sr. No.	Districts	Production of Pulses	CGR
1	Ambala	71.9	-3.1%
2	Panchkula	44.1	1.2%
3	Yamunanagar	71	2.7%
4	Kurukshetra	37.4	7.1%
5	Kaithal	32.6	-6.4%
6	Karnal	56.5	0.0%
7	Panipat	46.1	0.8%
8	Sonipat	260	-2.2%
9	Rohtak	355	-1.5%
10	Jhajjar	194	11.1%
11	Faridabad	82.9	-8.5%
12	Palwal	21	24.6%
13	Gurgaon	94.5	-1.3%
14	Mewat	35	14.7%
15	Rewari	59.2	-6.4%
16	Mahendergarh	316.4	-61.0%
17	Bhiwani	2022	-7.6%
18	Jind	133.4	-20.6%
19	Hissar	986	-6.4%
20	Fatehabad	60	-6.1%
21	Sirsa	537	-10.6%

Source: Statistical Abstract of Haryana (Different Issue)

Table No. 5 depicts that inter-district variation in production of pulses. The compound growth rate ranges from 24.6 percent to -61 percent. It is negative in all the district of study except Panchkula, Yamuna Nagar, Kurukshetra, Karnal, Panipat, Jhajjar and Mewat. The district Palwal has noticed highest growth rate 24.6 percent per annum in the production of pulses and lowest was recorded to be -61 percent per annum by the district Mahendergarh. District Kaithal and Rewari show the same growth rate namely -6.4 percent per annum in the production of pulses. We conclude that those districts who have negative compound growth rate should improve the position that will help the growth of the state in the agriculture sector.

Table 6: Analysis of Inter District variation in Production of Oilseeds (000 tones)

Sr. No.	Districts	Production of Oilseeds	CGR
1	Ambala	156	-1.3%
2	Panchkula	46	2.3%
3	Yamunanagar	136	7.3%
4	Kurukshetra	309	12.7%
5	Kaithal	81	-4.3%
6	Karnal	93	0.0%
7	Panipat	50	0.0%
8	Sonipat	154	-3.1%
9	Rohtak	820	-7.4%
10	Jhajjar	748	-1.1%
11	Faridabad	179	-13.6%
12	Palwal	34	-17.8%
13	Gurgaon	1136	-5.3%
14	Mewat	388	-0.6%
15	Rewari	2408	2.6%
16	Mahendergarh	2729	3.1%
17	Bhiwani	4018	5.4%
18	Jind	360	-6.1%
19	Hissar	2107	0.0%
20	Fatehabad	344	1.0%
21	Sirsa	1740	0.9%

Source: Statistical Abstract of Haryana (Different Issue)

Table No. 6 brings out the inter-district variation in the production of oilseeds. The compound growth rate ranges from 12.7 percent to -17.8 percent. It is positive in all districts of the study except the ten districts. The district Kurukshetra has noticed highest growth rate 12.7 percent per annum in the productivity of oilseeds and lowest was recorded to be i.e. -17.8 percent per annum by the district Palwal. District Karnal, Panipat and Hisar have registered zero percent growth rate per annum in the production of oilseeds. We conclude that this position is not proper as per reflects the growth of the economy.

Conclusion

The present paper concludes that the compound growth rate is found positive in all districts of the study except districts Panipat, Rohtak, Faridabad, Gurgaon, Mewat, Rewari and Hisar. The district Sonepat has noticed highest growth rate 3.5 percent per annum area of cereals and lowest was recorded to be -5.3 percent per annum by the district Faridabad. The compound growth rate of the area under pulses is found negative in all districts of the present study. The district Rewari, Fatehabad and Rohtak have registered lowest growth rate per annum. The compound growth rate of the area under the oilseeds is reported negative in all the districts of the study except districts Kurukshetra, Karnal, Jhajjar, Rewari and Mahendergarh. The district Kurukshetra has registered the highest growth rate 1.9 percent per annum area of oilseeds and lowest was recorded to be -18.7 percent per annum by the district Faridabad. District Karnal and Mahendergarh show the same growth rate to be 0.5 percent and 0.7 percent per annum in the area of oilseeds. The variation of production of cereals is reported positive in all districts of the study except Kurukshetra, Rohtak, Faridabad and Gurgaon. The district Bhiwani has noticed highest growth rate 5.3 percent per annum in the production of cereals and district Faridabad shows the lowest growth rate i.e. -3.4 percent per production of cereals. District Karnal and Rewari show the same growth rate i.e. 2.5 percent per annum in the production of cereals. The compound growth rate of the production of pulses is found negative in all the district of study except Panchkula, Yamuna Nagar, Kurukshetra, Karnal, Panipat, Jhajjar and Mewat. The district Palwal has noticed highest growth rate 24.6 percent per annum in the production of pulses and lowest was recorded to be -61 percent per annum by the district Mahendergarh. District Kaithal and Rewari show the same growth rate namely -6.4 percent per annum in the production of pulses. The compound growth of the production of oilseeds is reported positive in all districts of the study except the ten districts. The district Kurukshetra has noticed highest growth rate 12.7 percent per annum in the productivity of oilseeds and lowest was recorded to be i.e. -17.8 percent per annum by the district Palwal. District Karnal, Panipat and Hisar have registered zero percent growth rate per annum in the production of oilseeds.

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