

A CASE STUDY :

Trends in area, production and yield of pearl millet crop in Barmer district of Rajasthan

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SUMMARY : Pearl millet (*Pennisetum typhoideum*) is an important low value cereal crop grown in rainfed areas of country. The Indian hot arid zone is spread over 0.32 m km² area and 65 per cent of it is in the western district of Rajasthan. The Rajasthan is largest producer of pearl millet in India. The area, production and yield of the *Bajra* crop in Rajasthan and Barmer has been witnessing an increasing/decreasing trend since the 2007-2008 to 2017-18. Barmer district is having the most extensive sown area but productivity is very less as compared to other district and Rajasthan.

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KEY WORDS:

Bajra, Area, Production, Yield

BACKGROUND AND OBJECTIVES

Pearl millet (*Pennisetum typhoideum*) is an important low value cereal crop grown in rainfed areas of country. The Indian hot arid zone is spread over 0.32 m km² area and 65 per cent of it is in the western district of Rajasthan. The climate induces frequent droughts, making arable cropping difficult and uncertain. Rajasthan has cultivated area of almost 20 million hectares but due to some unavoidable circumstances on 20 per cent of the total cultivated area is irrigated. The economy of state is mostly depended on agriculture and 22.5 per cent of state's GDP comes from agriculture. The Rajasthan is largest producer of pearl millet in India. In Rajasthan it was grown on 5206162 ha with average productivity of 825 kg ha⁻¹ while in Barmer district it was grown on 1011401 ha

with average productivity of 130 kg ha⁻¹ (*Kharif* 2008-09). The yield of pearl millet crop is adversely affected by traditional cultivation without fertilizer application especially phosphatic fertilizer. This a good sign as *Bajra* is scanty rainfall crop and it provides grain for humans and fodder for animals. *Bajra* had lowest yield of 7 kg per hectare in 2002-03.

Objective of the study:

The important objective of this paper is to analyze the trends in the area, production, and yield of *Bajra* in Barmer district of Rajasthan.

RESOURCES AND METHODS

Agricultural development is a complex problem. Therefore, reliable collection and

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sources of data are necessary for decision making and future planning. The study relies on secondary data compiled from various published sources. Data on the area, production and yield were collected from the Agricultural Statistics at a Glance from 2006 to 2017, Directorate of Economics and Statistics (DES), Ministry of Agriculture, GOI, Agriculture department of Yojana Bhawan, C-scheme, Jaipur. To analyze the changes in the area, production and yield of the *Bajra* crop in Barmer district of Rajasthan, data were collected for the period from 2007-08 to 2017-18.

Trends in area, production and yield of *Bajra* crop:

Production of *Bajra* has increased or decreased significantly in the country during the last few years. Trends are the drifts in data over long periods of time.

“Gradual changes in the variable data over a long period and cause apparent increase or decrease in it that may not be detected in a year to year analysis” (Goodwin, 1994).

“Trend analysis uses time variable as a surrogate for capturing the effect of changes in other variables that either cannot be measured or in groups of variables that change so gradually that collecting the information is not worth the effort” (Tomek and Kenneth, 2003).

The trend analysis not only depicts the past behaviour pattern of the dependent variable but also provides forecast about its prospects. The trend analysis of the area, production and yield of the *Bajra* crop for 10 years from 2007-08 to 2017-18. There have shown considerable changes (increase/decrease) in the area, production and yield of the *Bajra* crop in Barmer district of Rajasthan during this period.

Trends in area of *Bajra* crop:

One-year area for the *Bajra* crop Barmer and Rajasthan are presented in Table 1. Fig. 1 illustrates the trends in the area of the *Bajra* crop in Rajasthan state and Barmer districts of Rajasthan. In Rajasthan and Barmer district of Rajasthan area under *Bajra* crop varied from 702042 ha and 3955525 in 2012-13 to 1001934 ha and 5174591 ha in 2008-09, respectively. During the year 2012-13 area under the crop declined and reached a level of 702042 and 3955525 ha but again increased from 2013 - 2014. Barmer is the most important districts for the *Bajra* crop regarding the area because of nearabout 40 per cent area of state in Barmer district.

Table 1: Area and productivity of pearl millet

Crop/Year	Area (ha)	
	Barmer	Rajasthan
2007-08	951949	5077396
2008-09	1001934	5174591
2009-10	956738	5168502
2010-11	945072	5488742
2011-12	867013	4986783
2012-13	702042	3955525
2013-14	851793	4412998
2014-15	741051	4076909
2015-16	767306	4044591
2016-17	785162	4150312
2017-18	892200	4236288

Source: Agricultural statistics at a glance 2007-08 to 2017-18

In Fig. 1 red line is the trend line for the *Bajra* crop in Rajasthan state which shows the decreasing and in Fig. 1 blue line is the trend for the trend line for the *Bajra* crop in Barmer district which shows the similar the area for the *Bajra* crop.

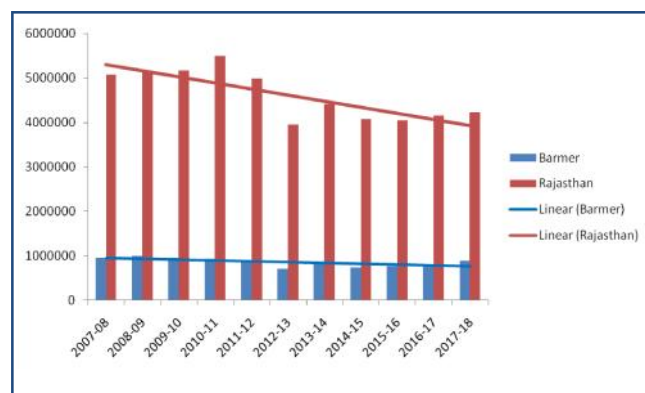


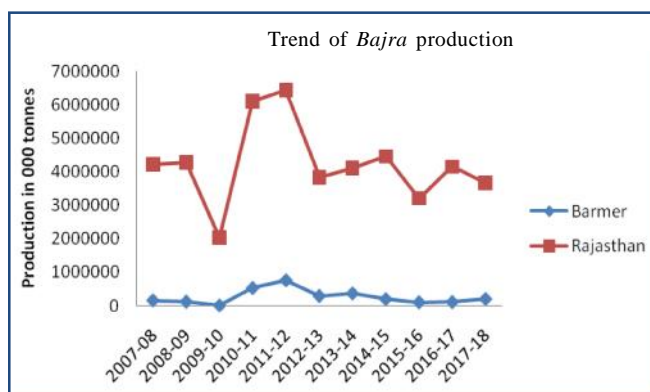
Fig. 1: Trends in area (ha.) of *Bajra* crop

Trends in production of *Bajra* crop:

The production of *Bajra* in Barmer and Rajasthan which was about 753021 and 6432950 tonnes in 2011-12 increased sharply and had doubled the production in year 2013-14. However, there is declining position in *Bajra* production during 2009-10. Lower production of *Bajra* crop was due to drought in year. Had an adverse impact on the area which directly affected the production of *Bajra* crop. In all of western districts, Barmer is the smallest *Bajra* producer districts of Rajasthan state. In Fig. 2 trend line which shows the increasing/decreasing trend in *Bajra* production in Barmer district of Rajasthan.

Table 2 : Bajra production at Barmer district from year 2007-08 to 2017-18

Sr. No.	Year	Production (tons)	
		Barmer	Rajasthan
1.	2007-08	164978	4224393
2.	2008-09	129974	4284561
3.	2009-10	18402	2036390
4.	2010-11	529021	6092504
5.	2011-12	753021	6432950
6.	2012-13	295657	3840815
7.	2013-14	369471	4117327
8.	2014-15	203800	4456062
9.	2015-16	110980	3211405
10.	2016-17	117382	4154462
11.	2017-18	206990	3668625

**Fig. 2: Trends in production of Bajra crop**

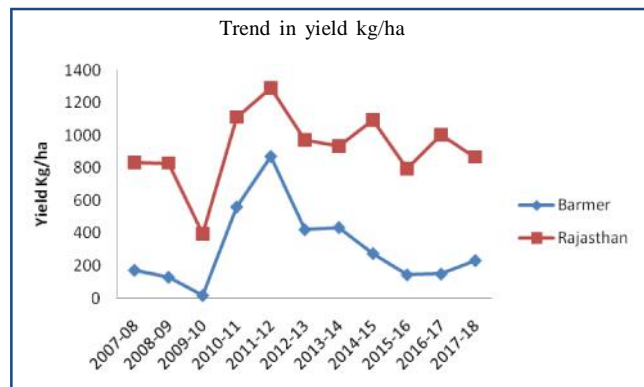
Trends in yield of Bajra crop:

The yield of the *Bajra* crop in Rajasthan and Barmer

Table 3: Yield of Bajra in Barmer and Rajasthan (kg/ha)

Crop/Year	Productivity (kg/ha)	
	Barmer	Rajasthan
2007-08	173	832
2008-09	130	828
2009-10	19	394
2010-11	560	1110
2011-12	869	1290
2012-13	421	971
2013-14	434	933
2014-15	275	1093
2015-16	145	794
2016-17	150	1001
2017-18	232	866

Source: Agricultural statistics at a Glance 2007-08 to 2017-18

**Fig. 3: Trend in yield (kg/ha.) of Bajra crop**

has increased from 173 and 832 kg/ha in 2007-08 to 232 and 866 kg/ha in 2017-18. The productivity may decrease due to deficient rains in 2009-10. Farmers were concerned about the negative impact of the drought on yield.

Conclusion:

The present study has discussed the trends of the area, production and yield for the *Bajra* crop in Rajasthan and Barmer district of Rajasthan. The area, production and yield of the *Bajra* crop in Rajasthan and Barmer has been witnessing an increasing/decreasing trend since the 2007-2008 to 2017-18. Barmer district is having the most extensive sown area but productivity is very less as compared to other district and Rajasthan. The major avenues for future increases in *Bajra* production are expected to come from enhancement in productivity of this crop. To realize this expectation, a proper mix of technologies and strategies needs to be put in place.

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