

Inter District Variations in Production and Productivity in Rajasthan Agriculture

Rekha Devi

Research Scholar, Alwar, India

Abstract:- Agriculture Sector is very important for the development of economy of any country. There is a positive relationship between agriculture and Economic development. Rajasthan's economy is not exception in this regard, Agriculture Sector is also very important for its economy as it provides employment opportunity and food to the majority of the population. So, it is very important to know the variations area wise in production & productivity in agriculture sector in Rajasthan. Many researchers have been studied different aspects of the India agriculture and found very important results about the problems of it. In add to them, this research work will try to examine the most possible inter district variations in production & productivity in agriculture sector in Rajasthan.

I. INTRODUCTION

In the present work an attempt has been made to investigate the regional disparities in agricultural productivity of the state which is the largest state in term of area in the country. Agriculture is the dominant sector contributing about 21% in Net State Domestic Product. The growth of agriculture sector in Rajasthan has improved tremendously in comparison to many other Indian states. Equality in agriculture sector across the districts in the state has become important. Therefore an attempt is made to investigate the district-wise changing scenario of the productivity during 1990-2010. The analysis from the time series data shows that agricultural productivity pattern is undergoing a change over the years. The study concludes that the desert districts are not still behind in term of productivity than non desert districts although growth rate is much higher in term of productivity in desert districts than non desert districts. Finding of this study will facilitate for formation of agriculture policy in the state for agricultural development.

II. OVERVIEW

India is the agriculture dominant country in present world in spite that the role of agriculture is very less in GDP of the country. India is facing a different type of paradoxical approach of development because the role of agriculture is declined due to enhancement of the development of service sector. This dramatically change is happened after 1991 reform of policy but there is need to develop the agriculture sector also because otherwise future problem of mismanagement would be occurred. India's states should focus on the development of agriculture as well industry. There are 29 small as well as large states in India where there is very much potential in agricultural development.

The growth rate of world GDP in 1960s was 5.4% and it was 3% in 2000s in which developing countries growth rate was 5% in 1960s and 5.6% in 2000s which shows that the growth rate was enhanced very much in developing countries than developed countries but on the other hand inflation rate of industrialized countries was 4.9% in 1960s and 2% in 2000s and it was 4.9% in 1960s and 5.8% in 2000s (World Bank 2007). Per capita GDP growth rate of last six decades was better in East Asia and Pacific than other continent. The per capita growth rate of South Asia without India was 2.4 in 1960s and it was 2.5 in 2000s. The decades of 1960s and 1970s were for concept of industrialization of import substitution. These decades also known for agriculture sector reform such as green revolution, land reforms, credit flow, marketing and other specific reform which were helpful for grown up the demand of agriculture. India's 70 per cent cultivated area is rainfed and it contributes around 40 percent of the total production (Vaidyanathan, 2010). Rajasthan is the largest state in term of area where it contributes 10.41 per cent area, 5.67 per cent of population, 10.70 per cent of live stocks and 8.48 per cent of milk production of the country. Further, total forest area 4.24, tree covered area 8.92, crop irrigated area 8.95, net irrigated area 9.88, total cropped area 11.67 and net area sown is 12.42 percent of the country. GOR (2012). GDP growth rate of Rajasthan in 2012-13 was 5.31 per cent. The sector wise contribution of GSDP at constant price of 2004-05 by agriculture was 19.88, Industry 31.31 and service sector was 48.81 percent. It is proposed in twelfth five year plan (2012-17) that the outlay on agriculture and allied service will be 5.57 per cent. The state of Rajasthan has very much disparity in term of agriculture productivity because there are 10 agro climate zones and it affected the productivity of the crops. Some districts are far better than other, in this study attempts are made to justify the productivity in quinquennially i.e. 1990-95, 1995-2000, 2000-2005 and 2005-10. This division is based on the ranking of the districts in term of developed and non developed districts.

An analysis of the growth of agricultural production in terms of physical components viz. area, productivity and prices in the state of Rajasthan was conducted by Vidya Sagar (1977). It was revealed that maximum increase in the acreage allocation was 10 percent and yield rate by more than 50 per cent was recorded for bajra crop. Wheat recorded an increase of 7 per cent in area and 9 per cent in yield but oilseeds recorded an increase of only 1 per cent in acreage allocation while 40 per cent in yield. The other individual crops of barley, gram and small millets had reduction both in their share in area and yield rate. All those crops, which showed an increase in the yield rate but a

decrease in the proportion of area, had also recorded area increase in absolute. A higher yield rate implied a higher level of production and this may cause price to go down or increase less as compared to the overall price level. Rajasthan is desert dominant state even then it is not most exclusive state in term of socioeconomic indicators (Kulshrestha, 2014). But socio-economic exclusion is very from district to district. Exclusion is more widely in desert areas than non desert area in terms of per capita net district domestic product, population density, decadal population growth, and sex ratio but there is inclusion in literacy rate (Bhullar and Kulshrestha, 2013). Rajasthan where most part of the state is arid and the basic factors having relative permanency and fixity are those which tend to make stock raising the most suited farm activity in the region. This state is better for livestock farming in the arid region over animal husbandry in the other areas Jodha (1972). The desert area of the state is much affected by the economy of the state because there is severity of drought which occurs frequently and the Government can avert famine deaths, first, drinking water and, second, fodder for the cattle Ghosh(1987). The agricultural production of the state is affected due to uncertainty of rainfall.

Three technological factors, viz, high yielding varieties of seed, fertilisers, and irrigation also affects the growth of agricultural productivity in Rajasthan during 1961-74 i.e. just after the green revolution. The analysis contradicts the popular hypothesis that the new varieties are, by and large, responsible for the green revolution in India. Even in the case of wheat, which has registered nearly 40 per cent yield increase, high yielding varieties contribute a mere 26 per cent of the yield growth while the share of the other two factors is 74 per cent. Overall, the share of the new varieties of seed is 15 per cent. The share of fertilisers and irrigation is 30 per cent and 18 per cent, respectively. Of the growth of overall agricultural productivity, 33 per cent is unexplained in the study by Sagar (1978). Mahendra(2003) explains that the state government have a major responsibility in agriculture and the social sector. Since the early 1990s, however, the finances of states have been in bad shape. The centre's tax to GDP ratio has declined significantly in the 1990s.

As a result, central transfers to states have been reduced. This could be one of the reasons why states are not able to allocate higher resources for agriculture and social sector.

III. METHODOLOGY

The study is based on data for the period 1990- 2010, considering all the 30 districts² in Rajasthan. The mean and standard deviation () were calculated from the data of five years i.e. 1990-1995, 1995-2000, 2000- 2005 and 2005-2010 for the productivity at the district level. The districts were than classified on the basis of average productivity of all major crops in the following three categories:

- Developed districts: Above (+) values.
- Moderately developed districts: Between (±) values and
- Under developed districts: Below (-) values

The developed districts are those which gets the score above (+), moderate are those which gets the score between (±) values and under developed districts are those which gets the score below (-) values. The same procedure of ranking the districts was followed for four time periods.

IV. ANALYSIS AND RESULTS RANKING OF DISTRICTS

District	Average Productivity (1990-2010)	Rank
Bundi	1843.09	1
Dholpur	1714.44	2
Bharatpur	1637.30	3
Baran	1568.23	4
Chittorgarh*	1507.33	5
Kota	1464.54	6
Alwar	1368.76	7
Rajsamand	1365.36	8
Ganganagar* ³	1339.84	9
Udaipur	1294.39	10
S.Madhopur*	1287.36	11
Dungarpur	1286.62	12
Dausa	1235.23	13
Jhalawar	1223.53	14
Jaipur	1199.99	15
Sirohi	1176.56	16
Banswara	1149.81	17
Bhilwara	1111.48	18
Sikar	901.82	19
Jhunjhunu	864.84	20
Tonk	790.70	21
Pali	668.82	22
Ajmer	665.73	23
Jaisalmer	578.76	24
Jalore	531.83	25
Nagaur	474.26	26
Jodhpur	418.38	27
Bikaner	403.20	28
Churu	340.88	29
Barmer	168.14	30

Table 1:- Average Productivity of All Districts (1990-2010)

The conclusions are made on the basis of last twenty years productivity data of the state across districts. The table 1 shows that the district Bundi is the most productive in the state. Other districts such as Dholpur, Bharatpur, Baran, Chittorgarh, Kota and Alwar are the productive districts; on the other hand Barmer, Churu, Bikaner, Jodhpur and Nagour are less productive districts. This analysis shows that desert districts are less productive than non desert Districts. Table 1 also shows that there is much difference across the districts on the other hand it shows that Bundi have the average productivity about 1843 kg./hectare whereas on the another hand it shows that it is 168 kg./hectare in Barmer.

- *Districtwise Agricultural Productivity During 1990- 95*

On the basis of initial five years data on average productivity during 1990- 95 across districts it can be inferred that the developed districts in term of productivity

are Bharatpur, Ganganagar, Bundi and Chittorgarh (Table 2). These districts are water abundant and there is facility of canal, tube wells and other sources. These districts are well known districts for production of food grains. The under

developed districts in this period are Bikaner, Barmer, Churu, Jaisalmer and Jodhpur. They all are arid area districts.

Status	Districts	Productivity (1990-95)
Developed Districts	Bharatpur	1273.64
	Ganganagar*	1303.67
	Bundi	1390.49
	Chittorgarh	1357.61
Moderate Districts	Ajmer	621.51
	Jaipur	1031.38
	Dausa	1048.36
	Sikar	604.11
	Jhunjhunu	571.29
	Alwar	1226.17
	Dholpur	1224.53
	S.Madhapur*	1122.79
	Jalore	452.59
	Nagaur	504.92
	Pali	573.42
	Sirohi	964.98
	Kota	1184.06
	Baran	1190.36
	Jhalawar	1014.58
	Tonk	723.89
	Banswara	1045.05
	Dungarpur	878.69
Udaipur	1111.79	
Rajsamand	1215.32	
Bhilwara	1051.83	
Under Developed Districts	Bikaner	357.01
	Churu	260.59
	Jodhpur	366.11
	Jaisalmer	187.04
	Barmer	193.20

Table 2:- Average Productivity of Agriculture (1990-95) (Kg/Hect.)

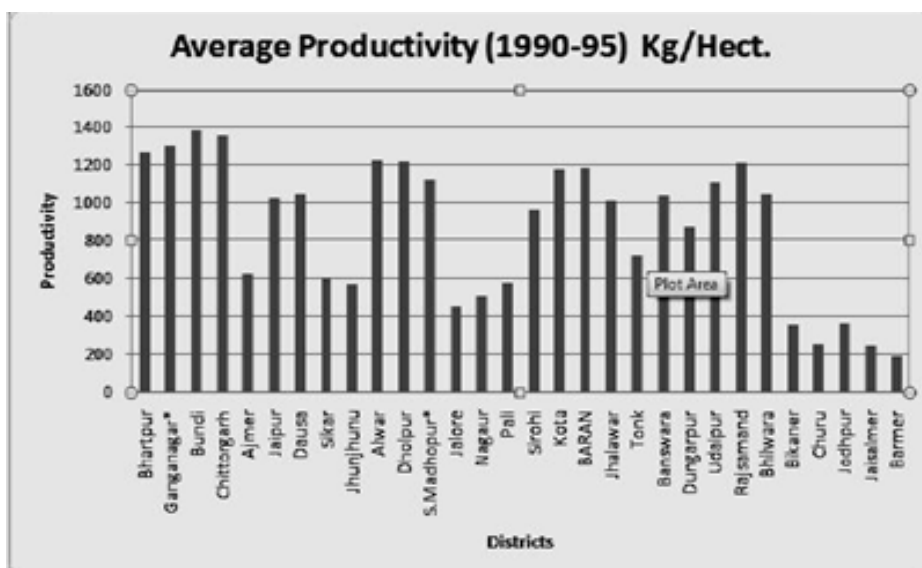


Fig 1:- Average Productivity of Agriculture (1990-95)

Status	Districts	Productivity (1995-2000)
Developed Districts	Alwar	1572.87
	Bharatpur	1671.25
	Dholpur	1588.32
	Ganganagar*	1449.92
	Bundi	1679.71
Moderate Districts	Ajmer	627.43
	Jaipur	1222.58
	Dausa	1324.25
	Sikar	854.17
	Jhunjhunu	779.73
	S.Madhapur*	1262.11
	Pali	581.86
	Sirohi	1053.39
	Kota	1430.10
	Baran	1435.36
	Jhalawar	1218.24
	Tonk	857.54
	Banswara	1164.47
	Dungarpur	1041.19
	Udaipur	1272.96
	Rajsamand	1347.25
Bhilwara	1164.25	
Chittorgarh	1352.92	
Under Developed Districts	Bikaner	459.36
	Churu	331.53
	Jodhpur	305.28
	Jaisalmer	212.58
	Jalore	475.32
	Barmer	150.63
	Nagaur	482.50

Table 3:- Average Productivity of Agriculture (1995-2000) (Kg/Hect.)

Table 3 shows that there are five districts out of thirty districts which are more productive than others and on the other hand seven districts are less productive in term of agricultural productivity. The productive districts are Iwar, Bharatpur, Bundi, Dholpur and Ganaganagar and the less productive districts are Bikaner, Barmer, Churu, Jaisalmer, Jalore and Nagaur. It shows that in Alwar and Dholpur districts productivity enhancement is observed for this internal as well as externalities are responsible. On the other

hand, the number of less productive districts were increased in this period such as Jalore and Nagaur, which are also desert districts of the state. It has also seen that the overall productivity of the districts enhanced across districts which reflects that growth of productivity is registered in this period. This growth of productivity may be due to use of fertilizers and enhancement of the facility of irrigation.

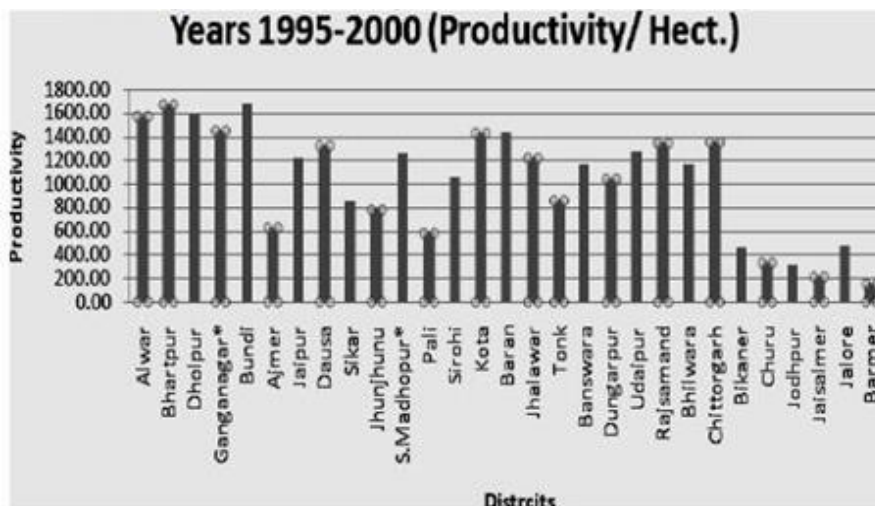


Fig 2:- Average Productivity (1995-2000) (Kg/Hect.)

Fig 2 shows that the productivity of the different districts over the period of 1995-2000 and it reflects that the Northern and Eastern districts are more productive than the west. This also emphasizes that the desert districts are far behind in term of the productivity and there need to focus on these districts at that time.

Table 4 shows that during the first five years of the second decade of the study productivity of the developed districts as shown in previous decade remains by and large the same. In this period highly desert districts also have done well and there is enhancement of the productivity. On the other hand other districts such as Bikaner, Barmer, Churu, Jaisalmer, Jodhpur, Jalore and Nagaur are highly less productive districts during this period.

	Districts	Productivity(2000-2005)
Developed Districts	Bharatpur	1676.47
	Dholpur	1889.07
	Bundi	1805.19
	Dungarpur	2245.41
Moderate Districts	Ajmer	861.41
	Jaipur	1164.66
	Dausa	1368.36
	Sikar	1070.83
	Jhunjhunu	1053.75
	Alwar	761.99
	S.Madhapur*	1248.29
	Ganganagar*	1242.67
	Pali	947.82
	Sirohi	1557.68
	Kota	1474.92
	Baran	1574.36
	Jhalawar	1113.89
	Tonk	742.17
	Banswara	1195.43
	Udaipur	1293.85
Rajsamand	1336.52	
Bhilwara	970.75	
Chittorgarh	1404.49	
Under Developed Districts	Bikaner	417.85
	Churu	513.92
	Jodhpur	511.89
	Jaisalmer	331.25
	Jalore	535.22
	Barmer	175.52
Nagaur	476.88	

Table 4:- Average Productivity of Agriculture (2000-2005) (Kg/Hect.)

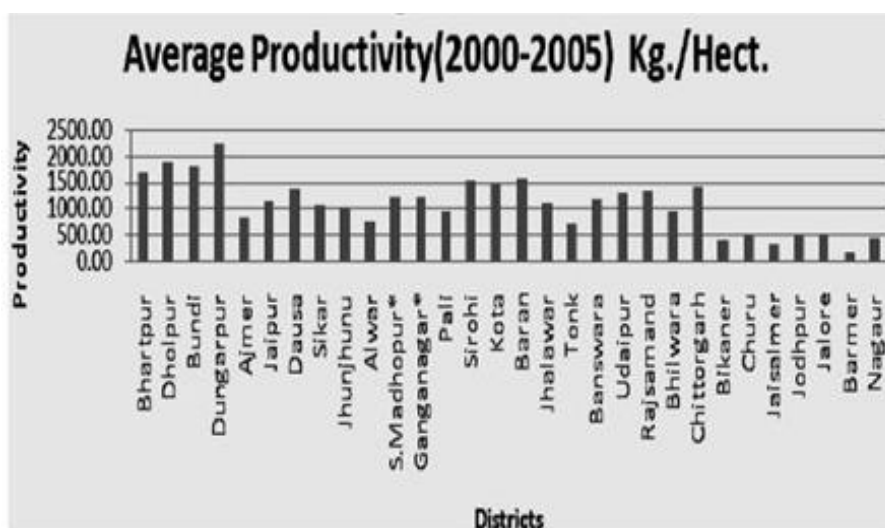


Fig 3:- Average Productivity of Agriculture (2000-2005) (Kg/Hect.)

Fig 3 also shows that the productivity is increased over this period but desert districts remains backward in this period.

Status	Districts	Productivity(2005-10)
Developed Districts	Alwar	1914.02
	Bharatpur	1927.84
	Dholpur	2155.85
	Baran	1865.36
	Bundi	2496.95
	Chittorgarh*	1914.29
Moderate Districts	Ajmer	552.58
	Jaipur	1381.32
	Dausa	1532.36
	Sikar	1078.18
	Jhunjhunu	1054.57
	S.Madhopur*	1516.23
	Ganganagar*	1363.09
	Jalore	664.21
	Pali	572.17
	Sirohi	1130.18
	Kota	1769.07
	Jhalawar	1547.40
	Tonk	839.18
	Banswara	1194.28
Dungarpur	981.17	
Udaipur	1498.93	
Rajsamand	1536.36	
Bhilwara	1259.10	
Under	Bikaner	378.58
Developed Districts	Churu	257.47
	Jodhpur	490.24
	Jaisalmer	226.88
	Barmer	153.22
	Nagaur	432.73

Table 5:- Average Productivity of Agriculture (2005-2010)

Table 5 reveals that the agricultural productivity during this period (2005-10) Alwar, Bharatpur, Baran, Bundi, Chittorgarh and Dholpur showed excellent results.

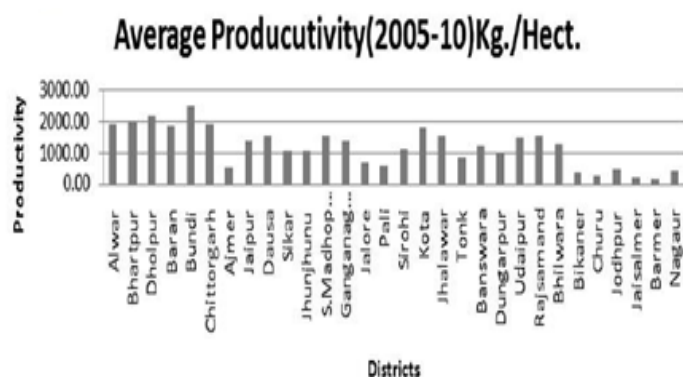


Fig 4

Fig 4 shows that average productivity is much higher in all districts other than desert districts. There is need to develop the facilities of irrigation in desert districts by which these districts can use their potential.

Developed Districts				
Years	1990-95	1995-2000	2000-2005	2005-10
Districts	Bharatpur	Bharatpur	Bharatpur	Bharatpur
	Bundi	Bundi	Bundi	Bundi
	Chittorgarh	Dholpur	Dholpur	Dholpur
	Ganganagar*	Ganganagar*	Dungarpur	Baran
		Alwar		Alwar
				Chittorgarh

Table 6

Productive Districts in Rajasthan Table 6 shows that some districts remained productive such as Bharatpur and Bundi. In the district Dholpur productivity also remained high from 1995-2010. Chittorgarh, Ganganagar and Alwar districts also did well in this period whereas Dungarpur the southern district and east-south districts Baran also growing faster.

Under Developed Districts				
Years	1990-95	1995-2000	2000-2005	2005-10
Districts	Bikaner	Bikaner	Bikaner	Bikaner
	Churu	Churu	Churu	Churu
	Jodhpur	Jodhpur	Jodhpur	Jodhpur
	Jaisalmer	Jaisalmer	Jaisalmer	Jaisalmer
		Jalore	Jalore	
	Barmer	Barmer	Barmer	Barmer
		Nagaur	Nagaur	Nagaur

Table 7:- Under Productive Districts in Rajasthan

Table 7 shows that the all under productive districts are desert. Some under productive districts such as Bikaner, Churu, Jodhpur, Jaisalmer and Barmer were remained less productive during the study period. Jalore has increased their productivity in last quinquennium. Nagaur had been remained less productive districts for three quinquennium.

V. CONCLUSION

This research paper is focused on the productivity across districts over last two decades. This study deals with all the districts and captures the scenario of the productivity. Productive districts are a few and their produce remained the same by and large and on the other hand less productive districts remained same over the time. The moderate districts are by and large same but the division of desert and non desert is also important here because all less productive districts belong to the desert districts where the production is very less that's why the productivity is less. This study also shows that the overall productivity across the districts also enhanced due to technology and other institutional development in the agriculture. In this period there is on an average incremental trends of the productivity but government should focus on the desert districts of the state because there is much difference in productivity of the desert and non desert districts of the state.

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