

Growth in Area, Production and Productivity of Agricultural Sector in India: A Regional Perspective

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Abstract

The present research paper is dealing with the growth in area, production and productivity of Agriculture sector in India between the time periods of 2004-05 to 2014-15. This is an attempt to know the changes in the growth rates of area, production and productivity of Agriculture sector in India. An attempt has been made to divide the whole country in to four regions and all major farm crops and states has been included region wise to find out the change occurred during the time period in the growth rates of area, production and productivity of Agriculture sector in India.

I

Introduction

Dr. V.K.R.V. Rao has advocated that to meet the growing requirements of the Indian Economy agricultural output should rise by 4 percent, and foodgrains output by 6 per cent annum. In the case of foodgrains, while wheat, bajra and rice have shown rise in their production there has been rather no improvement in the production of jowar, maize and pulses. The growth in area was the major source of production growth until early 1960 (Bhalla & Gurmail Singh 2001). The high yielding varieties introduced in wheat and rice during the late Sixties resulted in India's green revolution. Along with technology, new institutional structures enabled the farmers to adopt improved methods of cultivation. The major changes included provision of better irrigation facilities, government procurement system, guaranteed support price and input subsidies. Both yield and area contributed to higher growth in production (Vaidyanathan 2010).

II

Data and Methodology

Data

The present study is mainly based on secondary sources of data. Data on various categories of land use in Indian agriculture has been obtained from Directorate of Agriculture and Statistics, Government of India, Ministry of Agriculture, Government of India, Planning Commission, Government of India, Reserve Bank of India (RBI) and Centre for Monitoring Indian Economy (CMIE), Report on Agriculture (Various Issues), www.indiastat.com, www.agricoop.nic.in, Agricultural Statistics at a Glance-An Annual Publication of the Directorate of Statistics,

Government of India, and Ministry of Agriculture. State wise and region wise data for area, production and yield of various crops have been compiled from official website of Government Reports and Journals. These data have been categorized for different regions of India for further analysis (Bhalla & Singh).

Methodology

Compound Annual Growth Rate

Concept that has been used maximum number of times during the past four decades or so in research papers published, particularly in the discipline of agricultural economics, it is undoubtedly the ‘computation of compound growth rates’ (see, for example, Panse, 1964; Dey, 1975; Reddy, 1978; Narain et al., 1982; Kumar and Rosegrant, 1994; Kumar, 1997; Joshi and Saxena, 2002; Singh and Srivastava, 2003).

If y_t denotes the observation (e.g. agricultural production, productivity, or area) at time t and r is the compound growth rate, model employed for estimating r is based on Eq. (1): $y_t = y_0 (1 + r)^t \dots\dots(1)$

The usual practice is to assume a multiplicative error-term $\exp(\varepsilon)$ in Eq. (1) so that the model may be linearized by means of logarithmic transformation, giving

$$\text{Eq. (2): } \ln(y_t) = A + Bt + \varepsilon \dots(2)$$

where, $A = \ln(y_0)$, and $B = \ln(1 + r)$. Eq. (2) is then fitted to data using “method of least squares” and goodness of fit is assessed by the coefficient of determination R^2 . Finally, the compound growth rate is estimated by

$$\text{Eq. (3): } r^{\wedge} = \exp(B^{\wedge}) - 1 \dots\dots(3)$$

Compound Growth Rate:

$$Y = AB^t$$

Where y = acreage, production, yield and contribution of value of output.

$$A = \text{Constant}$$

$$B = 1+r$$

$$r = \text{Compound Growth Rate}$$

$$t = \text{Time Variable in Years. (1,2,\dots\dots\dots n)}$$

Besides, the standard error of the compound growth rate will be worked out by using the following formula

$$SE(r) = \frac{100B}{(\log 10^e)^2} \sqrt{\frac{\frac{1}{N} \left(\sum \log y^2 - \frac{(\log y^2)^2}{N} \right) - (\log 10^B)^2 \sum x^2}{(N-2)\sum x^2}}$$

Where $x = x - \bar{x}$.

III

Result and Discussion

Region wise Growth in Area of Major Farm Crops

An increase in agricultural production can result from an increase in area under cultivation or from an increase in the productivity. The area under cultivation can be increased either through adoption of such practices as double-cropping and multiple-cropping or by the reclamation of uncultivated or waterlogged and waste lands. Some concerted efforts have been made during the Five Year Plans to increase the area of cultivable land as would be seen from the fact that the index number of the area under cultivation went up from 76.1Mh in 1950-51 to 103.4Mh in 1985-86 and 105.5Mh in 2000-01 (Gulati & Bathala (2001).

Region Wise Growth in Area of Major Crops in North Western Region

The increase in agricultural production over the years is an indicator of positive change in the economic development and vice versa. The growth in area of major farm crops region wise has been presented in the following tables:

Table-1 Growth in Area of Major Crops in North Western Region
(2004-05 to 2014-15) (Area in 000 ha)

Major Crops in North Western Region	North Western Region		Growth Rate
	2004-05	2014-15	
	Area in 000 ha	Area in 000 ha	
Rice	9698	10317	0.007
Wheat	15820	16455	0.004
Jowar	401	235	-0.058
Bajara	1574	1358	-0.016
Maize	1634	1490	-0.010
Raagi	7	12	0.062
Barley	323	260	-0.024
Pulses	3120	2564	-0.022
Fruit & Vegetable	1376	1555	0.014
Oilseeds	1575	1804	0.015
Gross Cropped Area	35390	35800	0.001

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the North Western Region gross cropped area stood at 35390 thousand hectares in the year 2004-05 and rose to 35800 thousand hectares in the 2014-15 recording a meager growth rate of 0.001percent. In case of major crops positive growth rate was shown in Rice (0.007 percent), Wheat (0.004 percent), Ragi (0.062 percent), Fruit and Vegetables (0.014 percent) and Oilseeds (0.015 percent), whereas the negative growth rate was registered in Jowar (-0.058 percent), Bajra (-0.016 percent), Maize (-0.010 percent), Barley (-0.024 percent), Pulses (-0.022 percent) during the years of 2004-05 and 2014-15 (Table 1).

Region Wise Growth in Area of Major Crops in Eastern Region

Table -2 Region Wise Growth in Area of Major Crops in India over the period

Major Crops in Eastern Region	(2004-05 to 2014-15)		Growth Rate
	Eastern Region		
	2004-05 Area in 0000 ha	2014-15 Area in 0000 ha	
Rice	16466	15254	-0.008
Wheat	2592	2565	-0.001
Jowar	14	5	-0.108
Bajra	5	4	-0.024
Maize	867	917	0.006
Ragi	219	75	-0.112
Barley	24	12	-0.074
Pulses	2691	1393	-0.071
Fruit & Vegetable	2975	2678	-0.012
Oilseeds	2024	1448	-0.037
Gross Cropped Area	30137	26722	-0.013

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the Eastern Region gross cropped area stood at 30137 thousand hectares in the year 2004-05 and falls to 26722 thousand hectares in the 2014-15 recording a negative growth rate of -0.013percent. It increased at the positive growth rate in case of Maize (0.006 percent) followed by negative growth rate in Rice (-0.008 percent), Wheat (-0.001 percent), Jowar (-0.0108 percent), Bajra (-0.024 percent), Maize (-0.006 percent), Ragi (-0.112 percent), Barley (-0.074 percent), Pulses (-0.071 percent), Fruit and vegetables (-0.012 percent) and Oilseeds (-0.037 percent) during the years of 2004-05 and 2014-15 (Table 2).

Region Wise Growth in Area of Major Crops in Central Region

Table-3 Region Wise Growth in Area of Major Crops in India over the period

Crops	2004-05 to 2014-15		Growth Rate
	Central Region		
	2004-05 Area in 0000 ha	2014-15 Area in 0000 ha	

Rice	4058	4278	0.006
Wheat	7717	10690	0.037
Jowar	6217	4287	-0.040
Bajra	8756	5917	-0.043
Maize	2919	3149	0.008
Ragi	179	146	-0.022
Barley	281	401	0.040
Pulses	12820	12040	-0.007
Fruit & Vegetable	1982	2060	0.004
Oilseeds	14847	19721	0.032
Gross Cropped Area	75063	81558	0.009

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the Central Region gross cropped area stood at 75063 thousand hectares in the year 2004-05 and rose to 81558 thousand hectares in the 2014-15 recording a positive growth rate of 0.009 percent. It increased at the positive growth rate in case of Rice (0.006 percent), Wheat (0.037 percent), Maize (0.008 percent), Barley (0.040 percent), Fruit and Vegetable (0.004 percent) and in case of Oilseeds (0.032 percent) followed by negative growth in Jowar (-0.040 percent), Bajra (-0.043 percent), Ragi (-0.022 percent) and Pulses shows (-0.007 percent) during the years of 2004-05 and 2014-15 (Table 3).

Region Wise Growth in Area of Major Crops in Southern Region

Table -4 Region Wise Growth in Area of Major Crops in India over the period 2004-05 to 2014-15 (Area in 000 ha)

Crops	Southern Region		growth rate
	2004-05	2014-15	
	Area in 0000 ha	Area in 0000 ha	
Rice	5726	6591	0.016
Wheat	244	233	-0.005
Jowar	2748	1759	-0.048
Bajra	616	385	-0.051
Maize	1487	2567	0.063
Ragi	1173	739	-0.050
Barley	NA	NA	NA
Pulses	4593	4423	-0.004
Fruit & Vegetable	2480	2680	0.009
Oilseeds	7252	5548	-0.029
Gross Cropped Area	32086	33130	0.004

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the Southern Region gross cropped area stood at 32086 thousand hectares in the year 2004-05 and rose to 33130 thousand hectares in the 2014-15 recording a positive growth rate of 0.004 percent. It increased at the positive growth rate in case of Rice (0.016 percent), Maize (0.063

percent) and in Fruit and Vegetable (0.009 percent) whereas negative growth was registered in Wheat (-0.005 percent), Jowar (-0.048 percent), Bajra (-0.051 percent), Ragi (-0.050 percent), Pulses (-0.004 percent) and in case of Oilseeds (-0.029 percent) during the years of 2004-05 and 2014-15 (Table 4).

Region Wise Growth in Production of Major Crops in India

The increase in agricultural production over the years is an indicator of positive change in the economic development of Indian economy. In fact, demand for agricultural products has been constantly rising over time owing to rapid rise of population. If agricultural production does not rise proportionately, it will adversely affect the all round development i.e. economic growth (Bhattacharjee 1958).

Growth rate of agricultural production of major farm crops region wise have been presented in the following table for the study period 2004-05 to 2014-15.

Region Wise Growth in Production of Rice in India

Table -5 Region Wise Growth in Production of Major Crops In India
2004-05 to 2014-15 (Production in Million Tonns)

Regions	States fall in the Region	Rice		ACGR
		2004-05	2014-15	
North Western Region	Haryana	3.02	4	0.0317
	Himachal Pradesh	NA	NA	NA
	Punjab	10.44	11.27	0.0085
	Jammu & Kashmir	NA	NA	NA
	Uttar Pradesh	9.56	14.63	0.0484
Eastern Region	Assam	3.47	4.78	0.0362
	Bihar	2.47	5.51	0.0932
	Orissa	6.47	7.58	0.0177
	West Bengal	14.88	15.31	0.0031
Central Region	Gujarat	1.24	1.62	0.0301
	Madhya Pradesh	1.17	2.78	0.1009
	Maharashtra	2.16	2.95	0.0352
	Rajasthan	NA	NA	NA
Southern Region	Andhra Pradesh	9.6	13.03	0.0345
	Karnataka	3.55	3.76	0.0064
	Kerala	0.67	0.51	-0.0298
	Tamil Nadu	5.06	5.54	0.0101
All India		83.13	106.54	0.0279

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Rice was 83.13 Million Tons in 2004-05 which rose to 106.54 Million Tons in 2014-15 registered a positive growth rate of 0.027 percent during the years of 2004-05 and 2014-15.

In the North Western Region the growth rate of Rice Production in Haryana was 0.031 percent, Punjab 0.008 percent, Uttar Pradesh 0.048 percent whereas in Himachal Pradesh and state of Jammu & Kashmir data of rice was not available during the years of 2004-05 and 2014-15.

In the Eastern Region the growth rate of Rice Production in Assam was 0.036 percent, Bihar 0.093 percent, Orissa 0.017 percent and in West Bengal it was 0.0031 percent during the years of 2004-05 and 2014-15.

In the Central Region the growth rate of Rice Production in Gujarat was 0.030 percent, Madhya Pradesh 0.10 percent, Maharashtra 0.035 percent and in Rajasthan data of rice production was not available during the years of 2004-05 and 2014-15.

In the Southern Region the growth rate of Rice Production in Andhra Pradesh was 0.034 percent, Karnataka 0.006 percent, Kerala -0.029 percent and in Tamil Nadu it was 0.010 percent during the years of 2004-05 and 2014-15 (Table 5).

Region Wise Growth in Production of Wheat in India

Table -6 Region Wise Growth in Production of Major Crops in India
2004-05 and 2014-15 (Production in Million Tonns)

Regions	States fall in the Region	Wheat		ACGR
		2004-05	2014-15	
North Western Region	Haryana	9.06	11.8	0.0297
	Himachal Pradesh	0.68	0.54	-0.0252
	Punjab	14.7	17.04	0.0165
	Jammu & Kashmir	0.47	0.46	-0.0023
	Uttar Pradesh	22.51	30.25	0.0333
Eastern Region	Assam	0.07	0.03	-0.0898
	Bihar	3.26	5.08	0.0505
	Orissa	NA	NA	NA
	West Bengal	0.84	0.95	0.0137
Central Region	Gujarat	1.81	3.65	0.0810
	Madhya Pradesh	7.18	13.93	0.0764
	Maharashtra	1.02	1.6	0.0512
	Rajasthan	5.71	8.92	0.0508
Southern Region	Andhra Pradesh	NA	NA	NA
	Karnataka	0.18	0.23	0.0276
	Kerala	NA	NA	NA
	Tamil Nadu	NA	NA	NA
All India		68.64	95.91	0.0378

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Wheat was 68.64 Million Tons in 2004-05 which rose to 95.91 Million Tons in 2014-15 registered a positive growth rate of 0.037 percent during the years of 2004-05 and 2014-15.

In the North Western Region the growth rate of Wheat Production in Haryana was 0.029 percent, Himachal Pradesh -0.025, Punjab 0.016 percent, Jammu & Kashmir -0.0023 and in Uttar Pradesh it was 0.033 percent during the years of 2004-05 and 2014-15.

In the Eastern Region the growth rate of Wheat Production in Assam was -0.089 percent, Bihar 0.050 percent, and in West Bengal it was 0.013 percent whereas in Orissa data of wheat production was not available during the years of 2004-05 and 2014-15.

In the Central Region the growth rate of Wheat Production in Gujarat was 0.081 percent, Madhya Pradesh 0.076 percent, Maharashtra 0.051 percent and in Rajasthan it was 0.050 percent during the years of 2004-05 and 2014-15.

In the Southern Region the growth rate of Wheat Production in Karnataka was 0.027 percent and in other states of Southern Region the data of wheat production was not available during the years of 2004-05 and 2014-15 (Table 6).

Region Wise Growth in Production of Jowar in India

Table -7 Region Wise Growth in Production of Major Crops in India
2004-05 to 2014-15 (Production in Million Tonns)

Regions	States fall in the Region	Jowar		ACGR
		2004-05	2014-15	
North Western Region	Haryana	0.03	0.04	0.0324
	Himachal Pradesh	NA	NA	NA
	Punjab	NA	NA	NA
	Jammu & Kashmir	NA	NA	NA
	Uttar pradesh	0.25	0.17	-0.0419
Eastern Region	Assam	NA	NA	NA
	Bihar	NA	NA	NA
	Orissa	0.01	0	-1
	West Bengal	NA	NA	NA
Central Region	Gujarat	0.21	0.17	-0.0232
	Madhya Pradesh	0.63	0.29	-0.0825
	Maharashtra	3.62	2.27	-0.0505
	Rajasthan	0.27	0.36	0.0324
Southern Region	Andhra Pradesh	0.52	0.38	-0.0342
	Karnataka	1.44	1.3	-0.0113
	Kerala	NA	NA	NA
	Tamil Nadu	0.25	0.41	0.0565
All India		7.24	5.39	-0.0322

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Jowar was 7.24 Million Tons in 2004-05 which falls to 5.39 Million Tons in 2014-15 registered a negative growth rate of -0.0325 percent during the years of 2004-05 and 2014-15.

In the North Western Region the growth rate of Jowar Production in Haryana was 0.0324, Uttar Pradesh -0.041 percent whereas the data of jowar production in Himachal Pradesh, Punjab and Jammu & Kashmir was not available during the years of 2004-05 and 2014-15.

In the Eastern Region the growth rate of Jowar Production in Orissa was -1.0 percent whereas in Assam, Bihar and in West Bengal the data of Jowar production was not available during the years of 2004-05 and 2014-15.

In the Central Region the negative growth rate of the production of Jowar was registered in Gujarat was -0.023 percent, Madhya Pradesh- 0.082 percent, Maharashtra -0.050 percent and in positive growth rate was measured in Rajasthan 0.032 percent during the years of 2004-05 and 2014-15.

In the Southern Region the growth rate of Jowar Production was negative in Andhra Pradesh -0.034, Karnataka - 0.011 percent at the same time Tamil Nadu registered a positive growth rate 0.056 percent whereas the data of jowar production in Kerala was not available during the years of 2004-05 and 2014-15 (Table 7).

Region Wise Growth in Production of Bajra in India

Table -8 Region Wise Growth in Production of Major Crops In India

2004-05 to 2014-15 (Production in Million Tonns)

Regions	States fall in the Region	Bajra		ACGR
		2004-05	2014-15	
North Western Region	Haryana	0.75	0.83	0.0113
	Himachal Pradesh	NA	NA	NA
	Punjab	NA	NA	NA
	Jammu & Kashmir	0.01	0.01	0
	Uttar Pradesh	1.22	1.6	0.0305
Eastern Region	Assam	NA	NA	NA
	Bihar	NA	NA	NA
	Orissa	NA	NA	NA
	West Bengal	NA	NA	NA
Central Region	Gujarat	1.08	1.3	0.0208
	Madhya Pradesh	0.24	0.37	0.0492
	Maharashtra	1.13	0.76	-0.0431
	Rajasthan	3	3.8	0.0266
Southern Region	Andhra Pradesh	0.08	0.1	0.0251
	Karnataka	0.27	0.31	0.0154
	Kerala	NA	NA	NA
	Tamil Nadu	0.12	0.1	-0.0200
All India		7.93	9.18	0.0163

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Bajra was 7.93 Million Tons in 2004-05 which rose to 9.18 Million Tons in 2014-15 registered a positive growth rate of 0.0163 percent during the years of 2004-05 and 2014-15.

In the North Western Region the growth rate of Bajra Production in Haryana was 0.113, Uttar Pradesh 0.030 percent whereas the data of Bajra production in Himachal Pradesh, Punjab and Jammu & Kashmir was not available during the years of 2004-05 and 2014-15.

In the Eastern Region the growth rate of Bajra Production could not be measured because in the states of this region likewise Orissa, Assam, Bihar and in West Bengal the data of Bajra production was not available during the years of 2004-05 and 2014-15.

In the Central Region the positive growth rate of the production of Bajra was registered in Gujarat was 0.020 percent, Madhya Pradesh 0.049 percent, Rajasthan 0.026 percent whereas the state of Maharashtra in this region shows negative growth rate -0.043 percent during the years of 2004-05 and 2014-15.

In the Southern Region the positive growth rate of Bajra Production was registered in Andhra Pradesh 0.025, Karnataka - 0.015 percent at the same time Tamil Nadu registered a negative growth rate -0.020 percent whereas the data of Bajra production in Kerala was not available during the years of 2004-05 and 2014-15 (Table 8).

Region Wise Growth in Production of Maize in India

Table -9 Region Wise Growth in Production of Major Crops in India
2004-05 to 2014-15 (Production in Million Tonns)

Regions	States fall in the Region	Maize		ACGR
		2004-05	2014-15	
North Western Region	Haryana	NA	NA	NA
	Himachal Pradesh	0.74	0.68	-0.0093
	Punjab	0.42	0.51	0.0218
	Jammu & Kashmir	0.49	0.53	0.0087
	Uttar pradesh	1.49	1.24	-0.0202
Eastern Region	Assam	NA	NA	NA
	Bihar	1.47	2.02	0.0359
	Orissa	NA	NA	NA
	West Bengal	0.14	0.52	0.1569
Central Region	Gujarat	0.41	0.69	0.0595
	Madhya Pradesh	1.25	1.51	0.0212
	Maharashtra	0.75	3.08	0.1699
	Rajasthan	1.26	1.5	0.0195
Southern Region	Andhra Pradesh	2.06	4.97	0.1028
	Karnataka	2.51	3.98	0.0525
	Kerala	NA	NA	NA

	Tamil Nadu	0.29	1.64	0.2122
All India		14.17	24.35	0.0620

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Maize was 14.17 Million Tons in 2004-05 which rose to 24.35 Million Tons in 2014-15 registered a positive growth rate of 0.062 percent during the years of 2004-05 and 2014-15.

In the North Western Region the positive growth rate of Maize Production registered in Punjab 0.021 percent, Jammu & Kashmir 0.008 and negative growth rate was calculated in Himachal Pradesh -0.0093, Uttar Pradesh -0.020 percent whereas the data of Maize production in Haryana was not available during the years of 2004-05 and 2014-15.

In the Eastern Region the growth rate of Bajra Production could not be measured because in the states of this region likewise Orissa, Assam, Bihar and in West Bengal the data of Bajra production was not available during the years of 2004-05 and 2014-15.

In the Central Region the positive growth rate of the production of Bajra was registered in Gujarat was 0.020 percent, Madhya Pradesh 0.049 percent, Rajasthan 0.026 percent whereas the state of Maharashtra in this region shows negative growth rate -0.043 percent during the years of 2004-05 and 2014-15.

In the Southern Region the positive growth rate of Bajra Production was registered in Andhra Pradesh 0.025, Karnataka - 0.015 percent at the same time Tamil Nadu registered a negative growth rate -0.020 percent whereas the data of Bajra production in Kerala was not available during the years of 2004-05 and 2014-15 (Table 9).

Region Wise Growth in Production of Pulses in India

Table -10 Region Wise Growth in Production of Major Crops in India

2004-05 to 2014-15 (Production in Million Tonns)

Regions	States fall in the Region	Pulses		ACGR
		2004-05	2014-15	
North Western Region	Haryana	0.15	0.13	-0.0157
	Himachal Pradesh	NA	NA	NA
	Punjab	NA	NA	NA
	Jammu & Kashmir	NA	NA	NA
	Uttar Pradesh	2.38	1.71	-0.0360
Eastern Region	Assam	NA	NA	NA
	Bihar	0.47	0.52	0.0112
	Orissa	0.25	0.42	0.0593
	West Bengal	0.17	0.25	0.0437
Central Region	Gujarat	0.48	0.74	0.0492
	Madhya Pradesh	3.43	5.09	0.0448
	Maharashtra	1.66	3.12	0.0726

	Rajasthan	1.34	2.47	0.0703
Southern Region	Andhra Pradesh	1.02	1.55	0.0475
	Karnataka	0.79	1.47	0.0714
	Kerala	NA	NA	NA
	Tamil Nadu	0.25	0.44	0.0648
All India		13.13	19.27	0.0435

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Pulses was 13.13 Million Tons in 2004-05 which rose to 19.27 Million Tons in 2014-15 registered a positive growth rate of 0.043 percent during the years of 2004-05 and 2014-15.

In the North Western Region the negative growth rate of Pulses Production was registered in Haryana -0.015 percent and in Uttar Pradesh -0.036 percent whereas in Punjab, Jammu & Kashmir, Himachal Pradesh the data of Pulses production was not available during the years of 2004-05 and 2014-15.

In the Eastern Region positive compound annual growth rate of Pulses Production was registered in Bihar 0.011 percent, Orissa 0.059 percent and in West Bengal 0.043percent whereas the growth rate of pulses production could not be measured in the state of Assam because the data of pulses production was not available during the years of 2004-05 and 2014-15.

In the Central Region the positive growth rate of the production of Pulses was registered in Gujarat was 0.049 percent, Madhya Pradesh 0.044 percent, Maharashtra 0.072 percent, and in Rajasthan 0.070 percent during the years of 2004-05 and 2014-15.

In the Southern Region the positive growth rate of Pulses Production was registered in Andhra Pradesh 0.047, Karnataka - 0.071 percent at the same time Tamil Nadu registered a growth rate 0.064 percent whereas the data of Pulses production in Kerala was not available during the years of 2004-05 and 2014-15 (Table 10).

Region Wise Growth in Production of Oilseeds in India

Table -11 Region Wise Growth in Production of Major Crops in India

Regions	States fall in the Region	2004-05 to 2014-15		ACGR
		(Production in Million Tonns)		
		2004-05	2014-15	
North Western Region	Haryana	0.84	0.9	0.0076
	Himachal Pradesh	NA	NA	NA
	Punjab	0.1	0.07	-0.0388
	Jammu & Kashmir	NA	NA	NA
	Uttar Pradesh	0.95	0.93	-0.0023
Eastern Region	Assam	0.15	0.16	0.0071
	Bihar	0.12	0.14	0.0172
	Orissa	0.18	0.16	-0.0133

	West Bengal	0.65	0.93	0.0406
Central Region	Gujarat	2.99	6.84	0.0963
	Madhya Pradesh	4.8	6.66	0.0370
	Maharashtra	2.74	5.24	0.0746
	Rajasthan	5.54	6.07	0.0102
Southern Region	Andhra Pradesh	2.21	1.84	-0.0201
	Karnataka	1.57	1.28	-0.0224
	Kerala	NA	NA	NA
	Tamil Nadu	1.06	1	-0.0064
All India		24.35	32.88	0.0339

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Oilseeds was 24.35 Million Tons in 2004-05 which rose to 32.88 Million Tons in 2014-15 registered a positive growth rate of 0.033 percent during the years of 2004-05 and 2014-15. In the North Western Region the positive growth rate of Pulses Production was registered in Haryana 0.007 at the same time it was negative in Punjab -0.038 Percent, Uttar Pradesh -0.002 percent, and in Uttar Pradesh -0.036 percent whereas it could not be measured in the states of Jammu & Kashmir, Himachal Pradesh, because the data of Oilseeds production was not available during the years of 2004-05 and 2014-15.

In the Eastern Region positive compound annual growth rate of Oilseeds Production was registered in Assam 0.007 percent, Bihar 0.017 percent, West-Bengal 0.040 percent at the same time it was negative in Orissa -0.013 percent during the years of 2004-05 and 2014-15. In the Central Region the positive growth rate of the production of Oilseeds was registered in Gujarat was 0.096 percent, Madhya Pradesh 0.037 percent, Maharashtra 0.074 percent, and in Rajasthan 0.010 percent during the years of 2004-05 and 2014-15. In the Southern Region the negative growth rate of Oilseeds Production was registered in Andhra Pradesh -0.020, Karnataka -0.022 percent at the same time Tamil Nadu registered -0.006 percent whereas the data of Oilseeds production in Kerala was not available during the years of 2004-05 and 2014-15 (Table 11).

Region Wise Growth in Production of Fruits & Vegetables in India

Table -12 Region Wise Growth in Production of Fruits & Vegetables in India
2004-05 to 2014-15 (Production in Million Tonns)

Regions	States fall in the Region	Fruits & Vegetables		ACGR
		2004-05	2014-15	
North Western Region	Haryana	2.39	6.12	0.11
	Himachal Pradesh	0.90	2.38	0.11
	Punjab	2.81	5.45	0.08
	Jammu & Kashmir	1.73	3.47	0.08
	Uttar Padesh	17.33	26.32	0.05
Eastern Region	Assam	4.27	5.69	0.03
	Bihar	10.90	20.74	0.07
	Orissa	8.81	11.58	0.03

	West Bengal	20.06	27.92	0.04
Central Region	Gujarat	5.63	19.72	0.15
	Madhya Pradesh	2.96	18.62	0.23
	Maharashtra	13.97	21.55	0.05
	Rajasthan	0.63	2.48	0.16
Southern Region	Andhra Pradesh	8.74	26.64	0.13
	Karnataka	8.20	14.15	0.06
	Kerala	4.31	6.03	0.04
	Tamil Nadu	9.79	16.05	0.06
All India		131.62	254.96	0.08

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

In the year of 2004-05 and 2014-15 in all regions the Production of Fruits and Vegetables was 131.62 Million Tons in 2004-05 which rose to 254.96 Million Tons in 2014-15 registered a positive growth rate of 0.08 percent during the years of 2004-05 and 2014-15.

In the North Western Region the positive growth rate of Fruits & Vegetables Production was registered in Haryana 0.011 Percent, Himachal Pradesh 0.011 Percent, Punjab 0.08 Percent Jammu & Kashmir 0.08 Percent and in Uttar Pradesh 0.05 percent during the years of 2004-05 and 2014-15.

Eastern Region also registered positive compound annual growth rate of Fruits & Vegetables Production in the state of Assam 0.03 percent, Bihar 0.07 percent and Orissa 0.03 Percent and in West Bengal 0.04 percent during the years of 2004-05 and 2014-15.

Central Region also witness positive growth rate of the production of Fruits & Vegetables in Gujarat it was 0.015 percent, Madhya Pradesh 0.023 percent, Maharashtra 0.05 percent, and in Rajasthan 0.016 percent during the years of 2004-05 and 2014-15. In the Southern Region the positive growth rate of Fruits & Vegetables Production was registered in Andhra Pradesh 0.13, Karnataka 0.06 percent, Kerala 0.04 and at the same time Tamil Nadu registered 0.006 percent during the years of 2004-05 and 2014-15 (Table 12).

Region wise Growth in Yield Rate of Major Farm Crops in India

Agricultural production depends not only upon land in use but also upon productivity. Agricultural production means agricultural yield/production per hectares of area. Agricultural productivity shows the relationship between agricultural output and input. India is one of the largest producers of many agricultural crops but ranks very low in their productivity. For instance, India is the second largest producer in rice and wheat but in terms of productivity its rank is 52nd in the world in rice and 38th in wheat. In pulses the productivity rank is 138th in the world.

Factors determining the Agricultural Productivity				
Irrigation Facilities	Quality Seeds	Manure & Fertilisers	Advance equipments	Scientific Cultivation

Ceiling on Land	Marketing	Soil conservation	Research Support	Quality of Livestock
Crop insurance	Cooperative farming	Credit facilities	Transport Facilities	Government Policies

Agricultural productivity both of food crops and non-food crops has certainly gone higher since the inception of plans in India. Except a few abnormal years, agricultural productivity has tended to rise almost consistently over time, though the rise has been relatively more in the case of food crops (Lekhi & Singh 2011).

Region wise Growth in Yield Rate of Rice in India

Region wise growth in the yield growth rate has been given in the following tables.

Table -13 Region Wise Growth Yield of Major Crops in India 2004-05 to 2014-15

(Production in KG/Hectares)

Regions	States fall in the Region	Rice		ACGR
		2004-05	2014-15	
North Western Region	Haryana	2941	3256	0.0114
	Himachal Pradesh	1506	1736	0.0159
	Punjab	3943	3952	0.0003
	Jammu & Kashmir	1969	2050	0.0045
	Uttar Pradesh	1790	2447	0.0353
Eastern Region	Assam	1460	2101	0.0413
	Bihar	792	1774	0.0937
	Orissa	1446	1815	0.0256
	West Bengal	2574	2786	0.0088
Central Region	Gujarat	1806	2053	0.0143
	Madhya Pradesh	720	1438	0.0799
	Maharashtra	1425	1891	0.0319
	Rajasthan	1485	2147	0.0418
Southern Region	Andhra Pradesh	3111	2891	-0.0081
	Karnataka	2712	2828	0.0047
	Kerala	2301	2581	0.0128
	Tamil Nadu	2703	3100	0.0153
All India		1984	2424	0.0225

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yield of Rice In the year of 2004-05 and 2014-15 was 1984 KG Per Hectares in 2004-05 which rose to 2424 KG Per Hectares 2014-15 registered a positive growth rate of 0.022 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows yield growth rate of Rice Production in Haryana 0.011 Percent, Himachal Pradesh 0.015 Percent, Punjab 0.0003 Percent, Jammu & Kashmir 0.0045 Percent and in Uttar Pradesh 0.035 Percent, during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Rice Production in Assam was 0.041 percent, Bihar 0.093 percent, Orissa 0.025 percent and in West Bengal it was 0.008 percent during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Rice Production in Gujarat was 0.014 percent, Madhya Pradesh 0.079 percent, Maharashtra 0.031 percent and in Rajasthan 0.041 during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Rice Production in Andhra Pradesh was - 0.008 percent registered a negative yield growth rate whereas it was positive in Karnataka 0.004 percent, Kerala 0.012 percent and in Tamil Nadu it was 0.015 percent during the years of 2004-05 and 2014-15 (Table 13).

Region wise Growth in Yield Rate of Wheat in India

Table-14 Region Wise Growth Yield of Major Crops in India during the period

2004-05 to 2014-15 (Production in KG/Hectares)

Regions	States fall in the Region	Wheat		ACGR
		2004-05	2014-15	
North Western Region	Haryana	3901	4722	0.0214
	Himachal Pradesh	1890	1451	-0.0289
	Punjab	4221	4848	0.0155
	Jammu & Kashmir	1910	1589	-0.0202
	Uttar Pradesh	2502	3038	0.0218
Eastern Region	Assam	1066	821	-0.0285
	Bihar	1609	2551	0.0525
	Orissa	1250	1606	0.0282
	West Bengal	2103	2802	0.0323
Central Region	Gujarat	2482	2703	0.0095
	Madhya Pradesh	1735	2405	0.0369
	Maharashtra	1344	1460	0.0092
	Rajasthan	2839	3175	0.0125
Southern Region	Andhra Pradesh	556	1000	0.0673
	Karnataka	740	1075	0.0423
	Kerala	NA	NA	NA
	Tamil Nadu	NA	NA	NA
All India		2602	3075	0.0187

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yield of Wheat In the year of 2004-05 and 2014-15 was 2602 KG Per Hectares in 2004-05 which rose to 3075 KG Per Hectares 2014-15 registered a positive growth rate of 0.018 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Wheat Production in Haryana 0.021 Percent, Punjab 0.015 Percent, and in Uttar Pradesh 0.021 Percent whereas Himachal Pradesh -0.028 Percent and Jammu & Kashmir -0.020 Percent registered a negative yield growth during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Wheat Production in Bihar was 0.0525 percent, Orissa 0.0282 percent and in West Bengal it was 0.0323 percent whereas Assam with - 0.0285 percent growth rate registered a negative yield growth during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Wheat Production in Gujarat was 0.0095 percent, Madhya Pradesh 0.0369 percent, Maharashtra 0.0092 percent and in Rajasthan 0.0125 during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Wheat Production in Andhra Pradesh was 0.0673 percent, Karnataka 0.0423 percent whereas the yield growth rate for wheat in Kerala and in Tamil Nadu could not be measured because the data for the same was not available during the years of 2004-05 and 2014-15 (Table 14).

Region wise Growth in Yield Rate of Jowar in India

Table -15 Region Wise Growth Yield of Major Crops in India during the period
2004-05 to 2014-15 (Production in KG/Hectares)

Regions	States fall in the Region	Jowar		ACGR
		2004-05	2014-15	
North Western Region	Haryana	850	904	0.0068
	Himachal Pradesh	1333	929	-0.0393
	Punjab	863	1250	0.0420
	Jammu & Kashmir	0	529	0
	Uttar Pradesh	910	824	-0.0109
Eastern Region	Assam	524	557	0.0068
	Bihar	835	1313	0.0515
	Orissa	607	768	0.0264
	West Bengal	1024	768	-0.0314
Central Region	Gujarat	803	768	-0.0049
	Madhya Pradesh	928	768	-0.0208
	Maharashtra	561	768	0.0355
	Rajasthan	747	768	0.0030
Southern Region	Andhra Pradesh	1012	768	-0.0301
	Karnataka	536	768	0.0407
	Kerala	0	768	0
	Tamil Nadu	657	768	0.0174
All India		815	768	-0.0065

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yield of Jowar In the year of 2004-05 and 2014-15 was 815 KG Per Hectares in 2004-05 which falls to 768 KG Per Hectares 2014-15 registered a negative growth rate of -0.0065 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Jowar Production in Haryana 0.0068 Percent, Punjab 0.0420 Percent, whereas the following states registered negative yield growth rate Himachal Pradesh -0.0393 Percent and in Uttar Pradesh -0.0109 Percent and data of jowar production could not be captured in the state of Jammu & Kashmir during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Jowar Production in Assam was 0.0068 percent, Bihar 0.0515 percent, Orissa 0.0264 percent and in West Bengal yield growth rate for jowar was negative with -0.0314 percent during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Jowar Production was negative in Gujarat -0.0049 percent, Madhya Pradesh -0.0208 percent and positive yield growth rate was registered in Maharashtra 0.0355 percent and in Rajasthan 0.0030 during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Jowar Production was negative in Andhra Pradesh -0.0301 percent in the other states of this region positive yield growth rate was registered Karnataka 0.0407 percent, Tamil Nadu 0.0174 Percent whereas the yield growth rate for jowar in Kerala could not be measured because the data for the same was not available during the years of 2004-05 and 2014-15 (Table 15).

Region wise Growth in Yield Rate of Bajra in India

Table-16 Region Wise Growth Yield of Major Crops in India during the period

2004-05 to 2014-15 (Production in KG/Hectares)

Regions	States fall in the Region	Bajra		ACGR
		2004-05	2014-15	
North Western Region	Haryana	1316	2057	0.0508
	Himachal Pradesh	667	542	-0.0227
	Punjab	1000	1000	0
	Jammu & Kashmir	600	592	-0.0014
	Uttar Pradesh	1534	1744	0.0143
Eastern Region	Assam	0	0	0
	Bihar	1083	1139	0.0056
	Orissa	500	611	0.0225
	West Bengal	0	500	0
Central Region	Gujarat	1172	1869	0.0532
	Madhya Pradesh	1368	1873	0.0355
	Maharashtra	736	932	0.0265
	Rajasthan	658	857	0.0297
Southern Region	Andhra Pradesh	862	1597	0.0709
	Karnataka	601	1080	0.0672
	Kerala	0	0	0
	Tamil Nadu	1274	1782	0.0379
All India		859	1164	0.0343

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yield of Bajra In the year of 2004-05 and 2014-15 was 859 KG Per Hectares in 2004-05 which rose to 1164 KG Per Hectares 2014-15 registered a positive yield growth rate of 0.0343 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Bajra Production in Haryana 0.0508 Percent, Uttar Pradesh 0.0143 Percent whereas the following states registered negative yield growth rate of Bajra in Himachal Pradesh -0.0227 Percent and in Jammu & Kashmir -0.0014 Percent and the production of bajra in Punjab remain same during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Bajra Production in Bihar 0.0056 percent, Orissa 0.0225 percent and in Assam and West Bengal yield growth rate for Bajra could not be measured due to non availability of data during the years of 2004-05 and 2014-15. In the Central Region the yield growth rate of Bajra Production in Gujarat was 0.0532 percent, Madhya Pradesh 0.0355 percent, Maharashtra 0.0265 percent and in Rajasthan 0.0297 percent during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Bajra Production in Andhra Pradesh was 0.0709 percent, Karnataka 0.0672 percent, Tamil Nadu 0.0379 Percent whereas the yield growth rate for Bajra in Kerala could not be measured because the data for the same was not available during the years of 2004-05 and 2014-15 (Table 16).

Region wise Growth in Yield Rate of Maize in India

Table-17 Region Wise Growth Yield of Major Crops in India during the period 2004-05 to 2014-15 (Production in KG/Hectares)

Regions	States fall in the Region	Maize		ACGR
		2004-05	2014-15	
North Western Region	Haryana	2500	3000	0.0204
	Himachal Pradesh	2272	2324	0.0025
	Punjab	2740	3900	0.0400
	Jammu & Kashmir	1526	1776	0.0177
	Uttar Pradesh	1705	1671	-0.0022
Eastern Region	Assam	724	2684	0.1567
	Bihar	2386	0	0
	Orissa	1631	2769	0.0605
	West Bengal	2799	4059	0.0421
Central Region	Gujarat	0	1501	0
	Madhya Pradesh	1759	1506	-0.0171
	Maharashtra	0	2544	0
	Rajasthan	1211	1621	0.0329

Southern Region	Andhra Pradesh	3142	4673	0.0450
	Karnataka	2955	2883	-0.0027
	Kerala	NA	NA	NA
	Tamil Nadu	1552	5450	0.1497
All India		1907	2583	0.0342

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yield of Maize In the year of 2004-05 and 2014-15 was 1907 KG Per Hectares in 2004-05 which rose to 2583 KG Per Hectares in 2014-15 registered a positive yield growth rate of 0.0342 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Maize Production in Haryana 0.0204 Percent, Himachal Pradesh 0.0025 Percent, Punjab 0.0400 Percent and in Jammu & Kashmir 0.0177 Percent whereas negative yield growth rate of Maize production was registered in Uttar Pradesh -0.0022 Percent during the years of 2004-05 and 2014-15. In the Eastern Region the yield growth rate of Maize Production in Assam was 0.156 percent, Bihar 0.0 percent, Orissa 0.0605 percent and in West Bengal it was 0.0421 percent during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Maize Production in Gujarat was 0.0 percent, Madhya Pradesh -0.0355 percent, Maharashtra 0.0 percent, and in Rajasthan 0.0329 percent during the years of 2004-05 and 2014-15. In the Southern Region the yield growth rate of Maize Production in Andhra Pradesh was 0.0450 percent, Karnataka -0.0027 percent, Tamil Nadu 0.0149 Percent whereas the yield growth rate for Maize in Kerala could not be measured because the data for the same was not available during the years of 2004-05 and 2014-15 (Table 17).

Region wise Growth in Yield Rate of Tur in India

Table-18 Region Wise Growth Yield of Major Crops In India during the period
2004-05 to 2014-15 (Production in KG/Hectares)

Regions	States fall in the Region	Tur		ACGR
		2004-05	2014-15	
North Western Region	Haryana	1032	1111	0.0082
	Himachal Pradesh	333	450	0.0340
	Punjab	865	897	0.0040
	Jammu & Kashmir	0	0	0
	Uttar Pradesh	982	900	-0.0096
Eastern Region	Assam	716	833	0.0169
	Bihar	1235	1899	0.0489
	Orissa	683	896	0.0306
	West Bengal	733	1500	0.0828
Central Region	Gujarat	928	1138	0.0229
	Madhya Pradesh	785	955	0.0220
	Maharashtra	613	881	0.0411
	Rajasthan	746	650	-0.0151

Southern Region	Andhra Pradesh	456	543	0.0195
	Karnataka	516	733	0.0397
	Kerala	0	1800	0
	Tamil Nadu	625	874	0.0379
All India		667	848	0.0270

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yield of Tur In the year of 2004-05 and 2014-15 was 667 KG Per Hectares in 2004-05 which rose to 848 KG Per Hectares in 2014-15 registered a positive yield growth rate of 0.0270 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Tur Production in Haryana 0.0082 Percent, Himachal Pradesh 0.0240 Percent, Punjab 0.0040 Percent and a negative yield growth rate of Tur production was registered in Uttar Pradesh -0.0096 Percent whereas in Jammu & Kashmir the data pertaining to the yield growth rate of Tur was not available during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Tur Production in Assam was 0.169 percent, Bihar 0.0489 percent, Orissa 0.0306 percent and in West Bengal it was 0.0828 percent during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Tur Production in Gujarat was 0.0229 percent, Madhya Pradesh 0.0220 percent, Maharashtra 0.0411 percent and the state of Rajasthan in this region registered a negative yield growth rate of -0.0151 percent during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Ragi/Tur Production in Andhra Pradesh was 0.0195 percent, Karnataka 0.0397 percent, Tamil Nadu 0.0379 Percent whereas the yield growth rate for Ragi/Tur in Kerala could not be measured because the data for the period was not available during the years of 2004-05 and 2014-15 (Table 18).

Region wise Growth in Yield Rate of Pulses in India

Table-19 Region Wise Growth Yield of Major Crops in India during the period

Regions	States fall in the Region	2004-05 to 2014-15		ACGR
		(Production in KG/Hectares)		
		Pulses		
		2004-05	2014-15	
North Western Region	Haryana	793	817	0.0033
	Himachal Pradesh	560	1165	0.0847
	Punjab	801	872	0.0094
	Jammu & Kashmir	492	497	0.0011
	Uttar Pradesh	847	741	-0.0147
Eastern Region	Assam	571	576	0.0009
	Bihar	710	974	0.0357

	Orissa	388	533	0.0359
	West Bengal	740	952	0.0283
Central Region	Gujarat	675	909	0.0336
	Madhya Pradesh	759	938	0.0238
	Maharashtra	492	796	0.0549
	Rajasthan	375	588	0.0512
Southern Region	Andhra Pradesh	565	929	0.0568
	Karnataka	376	595	0.0523
	Kerala	853	2515	0.1276
	Tamil Nadu	410	495	0.0211
All India		577	764	0.0316

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yields of Pulses In the year of 2004-05 and 2014-15 was 577 KG Per Hectares in 2004-05 which rose to 764 KG Per Hectares in 2014-15 registered a positive yield growth rate of 0.0316 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Pulses Production in Haryana 0.0033 Percent, Himachal Pradesh 0.0847 Percent, Punjab 0.0094 Percent, Jammu & Kashmir 0.0011 Percent and a negative yield growth rate of Pulses production was registered in Uttar Pradesh -0.0147 Percent during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Pulses Production in Assam was 0.0009 percent, Bihar 0.0357 Percent, Orissa 0.0359 Percent and in West Bengal it was 0.0283 percent during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Pulses Production in Gujarat was 0.0336 percent, Madhya Pradesh 0.0238 percent, Maharashtra 0.0549 percent and in the state of Rajasthan 0.0512 percent was registered during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Pulses Production in Andhra Pradesh was 0.0568 percent, Karnataka 0.0523 percent, Kerala 0.1276 Percent and in Tamil Nadu 0.0379 Percent yield growth rate was registered during the years of 2004-05 and 2014-15 (Table 19).

Region wise Growth in Yield Rate of Oilseeds in India

Table-20 Region Wise Growth Yield of Major Crops in India during the period

Regions	States fall in the Region	2004-05 to 2014-15		ACGR
		(Production in KG/Hectares)		
		2004-05	2014-15	
North Western Region	Haryana	1176	1630	0.0369
	Himachal Pradesh	632	568	-0.0117
	Punjab	1098	1372	0.0250
	Jammu & Kashmir	1125	788	-0.0387

	Uttar Pradesh	861	842	-0.0024
Eastern Region	Assam	529	571	0.0085
	Bihar	887	1114	0.0256
	Orissa	568	727	0.0278
	West Bengal	964	1186	0.0232
Central Region	Gujarat	990	2222	0.0939
	Madhya Pradesh	833	850	0.0022
	Maharashtra	817	1177	0.0413
	Rajasthan	1079	1150	0.0071
Southern Region	Andhra Pradesh	757	934	0.0236
	Karnataka	587	853	0.0424
	Kerala	792	1114	0.0386
	Tamil Nadu	1483	2383	0.0541
All India		885	1153	0.0298

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yields of Oilseeds In the year of 2004-05 and 2014-15 was 885 KG Per Hectares in 2004-05 which rose to 1153 KG Per Hectares in 2014-15 registered a positive yield growth rate of 0.0298 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Oilseeds Production in Haryana 0.0369 Percent, Punjab 0.0250 Percent and a negative yield growth rate of Oilseeds production was registered in Himachal Pradesh -0.0117 Percent, Jammu & Kashmir - 0.0387 Percent and in Uttar Pradesh -0.0024 Percent was registered during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Oilseeds Production in Assam was 0.0085 percent, Bihar 0.0256 Percent, Orissa 0.0278 Percent and in West Bengal it was 0.0232 percent during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Oilseeds Production in Gujarat was 0.0939 percent, Madhya Pradesh 0.0022 percent, Maharashtra 0.0413 percent and in the state of Rajasthan 0.0071 percent was registered during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Oilseeds Production in Andhra Pradesh was 0.0236 percent, Karnataka 0.0424 percent, Kerala 0.0386 Percent and in Tamil Nadu 0.0541 Percent yield growth rate was registered during the years of 2004-05 and 2014-15 (Table 20).

Region wise Growth in Yield Rate of Fruit & Vegetable in India

Table -21 Region Wise Growth Yield of Fruit & Vegetables In India during the period 2004-05 to 2014-15 (Production in KG/Hectares)

Regions	States fall in the Region	Fruit & Vegetable		ACGR
		2004-05	2014-15	
North Western Region	Haryana	21800	23400	0.008

	Himachal Pradesh	19700	21600	0.010
	Punjab	31100	40600	0.030
	Jammu & Kashmir	21400	27100	0.027
	Uttar Pradesh	27200	37300	0.036
Eastern Region	Assam	23400	26100	0.012
	Bihar	24500	33000	0.034
	Orissa	17700	20500	0.016
	West Bengal	29400	33300	0.014
Central Region	Gujarat	29800	41700	0.038
	Madhya Pradesh	37900	48400	0.028
	Maharashtra	27900	23200	-0.020
	Rajasthan	13500	19300	0.041
Southern Region	Andhra Pradesh	22300	32400	0.042
	Karnataka	27400	35100	0.028
	Kerala	29800	31800	0.007
	Tamil Nadu	44600	50000	0.013
All India		25100	29200	0.017

Source: Agriculture Statistics of India, Directorate of Economics and Statistics Government of India, 2004-05 and 2014-15.

All India yields of Fruit & Vegetable In the year of 2004-05 and 2014-15 was 25100 KG Per Hectares in 2004-05 which rose to 29200 KG Per Hectares in 2014-15 registered a positive yield growth rate of 0.017 percent during the years of 2004-05 and 2014-15.

States falling in North Western Region shows positive yield growth rate of Fruit & Vegetable Production in Haryana 0.008 Percent, Himachal Pradesh 0.010 Percent, Punjab 0.030 Percent, Jammu & Kashmir 0.027 Percent and in Uttar Pradesh 0.036 Percent was registered during the years of 2004-05 and 2014-15.

In the Eastern Region the yield growth rate of Fruit & Vegetable Production in Assam was 0.012 percent, Bihar 0.034 Percent, Orissa 0.016 Percent and in West Bengal it was 0.014 percent during the years of 2004-05 and 2014-15.

In the Central Region the yield growth rate of Fruit & Vegetable Production in Gujarat was 0.038 percent, Madhya Pradesh 0.028 percent, Rajasthan 0.041 percent and negative yield growth rate was registered in Maharashtra -0.020 percent during the years of 2004-05 and 2014-15.

In the Southern Region the yield growth rate of Fruit & Vegetable Production in Andhra Pradesh was 0.042 percent, Karnataka 0.028 percent, Kerala 0.007 Percent and in Tamil Nadu 0.013 Percent yield growth rate was registered during the years of 2004-05 and 2014-15 (Table 21).

Conclusion:

The region wise growth rates of the major farm crops are the reflection of the various factors pertaining to the growth in the production and productivity of agriculture, in the North Western Region of India gross cropped area recorded a meager growth rate of 0.001percent during the study

period, -0.013 percent in the Eastern Region, 0.009 percent in the Central Region and 0.004 percent in the Southern Region.

Crop wise growth rates of major farm crops during 2004-05 and 2014-15 in all regions of India shows growth rate as, in the production of Rice registered a positive growth rate of 0.027 percent, Wheat 0.037 percent, Jowar -0.0325 percent, Bajra 0.0163 percent, Maize 0.062 percent, Pulses 0.043 percent, Oilseeds 0.033 percent and Fruits and Vegetables registered a positive growth rate of 0.08 percent.

Growth in the yield rate of major farm crops registered as in the year of 2004-05 to 2014-15 all India yield rate of Rice was 0.022 percent, Wheat 0.018 percent, Jowar -0.0065 percent, Bajra 0.0343 percent, Maize 0.0342 percent, Tur 0.0270 percent, Pulses 0.0316 percent, Oilseeds 0.0298 percent and Fruit & Vegetable 0.017 percent.

India is a country with vast potential and large population therefore in the coming years the need of the foodgrains will be rising and keeping these factors in view India needs to be seriously reviewed the requirements of this side at large.

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