2016

OCT -NOV

Aarhat Multidisciplinary International Education Research Journal (AMIERJ)

(Bi-Monthly)
Peer-Reviewed Journal
Impact factor: 2.125

VOL – V Issues: V

Chief-Editor:

Ubale Amol Baban

Aarhat Multidisciplinary International Education Research Journal (AMIERJ)
(Bi-Monthly) Peer-Reviewed Journal Vol No V Issues V
OCT-NOV 2016 ISSN 2278-5655

FOODGRAINS TRENDS IN INDIA, 1991-2016: PRODUCTION AND PRODUCTIVITY

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Abstract:

Economic reforms started in 1991 in India, but in agriculture sector new economic policy initiated after some years. There have been a rising trend in foodgrains production and productivity. But slow growth rate in foodgrains production and productivity. There were almost stagnant in increase in area under foodgrains cultivation. There are high potential in foodgrains productivity enhancement.

Introduction

The economic reforms was introduced in India in 1991 with the two main objectives- macroeconomic stabilisation and structural reform. To achieve these objectives government framed policies to reduce current account deficit and increase efficiency in resource allocation through more participation of private players. (Joshi and Little, 1996). The reforms began with the new economic policies in various sectors but much less was done in the agriculture sector. The trade in the agricultural sector was controlled by the government. The Irrigation and electricity were remain subsidised. And the price of the foodgrains were regulated by the government (Joshi and Little, 1996). Later the government brought reform policy with New Agriculture Policy, 2000 with new initiatives in agriculture sector- i) to achieve a growth rate more than 4 percent per annum; ii) efficient use of resources and conservation of soil, water and bio-diversity; iii) growth which is widespread across regions and farmers; demand driven agricultural growth; technologically, environmentally and economically sustainable growth; incentives for agriculture; investment in agriculture; institutional restructure; risk management and reforms in management (Thamarajakshi, 2000). This policy was in the line of neo-liberal policy, in which less participation of government in agricultural activities and more role of private players, decontrol of price of agricultural products, withdrawal of subsidies. The government also opened agriculture sector for the international market. Thus new policy exposed

agriculture sector to compete in free market without much support from the government. Hence agriculture sector have been facing new challenges and opportunities. There are debates on the impact of economic reforms in foodgrains production. Some suggests that neo-liberal policy may have adverse effect on agriculture sector. This adverse effect will impact farmers and that will lead to decrease in foodgrains production (Sen and Nayyar, 1997). On the contrary, some suggests that economic reforms provides better opportunities through access of better technologies, superior quality of seeds, bigger markets, etc. Thus improvement in the foodgrains production (Little and Joshi, 1996).

Agriculture sector plays significant role in Indian economy. The Indian economy very much depend on the performance of agriculture sector. There are relation between agriculture sector and other sectors in the factor and product markets. Agriculture supply major wage good as food and raw materials in the economy. Agriculture sector also provides market for the non-agricultural products and services. Due to inter-sectoral relationships agricultural prices can lead to trend in general price level and have impact on real wages of workers (Thamarajakshi, 2000). In India about half of the population for their livelihood depend on agriculture and allied activities. It provides employment to 48.9 percent of the workforce and contributes 17.4 percent Gross Domestic Product (GDP) (Economic Survey 2015-16). New policy initiatives for the agriculture sector may have significant effect both in the short and long run. In the agriculture sector among various agricultural products foodgrains are more important for the entire population because it is mainly used as food. Hence impact on real wages and price trend. After completion of twenty-five years of reforms it becomes important to examine the impact of reforms on the trends of foodgrains production.

Methodology:

Simple statistical tools and graphical methods are used for the present study. Three years moving average is applied in the time series data. For the growth rate formula is $rowth\ rate = (Q_{t+1} - Q_t)/Q_t$, where Q is quantity and t is time.

Data:

In the empirical analysis the study uses the secondary sources of data published by Reserve Bank of India (RBI) for the period of 1991-92 to 2015-16. The data is collected from RBI website for all India level and then compiled.

Assessment of Trends in Foodgrains Production:

The character of agricultural production is fluctuating, so the production may decrease or increase in the successive years (Dantwala, 1959). Therefore high fluctuations may not be able to get the right trends of foodgrains production. To reduce the effect fluctuation on trend three years moving average values have been used for study. Post-1991 the trend of foodgrains production have been positive with fluctuation. The production of foodgrains increased from 177.37 million tonnes in 1992-93 to 256.43 million tonnes in 2014-15 (see Table-1). The average growth rate of foodgrains production was 1.73 percent during 1992-93 to 2014-15. But the average growth rate of all the four major crops were not same. In 1992-93 rice- 75.95 million tonnes, wheat- 57.58 million tonnes, coarse cereals- 31.13 million tonnes and pulses- 12.71 million tonnes. But in 2014-15 rice production was 105.48 million tonnes, wheat- 91.96 million tonnes, coarse cereals- 41.36 million tonnes and pulses- 17.62 million tonnes. During 1992-93 to 2014-15 average growth rate of rice production was 1.55 percent, wheat 2.19 percent, coarse cereals 1.38 percent and pulses 1.60 percent. For the said period average growth rate of production of rice, wheat, coarse cereals and pulses were not same. During 1993-94 to 2003-04 three years moving average growth rate of rice was 0.65 percent, wheat was 1.68 percent, coarse cereals was 0.44 percent and pulses was 0.37 percent. But through 2004-05 to 2014-15 average per annum growth rate was much higher than the earlier period: rice 2.45 percent, wheat 2.69 percent, coarse cereals 2.32 percent and pulses 2.82 percent (see, Table-3). The comparison between the above two periods shows that in the second period the growth rate of production of all the four crops are much higher than the first period of reforms (see, Figure-3). But the growth rate of food production have been fluctuating as it is one of the character of agriculture sector. For instance, all the four crops had significant negative growth rate in 1995-96, 2002-03 and 2004-05. Among

these 2002-03 had one of the worst performance in this period. The fall in foodgrains production was -17.89 percent in comparison to previous year. Over the period among these four crops generally fluctuations in the growth rate of pulses production have been worst (see, Figure-2). The fluctuations in the growth rate of foodgrains production have been reduced 2003-04 onwards, except in 2009-10 growth rate of foodgrains production was -6.98 percent (see, Table-2). Thus the fluctuations in the foodgrains production is gradually slowing down.

Table-1

Foodgrains production in India (in Million tonnes)
3 Years Moving Average

Year	Rice	Wheat	Coarse cereals	Pulse	Total foodgrains
1992-93	75.95	57.58	31.13	12.71	177.37
1993-94	78.32	60.94	32.43	13.39	185.08
1994-95	79.70	62.57	29.91	13.22	185.39
1995-96	80.17	65.74	31.01	13.53	190.45
1996-97	80.42	65.93	31.18	13.46	190.99
1997-98	83.45	69.00	31.95	14.33	198.72
1998-99	86.10	71.34	30.69	14.05	202.18
1999-00	86.91	72.45	30.92	13.13	203.41
2000-01	89.33	72.94	31.60	12.62	206.49
2001-02	83.38	69.40	30.17	11.86	194.81
2002-03	84.56	70.23	32.35	13.14	200.27
2003-04	81.16	68.85	32.38	13.06	195.44
2004-05	87.82	70.05	35.04	13.81	206.72
2005-06	89.43	71.27	33.82	13.57	208.08
2006-07	93.95	74.58	36.25	14.11	218.89
2007-08	96.41	78.35	38.24	14.51	227.51
2008-09	94.99	80.02	38.11	14.66	227.79
2009-10	94.75	82.78	39.00	15.82	232.36
2010-11	96.79	87.52	39.65	16.66	240.63
2011-12	102.17	91.75	41.82	17.89	253.64
2012-13	105.73	94.75	41.78	18.23	260.49
2013-14	105.79	91.96	42.06	18.25	258.06
2014-15	105.48	91.96	41.36	17.62	256.43

Figure-1

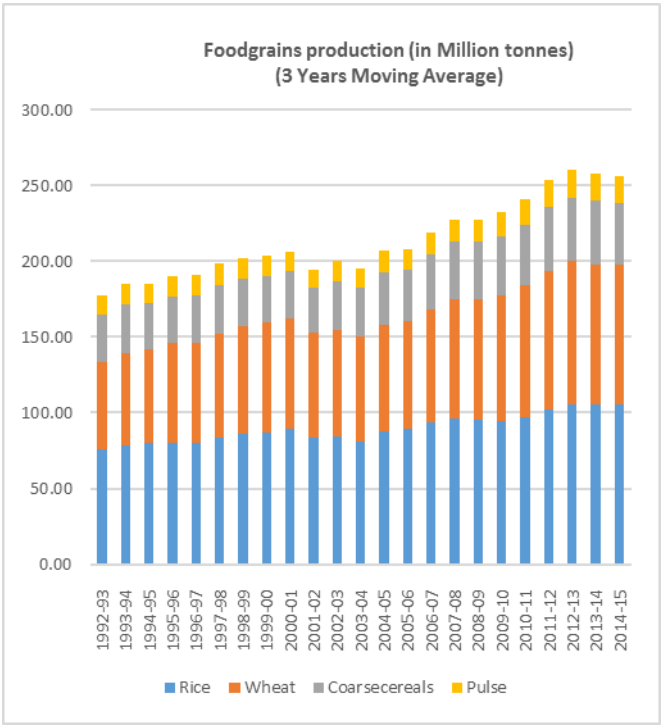


Table-2

Foodgrains production Growth rate in India

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

Figure-2

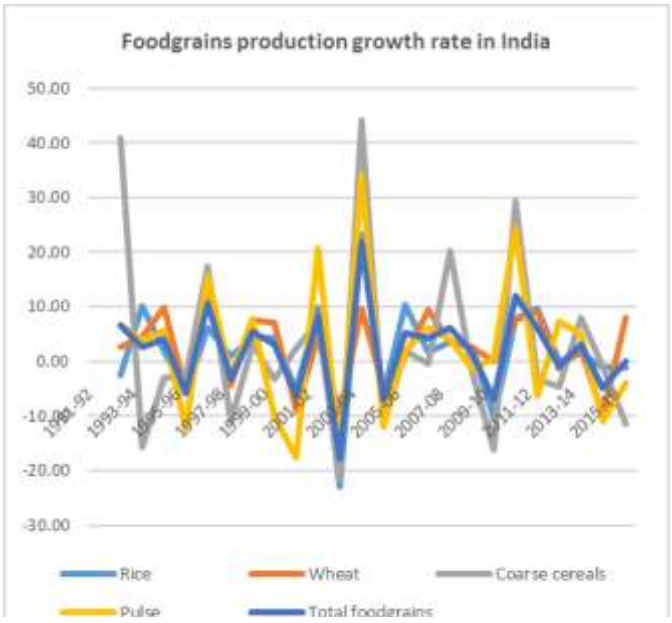
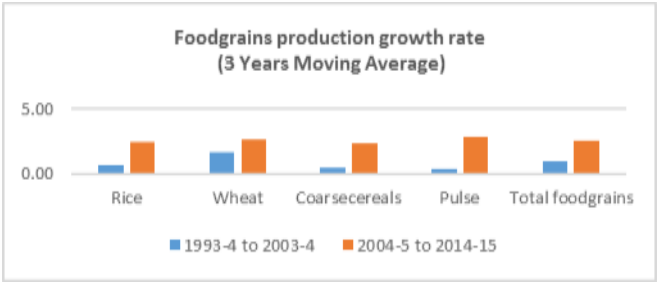


Table-3

Foodgrains production growth rate (3 Years Moving Average)

Year	Rice	Wheat	Coarse cereals	Pulse	Total foodgrains
1993-04 to 2003-04	0.65	1.68	0.44	0.37	0.92
2004-05 to 2014-15	2.45	2.69	2.32	2.82	2.53

Figure-3



Foodgrains Productivity in India:

With the growing population and economic development the demand for foodgrains are going to continuously increase in the future. Also increase in demand of foodgrains increasing due to more economic activities. The foodgrains production can be increased by two ways- i) increase in the area of land for cultivation, and ii) rise in productivity. The area under rice grew

by 3 percent, wheat by 27 percent, pulses by 10 percent during 1992-93 to 2014-15. Whereas area under coarse cereals declined by 27 percent during the same period (See, Table-4 and Figure-4). Thus the rise in area under foodgrains are very slow and negative growth rate for coarse cereals. Thus growth in foodgrains production by increase in area under cultivation have limited scope. Therefore foodgrains production can be increased mainly by increase in foodgrains productivity.

Table-4

Growth rate of area (in Million hectare)
(3 Years moving average)

Year	Rice	Wheat	Coarse Cereals	Pulses
1992-93 to 2014-15	0.03	0.27	-0.27	0.10

Figure-4

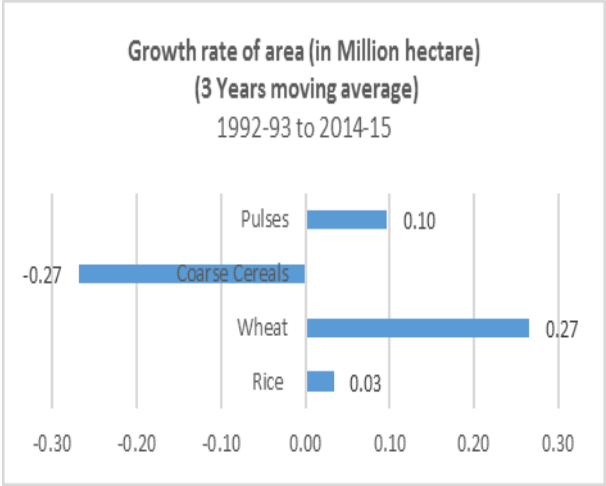


Figure-6

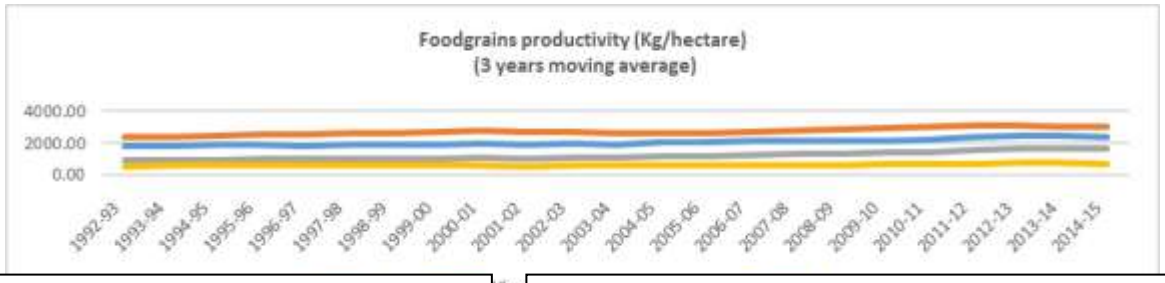
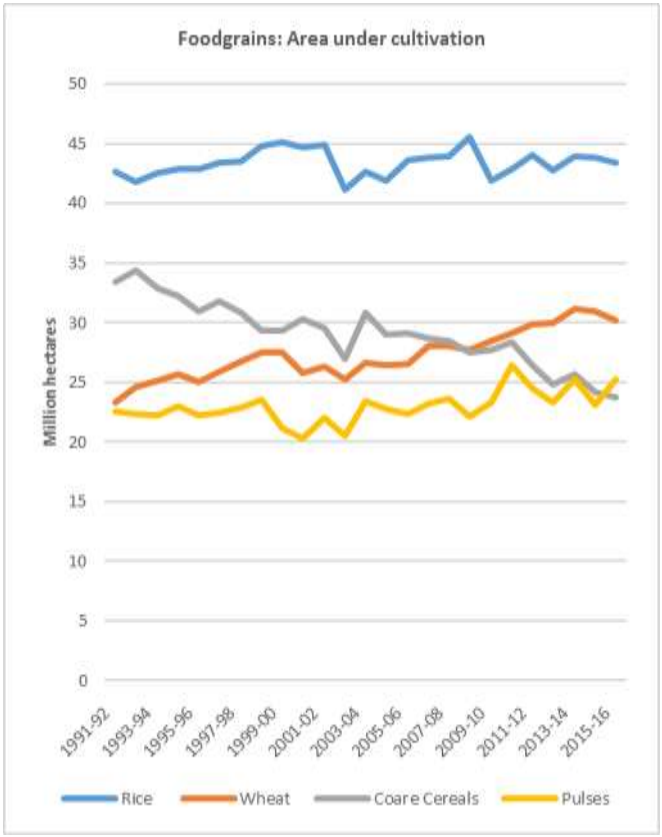


Table-5

Foodgrains Area Under Cultivation (in million hectares)				
Year	Rice	Wheat	Coarse Cereals	Pulses
1991-92	42.65	23.26	33.42	22.54
1992-93	41.78	24.59	34.42	22.36
1993-94	42.54	25.15	32.82	22.25
1994-95	42.81	25.7	32.17	23.03
1995-96	42.84	25.01	30.88	22.28
1996-97	43.43	25.89	31.81	22.45
1997-98	43.45	26.7	30.83	22.87
1998-99	44.8	27.52	29.34	23.5
1999-00	45.16	27.49	29.34	21.12
2000-01	44.71	25.73	30.26	20.35
2001-02	44.9	26.34	29.52	22.01
2002-03	41.18	25.2	26.99	20.5
2003-04	42.59	26.6	30.8	23.46
2004-05	41.91	26.38	29.03	22.76
2005-06	43.66	26.48	29.06	22.39
2006-07	43.81	27.99	28.71	23.19
2007-08	43.91	28.04	28.48	23.63
2008-09	45.54	27.75	27.45	22.09
2009-10	41.92	28.46	27.68	23.28
2010-11	42.86	29.07	28.34	26.4
2011-12	44.01	29.86	26.42	24.46
2012-13	42.75	30	24.76	23.26
2013-14	43.95	31.19	25.67	25.23
2014-15	43.86	30.97	24.15	23.1
2015-16	43.39	30.23	23.78	25.26

Figure-5



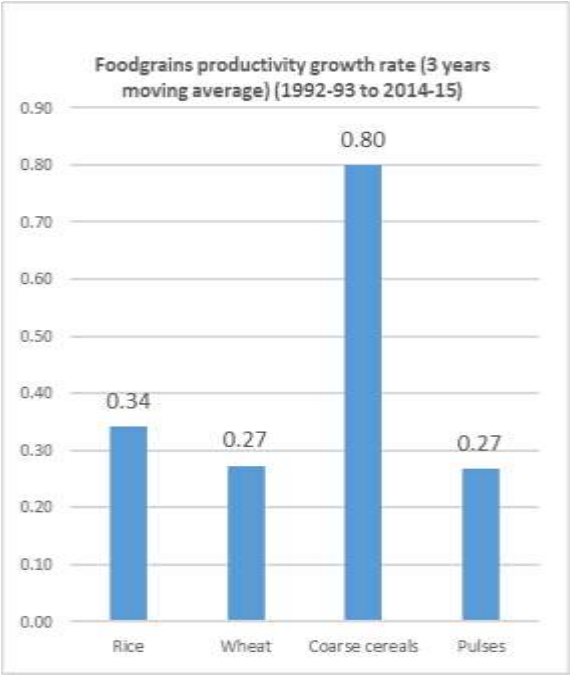
In India foodgrains productivity growth during 1992-93 to 2014-15 have been dissimilar for different crops. An improvement in productivity of rice was 34 percent, 27 percent increase in wheat, 80 percent in coarse cereals and 27 percent in pulses (see, Table-6 and Figure-6 & 6.1). This indicate that the agriculture sector is working towards further improvement in the foodgrains productivity, but the growth rate remain slow.

Table-6

Foodgrains productivity (Kg/hectare)
(3 years moving average)

Year	Rice	Wheat	Coarse cereals	Pulses
1992-93	1794.33	2367.00	926.67	568.00
1993-94	1847.67	2422.00	977.00	593.67
1994-95	1865.33	2474.00	936.00	586.67
1995-96	1863.33	2573.67	980.33	599.00
1996-97	1859.67	2549.00	999.33	584.67
1997-98	1901.00	2584.67	1042.00	612.00
1998-99	1935.67	2617.67	1029.33	612.00
1999-00	1936.00	2692.00	1043.00	604.33
2000-01	1988.67	2749.33	1064.00	595.33
2001-02	1908.00	2693.33	1041.33	564.67
2002-03	1966.67	2695.00	1106.00	595.00
2003-04	1935.00	2641.67	1113.33	585.00
2004-05	2054.33	2644.67	1182.00	603.33
2005-06	2072.33	2643.00	1169.00	595.67
2006-07	2145.00	2709.67	1261.67	611.67
2007-08	2170.33	2805.67	1357.33	632.00
2008-09	2168.33	2849.33	1367.33	638.00
2009-10	2180.67	2911.33	1400.67	660.00
2010-11	2252.33	3001.33	1444.33	673.33
2011-12	2364.33	3094.00	1579.33	726.33
2012-13	2426.00	3123.00	1628.00	750.67
2013-14	2425.00	3021.33	1674.33	765.67
2014-15	2406.00	3013.33	1667.33	720.00

Figure-6.1



Conclusion:

Economic reforms is a recent phenomenon in India. Due to new economic policy many sectors have been going through major transitions. In agriculture sector reforms introduced after some time and the process is continuing. The findings indicates that economic reforms in agriculture sector have no adverse impact on foodgrains production. Rather in later period of reform growth rate in foodgrains production have been more than initial periods of economic reforms. However in few years there were fluctuations in the foodgrains production, which is one of the characteristic of agriculture sector (Dantwala, 1959). It is also true that due to decline in public investment in irrigation and water management, and in scientific research has pressed the profitability of farmers (Bhalla and Singh, 2009). This led to shortfall in achieving target of more than 4 percent growth rate. Since agriculture is backbone of Indian economy therefore policymakers should prioritise it.

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