



A study on growth of major agricultural crops in Jammu and Kashmir

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Abstract

Agriculture sector is considered as backbone of Indian Economy and around 50 per cent work force is still dependent on Agriculture for their livelihood. Agriculture occupies an important status in economy of Jammu and Kashmir. It supports about 70 per cent of the people's livelihood in the state. The state comprises of three regions namely Jammu, Kashmir and Ladakh having distinct geographical outlook and agro climatic zones. Rice, maize and wheat are the major crops in the state. Jammu and Kashmir also has the honor of being amongst the world's few places where quality saffron is cultivated. The production of three major crops rice, maize and wheat in Jammu and Kashmir is more than 90 per cent of the total food grain production of all crops and rest is shared by other cereals and pulses. The percentage contribution of agriculture & allied sector was 21.19 per cent in 2011-12, against, the corresponding share of 28.06 per cent, registered in 2004-05 at constant prices. The Growth rate in this sector, particularly in the crop sub sector is on decline. The share of agricultural and allied activities to Gross State Domestic Product (GSDP) is continuously decreasing. Its share has declining from 56.64 per cent in 1970-71 to 19.96 per cent in 2013-14. The average growth of agricultural production in last seven years was only 2.28 per cent which is far from satisfactory. The objective of the study was to analyze the growth of major agricultural crops in Jammu and Kashmir. The relevant information was gathered through secondary data. Compound, Annual Growth rate and Covariance are used for the study. The result of the study shows that there are decreasing trends in area, production and yield of these major crops in the Jammu and Kashmir.

Keywords: agricultural crops, growth, compound growth rate and covariance

Introduction

Agriculture sector is considered as backbone of Indian economy and around 50 per cent work force is still dependent on agriculture for their livelihood. For ensuring inclusive growth, agriculture needs to be given priority for any reform agenda in order to make adequate depression on poverty reduction and providing food security to the people. Livelihood and food security of large number of low income and other disadvantaged sections of society is directly involved and its performance assumes great significance in view of National Food Security Mission. It has been realized that for achieving 9 per cent growth of the economy, the agriculture must grow at least by 4 per cent. Presently agricultural sector (including livestock) contributes 14 per cent of Gross Domestic Product (GDP) in the country. The production of three major crops paddy, maize and wheat in Jammu and Kashmir is more than 90 per cent of the total food grain production of all crops and rest is shared by other cereals and pulses. The percentage contribution of agriculture & allied sector was 21.19 per cent in 2011-12, against, the corresponding share of 28.06 per cent, registered in 2004-05 at constant prices. The share of agricultural and allied activities to Gross State Domestic Product (GSDP) is continuously decreasing. Its share has declining from 56.64 per cent in 1970-71 to 19.96 per cent in 2013-14. The average growth of agricultural production in last seven years was only 2.28 per cent which is far from satisfactory (7 July, 2015, Early Times). The productivity of land as compared to its potential is less due to low NPK consumption. The consumption of NPK in 2011-12 per hectare was 87.40 kg compared to 243.56 kg per hectare in Punjab and 144.33 kg per

hectare in the country. The average yield rate of food grains in last 3 years was around 15.5 quintals per hectare which is again less when compared to national level (19 quintals) per hectare (7 July, 2015 Early Times).

Objectives

The major objective of the study is to analyze the growth of area, production and yield of major agricultural crops (Rice, Maize and Wheat) in Jammu and Kashmir during the period from 2003-04 to 2016-17.

Methodology

This study is completely depends upon secondary data. The secondary data were collected from Directorate of Economics and Statistics. The major agricultural crops i.e. rice, maize and wheat were selected due to the highest production in the state which contributes more than 90 per cent of all crops in the state. Compound Growth Rate, Annual Growth Rate and Covariance were used to find out the growth of rice, maize and wheat crops in Jammu and Kashmir during the period from 2003-04 to 2016-17.

Compound Growth Rate

The compound growth rate of area, production and productivity were estimated with the use of following exponential function:

$$Y = a b^t \dots\dots\dots (1)$$

Where,

Y = the area / production / productivity

t = time variable in year

a = constant and

b = (1 + i)

Where, i = Compound Growth Rate

The equation (1) takes the following linear form by taking logarithms to the base of both sides of the equation

Log = loga + logb

Compound growth rate is computed using the following formula.

Compound Growth Rate (CGR) = $\text{Antilog}(\log n b - 1) \times 100$

Coefficient of variation

$$CV = \frac{\sigma}{\mu} \times 100$$

CV = Coefficient of variation

σ = Population standard deviation

μ = Population mean

Result and Discussion

The collected data were analyzed and present in the tabular form.

The results of the study are given in the following headings;

Table 1: Area, production and Yield of rice in Jammu and Kashmir from 2003-04 to 2012-13

Year	Area Thousand hectares	AGR	Production Thousand Quintals	AGR	Yield quintal/hect	AGR
2003-04	259.82		5048		1942.88	
2004-05	250.04	-3.76	4928	-2.38	1970.88	1.44
2005-06	259.01	3.59	5574	13.11	2152.04	9.19
2006-07	252.52	-2.51	5546	-0.5	2196.26	2.05
2007-08	263.25	4.25	5620	1.33	2134.85	-2.81
2008-09	257.63	-2.13	5637	0.3	2188.02	2.49
2009-10	259.89	0.88	5011	-11.11	1928.12	-11.88
2010-11	261.35	0.56	5077	1.32	1942.61	0.75
2011-12	262.17	0.31	5447	7.29	2077.66	6.95
2012-13	261.66	-0.19	5456	0.17	2085.15	0.36
2013-14	271.49	3.76	5567	2.03	20.51	-99.02
2014-15	276.42	1.82	3450	-38.02	12.48	-39.15
2015-16	304.50	10.16	6466	87.42	21.24	70.19
2016-17	283.44	-6.92	5725	-11.46	20.20	-4.90
CGR	0.98		0.02		-37.39	
C.V	5.34		12.5		65.08	

Source: Digest of Statistic 2016-17 Directorate of Economics & Statistics Government of J&K

Table 1 shows the area, production and yield of rice in Jammu and Kashmir from 2003-04 to 2016-17. The area had increased from 259.82 thousand hectares in 2003-04 to 283.44 thousand hectares in 2016-17. The highest Annual Growth Rate of area under rice was 10.16 per cent in 2015-16 and lowest in 2016-17 (-6.92%). The Compound Growth Rate of area under rice was 0.98 per cent per annum and coefficient of variation (C.V) was 5.34 during the reference period. The production of rice was increased from 5048 thousand quintals in 2003-04 to 5725 thousand quintals in 2016-17. The highest Annual Growth rate of

production of rice was 87.42 per cent in 2015-16 and lowest in 2016-17 (-11.46%). The Compound Growth Rate was 0.02 per cent per annum and C.V was 12.5 during the same period.

The yield of rice had decreased from 1942.88 quintals per hectare in 2003-04 to 20.20 quintals per hectare in 2016-17. The highest Annual Growth rate of yield of rice was 70.19 per cent in 2015-16 and lowest in 2013-14 (-99.02%). The Compound Growth rate was -37.39 per cent per annum and C.V was 65.08 during the reference period. The table shows that there are decreasing trend in area, production and yield of rice in Jammu and Kashmir.

Table 2: Area, production and Yield of Maize in Jammu and Kashmir from 2003-04 to 2012-13

Year	Area Thousand hectares	AGR	Production Thousand quintals	AGR	Yield Quintal/hect	AGR
2003-04	321.19		5326		1658.21	
2004-05	322.7	0.47	4922	-7.59	1525.26	-8.02
2005-06	320.92	-0.55	4535	-7.86	1413.12	-7.35
2006-07	323.6	0.84	4869	7.36	1504.64	6.48
2007-08	302.44	-6.54	4745	-2.54	1571.09	4.42
2008-09	315.81	4.42	6331	33.42	2004.69	27.6
2009-10	311.02	-1.52	4870	-23.08	1565.82	-21.89
2010-11	308.22	-0.9	5277	8.36	1712.09	9.34
2011-12	314.03	1.89	4745	-10.08	1511	-11.75
2012-13	310.91	0.99	5123	7.97	1647.74	9.05
2013-14	298.68	-3.93	5305	3.55	17.76	-98.92
2014-15	28.87	-90.33	3600	-32.14	12.04	-32.21
2015-16	293.86	225.11	5237	45.47	17.82	48.01
2016-17	295.17	0.45	5411	3.32	18.33	2.86

CGR	-5.19		-0.22		-32.97	
C.V	26.15		11.88		65.76	

Source: Digest of Statistic 2016-17 Directorate of Economics & Statistics Government of J&K

Table 2 pertains the data of area, production and yield of maize in Jammu and Kashmir during the period from 2003-04 to 2016-17. The area under maize had decreased from 321.19 thousand hectares in 2003-04 to 295.17 in 2016-17. The highest Annual Growth Rate of area under maize was 225.11 per cent in 2015-16 and lowest in 2014-15 (-90.33%). The Compound Growth Rate was -5.19 per cent per annum and C.V was 26.15 during the reference period. The production of maize had increased from 5326 thousand quintals in 2003-04 to 5411 thousand in 2016-17.

The highest Annual Growth was 45.47 per cent in 2015-16 and lowest in 2014-15 (-32.14%). The Compound Growth rate was (-0.22) per cent per annum and C.V was 11.38 during the same period. The yield of maize had decreased from 1658.21 quintals per hectare in 2003-04 to 18.33 quintals per hectare in 2016-17. The highest Annual Growth Rate was 27.6 per cent in 2008-09 and lowest in 2013-14 (-98.92%). The Compound Growth Rate was -32.97 per cent per annum and C.V was 65.76 during the reference period.

Table 3: Area, production and Yield of Wheat in Jammu and Kashmir from 2003-04 to 2012-13

Year	Area Thousand hectares	AGR	Production Thousand quintals	AGR	Yield Quintal/HEC	AGR
2003-04	254.66		4595		1804.37	
2004-05	252.78	-0.74	4782	4.07	1891.76	0.85
2005-06	252.83	0.02	4575	-4.33	1809.51	-4.35
2006-07	266.11	5.25	4983	8.92	1872.53	3.48
2007-08	278.3	4.58	4959	-0.48	1781.89	-4.84
2008-09	278.72	0.15	4835	-2.5	1734.71	-2.65
2009-10	288.94	3.67	2899	-40.04	1003.32	-42.16
2010-11	290.72	0.62	4463	53.95	1535.15	53.01
2011-12	296.17	1.87	5003	12.1	1689.23	10.04
2012-13	292.38	-1.28	4646	-7.14	1589.03	-5.93
2013-14	292.07	-0.11	6018	29.53	20.61	-98.70
2014-15	320.97	9.89	3143	-47.77	9.79	-52.50
2015-16	281.87	-12.18	5449	73.37	19.33	97.45
2016-17	290.30	2.99	5485	0.66	18.90	-2.22
CGR	1.36		0.42		-33.91	
C.V	6.86		17.63		67.19	

Source: Digest of Statistic 2016-17 Directorate of Economics & Statistics Government of J&K

Table 3 contains the data on area, production and yield of wheat in Jammu and Kashmir during the period from 2003-04 to 2012-13. The area under wheat had increased from 254.66 in 2003-04 thousand hectares to 290.30 in 2016-17. The highest Annual Growth of area under wheat was 9.89 per cent in 2014-15 and lowest in 2015-16 (-12.18%). The Compound Growth Rate was 1.36 per cent per annum and C.V was 6.86 during the reference period.

The production of wheat had increased from 4595 thousand quintals in 2003-04 to 5485 thousand quintals in 2016-17. The highest Annual Growth Rate was 73.37 per cent in 2015-16 and lowest in 2014-15 (-47.77%). The Compound Growth rate was 0.42 per cent and C.V was 17.63 during the same period.

The yield of wheat has decreased from 1804.37 quintals per hectare in 2003-04 to 18.90 quintals per hectare in 2016-17. The highest Annual Growth Rate was 97.45 per cent in 2015-16 and lowest in 2013-14 (-98.70%). The Compound Growth Rate was -33.91 per cent per annum and instable C.V was 67.19 during the reference period.

Findings of the study

1. The area and production of rice showed decline trend and the CGR was less than 1 per cent and but the yield was found negative trend in growth rate.
2. The area, production and yield of maize also showed decline trend. The CGR was negative in case of area (-5.19%), production (-0.22%) and yield (-32.97%).

3. The area, production and yield of wheat showed decreasing trend. The CGR was positive in area (1.36%), production (0.42%) and negative in yield (-33.91%)

Conclusion

Agriculture sector is considered as backbone of Indian economy and around 50 per cent work force is still dependent on agriculture for their livelihood. Agriculture occupies an important status in the economy of Jammu and Kashmir. It supports about 70 per cent of the people's livelihood in the state. Rice, maize and wheat are the major crops in the state. The production of these three major crops paddy, maize and wheat in Jammu and Kashmir is more than 90 per cent. The result of the study showed that there is decreasing trend in area, production and yield of these major crops in the Jammu and Kashmir during the study period and Hence the government should give more importance to increase the production of all these major crops with special concern.

Suggestion

Even though the high yield variety seeds are used everywhere, unfortunately, the growth in production and yield of rice, maize and wheat crops showed a declining trend in Jammu and Kashmir. So there is a need to increase production and productivity of crops by providing proper infrastructure, subsidies, training and loan facilities to crop growers.

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