

The Growth and Trend of Food Grains Production in the Post Liberalization Period

Krishnan Kutty. V

Assistant Professor of Economics, Government College Kodanchery – Kozhikode – Kerala

Abstract

Around 17% of the country's GDP and more than 60% of the workforce are employed in agriculture, which contributes significantly to the Indian economy. The goal of the study is to analyse the growth and trend of food grain production in the agricultural sector. To achieve this goal, we used secondary data, which were collected from the Ministry of Agriculture and Farmers' Welfare of the Government of India and the Reserve Bank of India's Handbook of Statistics on the Indian Economy-2020-21. Rice production decreased from this period's 746.8 to 1044.1 tonnes, wheat increased from 556.9 to 922.9 tonnes, coarse cereals decreased from 259.9 to 385.2 tonnes, pulses increased from 120.2 to 163.5 tonnes, total cereals decreased from 1563.6 to 2352.2 tonnes, and total food grains decreased from 1683.8 to 2515.7 tonnes. There were 896.652 tonnes of rice, 747.248 tonnes of wheat, 349.008 tonnes of coarse cereals, 144.992 tonnes of pulses, 1992.912 tonnes of total cereals, and 2137.908 tonnes of total food grains produced in the agricultural sector. Rice has a compound annual growth rate of 0.015, wheat has a rate of 0.022, coarse cereals have a rate of 0.017, pulses have a rate of 0.0134, overall cereals have a rate of 0.017, and total food grains have a rate of 0.0176, respectively. the trend line for rice, wheat, coarse cereals, and pulses; rice's growth rate was 12.942 and its intercept was 25039, indicating a strong positive link between rice production and these variables.

Keywords: Agriculture, Production, Cereals, Food Grains.

Introduction

More than 60% of the population is employed in agriculture, which contributes significantly to the Indian economy by making up more than 17% of the nation's GDP. Almost 58 percent of Indians depend mostly on agriculture for their income. Agriculture and associated sectors make up 20.19 percent of GDP on a sector-by-sector basis. For India's enormous population, the agricultural sector provides food security and nutrition. It also provides vast quantities of raw materials for developing the nation's industrial foundation and producing surpluses for export. Improved irrigation systems, pre-monsoon rainfall, the introduction of new technology, investment, mechanization, seeds, pricing policies, and other factors all led to the tremendous increase in food grain and commercial crop production. V.K. Mishra (2016) looked into how globalization has affected the area, production, and productivity of food grains in India. The research claims that the post-reform period had a detrimental effect on India's production, output, and productivity of food grains. The number of food grains produced has decreased together with the land used to grow them. In the study "Trends of Area, Production, and Productivity of Food Grain in the North Eastern States of India," Sharma, A. (2013) found encouraging trends in food grain yield and production in the North Eastern states. Elumalai Kannan's "Trends in India's Agricultural Development and its Factors" (2011). The study found that India's cropping patterns have drastically shifted over time, with a pronounced movement away from the cultivation of food grains and towards commercial crops. Throughout the study period, there was a 13.3% decrease in the cultivation of coarse grains. Around this time, the output and pulse area were not operating properly. Modern seed varieties, fertilizers, irrigation systems, and other elements all contributed to higher crop yields. Malik, Ruchi (2017) Food grain growth, volatility, and breakdown in India, even though the Indian economy is growing, because agriculture is the main source of income for the great majority of the population, India still has an agrarian economy. The area, production, and yield of food grains in India were examined in the current study using time series data from 2001-02 to 2015-16. According to the research, the increase in yield and/or area in India's food grains was responsible for the rise in production. The study also discovered that the area planted with food grains has grown throughout time, and this growth has been complemented by an increase in crop yield. It is crucial to use appropriate/alternative production technologies that will raise the productivity of food grains because it is not viable to increase the area over the long term. Rice production decreased from this period's 746.8 to 1044.1 tonnes, wheat increased from 556.9 to 922.9 tonnes, coarse cereals decreased from 259.9 to 385.2 tonnes, pulses increased from 120.2 to 163.5 tonnes, total cereals decreased from 1563.6 to 2352.2 tonnes, and total food grains decreased from 1683.8 to 2515.7 tonnes. The rate of growth in the production of rice was 39.8%, that of wheat was 65.7%, that of coarse cereals was 48.2% that of pulses was 36.02%, that of all cereals was 50.43, and that of all food grains was 49.40% over this time period. The rice had the biggest negative growth rate in the post-liberalization eras, with a simple growth rate of -23.06, followed by -10.17 in 2009-10 and -6.10 in 2004-05 periods. The smallest negative growth

was -0.06 in the years 2012–2013. The year 2003–2004 saw rice see the biggest positive increase, followed by 2005–2006 with 10.42 percent. Wheat's negative growth is -9.72 percent in 2014–15, which is higher than the -9.63 percent in 2002–03. Wheat output saw the highest growth rate in 1996–1997 (11.67%), followed by 9.91% in 1994–1995 and 9.73% in 2003–2004. The highest growth rate for coarse cereals was recorded in 2003–04 at 44.23 percent, with 40.78 percent and 29.36 percent following in 1992–93 and 2010–11. The two years with the largest negative percentages were 2002–03 (-21.88%) and 2009–10 (-16.21%). Overall cereal consumption increased positively, reaching a high of 21.16 percent in 2003–04 and a low of 11.21 percent in 2010–11. Pulses had growth at a rate of 33.96% in 2003–04, followed by 24.42% in 2010–11. The rate of increase of all food grains was found to be 21.98% in 2003–2004, and then 12.09% in 2010–2011. There were 896.652 tonnes of rice, 747.248 tonnes of wheat, 349.008 tonnes of coarse cereals, 144.992 tonnes of pulses, 1992.912 tonnes of total cereals, and 2137.908 tonnes of total food grains produced in the agricultural sector, respectively. Rice has a compound annual growth rate of 0.015, wheat has a rate of 0.022, coarse cereals have a rate of 0.017, pulses have a rate of 0.0134, overall cereals have a rate of 0.017, and total food grains have a rate of 0.0176, respectively. the trend line for rice, wheat, coarse cereals, and pulses; rice's growth rate was 12.942 and its intercept was 25039, indicating a strong positive link between rice production and these variables. The trend line for wheat output reveals a 14.717 growth rate with a 28746 intercept and a very high positive coefficient. During the post-liberalization period, the trend for coarse grains was 5.5826, with a 10839 intercept and a medium positive correlation coefficient, and the trend for pulses was 2.1855 growth with a 4234.8 intercept and a medium correlation coefficient. the overall production of food grains and cereals, as well as the increase in cereal production during the post-liberalization era, were 33.243, 64626 intercept, and a very high positive correlation coefficient. The trend line for all food grains had a slope of 35.429, a 69961 intercept, and a very high positive correlation coefficient of 0.8281.

Objective

To analyses the growth and the trend of food grains production in agricultural sector.

Methodology

The production of crops (in lakh tonnes) was collected from the Ministry of Agriculture and Farmers' Welfare of the Government of India and the Reserve Bank of India's Handbook of Statistics on the Indian Economy-2020-21 for the study. Secondary data were used to carry out the objectives of the production of food grains in India. The data covered several time periods associated with the post-new economic policy period in India, which ran from 1991–1992 to 2015–16. The average compound annual growth rate (CAGR) trend line was used to quantify, compare, and show the growth trend in agricultural production following the new economic policy in India.

Results and Discussion

Table 1: Agricultural Production of Food Grains

Year	Rice	Wheat	Coarse Cereals	Pulses	Total Cereals	Total Food Grains
1991-92	746.8	556.9	259.9	120.2	1563.6	1683.8
1992-93	728.6	572.1	365.9	128.2	1666.6	1794.8
1993-94	803	598.4	308.2	133	1709.6	1842.6
1994-95	818.1	657.7	298.8	140.4	1774.6	1915
1995-96	769.8	621	290.3	123.1	1681.1	1804.2
1996-97	817.3	693.5	341.1	142.4	1851.9	1994.3
1997-98	825.4	663.5	304	138.3	1792.9	1931.2
1998-99	860.8	712.9	313.3	149.1	1887	2036.1
1999-00	896.8	763.7	303.4	134.1	1963.9	2098
2000-01	849.8	696.8	310.8	110.7	1857.4	1968.1
2001-02	933.4	727.7	333.7	133.7	1994.8	2128.5
2002-03	718.2	657.6	260.7	111.3	1636.5	1747.8
2003-04	885.3	721.6	376	149.1	1982.8	2131.9
2004-05	831.3	686.4	334.6	131.3	1852.3	1983.6

2005-06	917.9	693.5	340.7	133.8	1952.2	2086
2006-07	933.6	758.1	339.2	142	2030.8	2172.8
2007-08	966.9	785.7	407.5	147.6	2160.1	2307.8
2008-09	991.8	806.8	400.4	145.7	2199	2344.7
2009-10	890.9	808	335.5	146.6	2034.5	2181.1
2010-11	959.8	868.7	434	182.4	2262.5	2444.9
2011-12	1053	948.8	420.1	170.9	2422	2592.9
2012-13	1052.4	935.1	400.4	183.4	2387.9	2571.3
2013-14	1066.5	958.5	432.9	192.5	2457.9	2650.4
2014-15	1054.8	865.3	428.6	171.5	2348.7	2520.2
2015-16	1044.1	922.9	385.2	163.5	2352.2	2515.7

Source: Reserve Bank of India's handbook of statistics on the Indian economy.

Table 1 shows that the production of agricultural food grains from the post liberalization periods, the rice production changed from 746.8 to 1044.1 from this period, wheat was 556.9 to 922.9, coarse cereals changed from 259.9 to 385.2, the pulses were 120.2 to 163.5, the total cereals were 1563.6 to 2352.2 and total food grains changed from 1683.8 to 2515.7. The growth rate of rice production during this period were 39.8 percent, the growth of wheat production was 65.7percent, the coarse cereals were 48.2 percent, pulses were 36.02 percent, the total cereals were 50.43 percent and the total food grains were 49.40 percent respectively.

Table 2: Simple Growth Rate of Food Grains – Agricultural Production

Year	Growth Rate of Rice	Growth Rate of Wheat	Growth Rate of Coarse Cereals	Growth Rate of Total Cereals	Growth Rate of Pulses	Growth Rate of Total Food Grains
1991-92	-	-	-	-	-	-
1992-93	-2.44	2.73	40.78	6.59	6.66	6.59
1993-94	10.21	4.60	-15.77	2.58	3.74	2.66
1994-95	1.88	9.91	-3.05	3.80	5.56	3.93
1995-96	-5.90	-5.58	-2.84	-5.27	-12.32	-5.79
1996-97	6.17	11.67	17.50	10.16	15.68	10.54
1997-98	0.99	-4.33	-10.88	-3.19	-2.88	-3.16
1998-99	4.29	7.45	3.06	5.25	7.81	5.43
1999-00	4.18	7.13	-3.16	4.08	-10.06	3.04
2000-01	-5.24	-8.76	2.44	-5.42	-17.45	-6.19
2001-02	9.84	4.43	7.37	7.40	20.78	8.15
2002-03	-23.06	-9.63	-21.88	-17.96	-16.75	-17.89
2003-04	23.27	9.73	44.23	21.16	33.96	21.98
2004-05	-6.10	-4.88	-11.01	-6.58	-11.94	-6.96
2005-06	10.42	1.03	1.82	5.39	1.90	5.16
2006-07	1.71	9.32	-0.44	4.03	6.13	4.16
2007-08	3.57	3.64	20.14	6.37	3.94	6.21
2008-09	2.58	2.69	-1.74	1.80	-1.29	1.60
2009-10	-10.17	0.15	-16.21	-7.48	0.62	-6.98
2010-11	7.73	7.51	29.36	11.21	24.42	12.09
2011-12	9.71	9.22	-3.20	7.05	-6.30	6.05

2012-13	-0.06	-1.44	-4.69	-1.41	7.31	-0.83
2013-14	1.34	2.50	8.12	2.93	4.96	3.08
2014-15	-1.10	-9.72	-0.99	-4.44	-10.91	-4.91
2015-16	-1.01	6.66	-10.13	0.15	-4.66	-0.18

Source: Reserve Bank of India's handbook of statistics on the Indian economy.

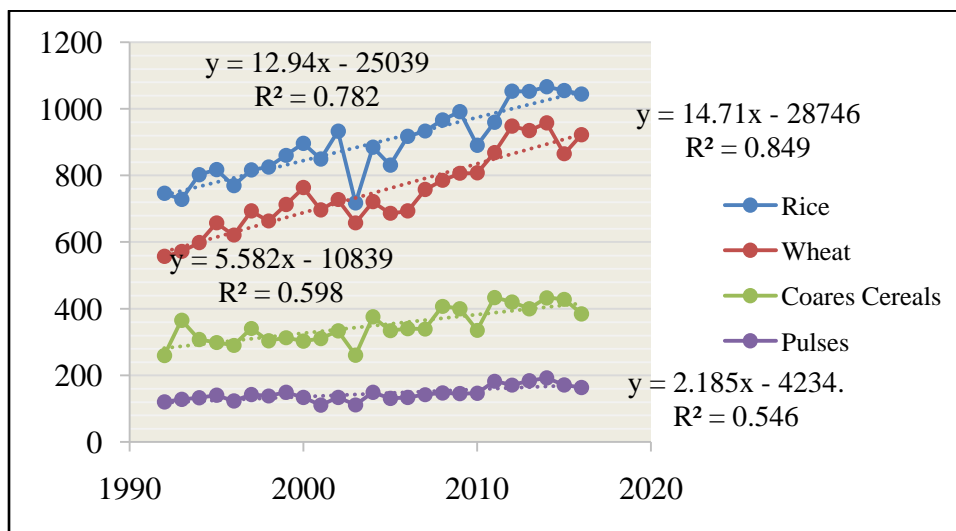
Table 2 indicates the simple growth rate of the food grains in the post liberalization periods, the highest negative growth rate of the rice was found in 2002-03 with -23.06, followed by -10.17 in 2009-10 and -6.10 in 2004-05 periods. The very lowest negative growth was in -0.06 in 2012-13. The highest positive growth for rice is 23.27 percent in 2003-04, followed by 10.42 percent in 2005-06. The negative growth of wheat is -9.72 percent in 2014-15, followed by -9.63 percent in 2002-03. The highest growth rate in wheat production were found in 1996-97 with 11.67 percent, followed by 9.91 percent in 1994-95 and 9.73 percent in 2003-04. The growth rate of coarse cereals, the highest were found in 2003-04 with 44.23 percent, followed by 40.78 percent in 1992-93 and 29.36 percent in 2010-11. The highest negative were -21.88 percent 2002-03, followed by -16.21 percent in 2009-10. The growth rate of total cereals was positive with high in 21.16 percent in 2003-04, followed by 11.21 percent in 2010-11. The rate of growth of pulses were 33.96 percent in 2003-04, followed by 24.42 percent in 2010-11. The rate of growth of total food grains were found in 21.98 percent in 2003-04, followed by 12.09 percent in 2010-11 periods.

Table 3: Average and Compound growth Rate of Food Grains

Year	Rice	Wheat	Coarse Cereals	Pulses	Total Cereals	Total Food Grains
Average (Mean)						
1991-2016	896.652	747.248	349.008	144.992	1992.912	2137.908
Compound Annual Growth Rate						
1991-2016	0.014677	0.022205	0.017254	0.013466	0.017913	0.01761

Source: Reserve Bank of India's handbook of statistics on the Indian economy.

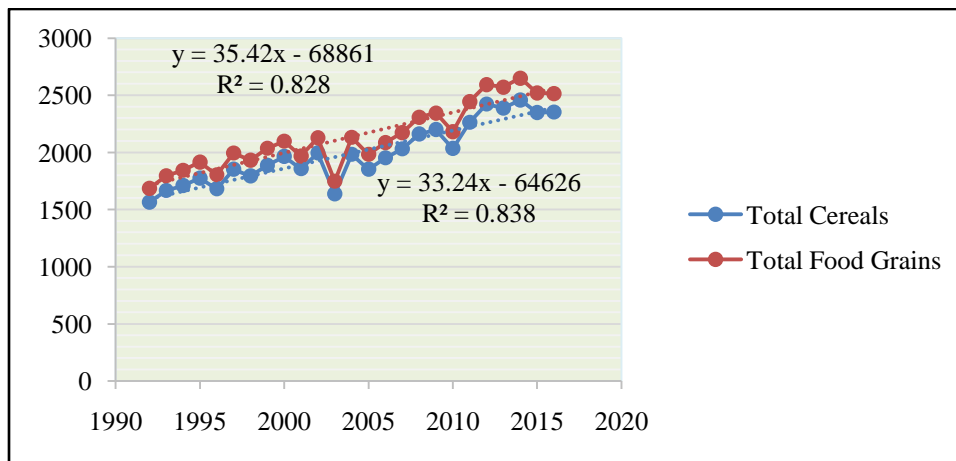
Table 3 shows that the average and compound growth rate of food grains production in agricultural sector; the rice were 896.652, wheat with 747.248, coarse cereals with 349.008, the pulses with 144.992, total cereals 1992.912 and total food grains were 2137.908 respectively. The compound annual growth rate of rice is 0.015, wheat with 0.022, coarse cereals with 0.017, pulses with 0.0134, total cereals with 0.017 and the total food grains were 0.0176 respectively.



Source: Reserve Bank of India's handbook of statistics on the Indian economy.

Figure 1: Trend Line of Selected Food Grains

Figure 1 represent the trend line of the rice, wheat, coarse cereals and the pulses; the growth rate of rice were 12.942 and the intercept were 25039 with high positive relationship of the rice production. The trend line of the wheat production shows that the 14.717 growth with 28746 intercept and the coefficient were very high in positive. The trend of coarse cereals was 5.5826 with 10839 intercept and medium positive correlation coefficient and the trend of pulses were 2.1855 growth with 4234.8 of the intercept and medium correlation coefficient during the post liberalization period.



Source: Reserve Bank of India's handbook of statistics on the Indian economy.

Figure 2: Trend line of total cereals and the total food grains Production

Figure 2 represent the total cereals and the total food grains production, the growth of the total cereals of the post liberalization period were 33.243 with 64626 intercept and very high positive correlation coefficient. The trend line of the total food grains was 35.429 with 69961 intercept and 0.8281 with very high positive correlation coefficient.

Conclusion

Rice production and its growth rate during this period were both at 39.8%, while wheat production increased by 65.7%, coarse cereals by 48.2%, pulses by 36.02%, total cereals by 50.43%, and food grains by 49.40%. These figures represent production of agricultural food grains from the post-liberalization periods. The highest growth rate for coarse cereals was recorded in 2003–04 at 44.23 percent, with 40.78 percent and 29.36 percent following in 1992–93 and 2010–11. The two years with the largest negative percentages were 2002–03 (-21.88%) and 2009–10 (-16.21%). Overall cereal consumption increased positively, reaching a high of 21.16 percent in 2003–04 and a low of 11.21 percent in 2010–11. Pulses had growth at a rate of 33.96% in 2003–04, followed by 24.42% in 2010–11. Rice has a compound annual growth rate of 0.015, wheat has a rate of 0.022, coarse cereals have a rate of 0.017, pulses have a rate of 0.0134, overall cereals have a rate of 0.017, and total food grains have a rate of 0.0176, respectively. The trend line for rice, wheat, coarse cereals, and pulses; rice's growth rate was 12.942 and its intercept was 25039, indicating a strong positive link between rice production and these variables. The trend line for wheat output reveals a 14.717 growth rate with a 28746 intercept and a very high positive coefficient. During the post-liberalization period, the trend for coarse grains was 5.5826, with a 10839 intercept and a medium positive correlation coefficient, and the trend for pulses was 2.1855 growth with a 4234.8 intercept and a medium correlation coefficient. The overall production of food grains and cereals, as well as the increase in cereal production during the post-liberalization era, were 33.243, 64626 intercept, and a very high positive correlation coefficient. The trend line for all food grains had a slope of 35.429, a 69961 intercept, and a very high positive correlation coefficient of 0.8281.

References

- [1]. Agricultural Statistics at Glance. Government of India, Ministry of Agriculture & Farmers Welfare, New Delhi, 2020-21.
- [2]. Borthakur, A., and P. Singh. (2012). "Agricultural research in India: An exploratory study" *International Journal of Social Science & Interdisciplinary Research*, Vol.1 Issue 9, September 2012, ISSN 2277 3630.

- [3]. Gangwar, B. (1999). "Technical Advances for Increasing Crop Productivity in Diara Areas", *Agricultural Situation in India*, Vol.LV, No. 10, pp:615-620. Government of India. Economic Survey of India, Various Issues, Ministry of Finance, New Delhi.
- [4]. Malik, Ruchi. (2017). "Food grains in India: Growth, instability and decomposition analysis", *International Journal of Multidisciplinary Research and Development*, Volume 4; Issue 6; June 2017; Page No. 304-308.
- [5]. Kumar, P., and S. Mittal. (2006). "Agricultural productivity trends in India: Sustainability issues", *Agriculture economics research review*, Vol.19, pp 71-88.
- [6]. Ruchi. (2014). "A Study on Agricultural Credit System in India". *International Journal of Business, Management & Social Sciences*. 2 (1):41 -45. ISSN: 2249 -7463.
- [7]. Sharma, H. R., Kamlesh Singh and Shanta Kumari. (2006). "Extent and Source of Instability in Food Grains Production in India", *Indian Journal of Agricultural Economics*, Vol. 61, No. 4, pp: 647-666.
- [8]. Tripathi, A., and A R. Prasad. (2009). "Agricultural development in India since independence: A study on progress, performance and determinants" *journal of emerging knowledge on emerging markets*, Vol. 1, issue 1, pp 63-92.