

# Trends in Area, Production, and Yield of Mustard crop in Bharatpur Region of Rajasthan

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**Abstract - Rapeseed-mustard (*Brassica species*) is the major rabi oilseed crop of India. Mustard seed is the second most important oil seed crop in India after soyabean accounting for nearly 20- 22% of the total oilseeds produced in the country. India is the fourth producer of mustard seed contributing to around 11 % of world's total production. Rajasthan is the most giant mustard growing state and alone contributes 43% of the total mustard seed production in India (Mustard crop Survey Report 2014-15). In Rajasthan, the mustard crop is mostly cultivated in Alwar, Bharatpur, Jaipur, Dholpur, Sawaimadhopur, Sriganganagar, Jhunjhunu & Sikar districts. Bharatpur, eastern district of Rajasthan is the largest mustard growing division covering about 48 per cent of the total production of state. Therefore a study was carried out to assess the trend in area, production and yield of mustard crop in Bharatpur region of Rajasthan. Secondary data were compiled for the period 2001-02 to 2014-15 from various published sources and websites. The area, production and yield of mustard crop in Bharatpur region has been witnessing an increasing trend since 2001-2013 decade due to increasing usage of RM seed oil in food. Moreover, strong domestic demand for mustard seed oil was also one of the reasons for rise in production. During 2013-15 mustard crop shows decreasing trends in terms of area, production and productivity due to unfavorable weather conditions.**

**Keywords: Domestic demand, Area, Production and Yield**

## Introduction

The Indian agriculture is considered to be the backbone of Indian economy. The agricultural sector is the largest employer in India's economy and employed 49% of its total workforce in 2014 but contributes to a declining share of its GDP (17% in 2013–14). A large number of important industries like jute, textiles, edible oils, tobacco, sugar, etc. receive the raw materials produced by agriculture sectors. Edible oilseeds are an essential part of Indian agriculture and contribute more than 10 percent to agriculture GDP. Soybean, groundnut and rapeseed-mustard are the major oilseed crops in India contributing nearly 79% and 88% to its total acreage and production, respectively. During 2012-13, rapeseed-mustard contributed 24.2 % to the total oilseeds production. Globally, India account for 19.29 % and 11.27% of the total area and production of mustard (USDA 2013). Mustard seed is the second most important oil seed crop in India after soybean. It accounts for nearly 20- 22% of the total oilseeds produced in the country. Mustard seed is grown with a different consumption pattern in the country. Indian mustard is mainly used for extraction of mustard oil while black mustard is mainly used as a spice. White mustard is used as fodder crop or as green manure. India is the fourth producer of mustard seed contributing to around 11 % of world's total production. The production in India has been witnessing an increasing trend since the 2001-2014 decade due to increasing usage of mustard seed oil in food. Moreover, strong domestic demand for mustard seed oil was also one of the reasons for rise in production. European Union (27) is the leading producer of mustard seed in the world accounting for 35% of the world production - followed by Canada (21%), China (22%) and India (11%) (Mustard crop Survey Report 2014-15).

In India, mustard seed is mainly grown in North West parts of India. Rajasthan and Uttar Pradesh are the major producing States in the country. The production from Rajasthan is highly monsoon dependent. The other significant producers are Madhya Pradesh, Haryana, Gujarat, West Bengal and Assam. Mustard Seed is a Rabi season crop sown during Oct-Nov and harvested during March -April. Marketing season starts from March and end during Feb. Rajasthan is the most giant rapeseed-mustard growing state and alone contributes 43% of the total mustard seed production in India (Mustard crop Survey Report 2014-15).

In Rajasthan state, the mustard crop is mostly cultivated in Alwar, Bharatpur, Jaipur, Dholpur, Sawaimadhopur, Sriganganagar, Jhunjhunu & Sikar districts. Bharatpur, eastern district of Rajasthan is the largest mustard growing division covering about 48 per cent of the total production of state. Indian mustard crop plays a vital role in improving economic status of the farming community of Bharatpur region.

Oilseed crops are high paying crops in the dry regions. Rapeseed-mustard is a multiple use crop. Besides, its oil value, its seeds are also used as condiments in preparation of pickles and flavoring curries and vegetables. Oil and fat play a significant role in the human dietary system as well as the economy of the people. The oil is utilized for human consumption throughout India in cooking & frying. The leaves of young plants are used as a green vegetable as they supply enough sulfur minerals in the diet. The oil cakes are used as cattle feed & manures. Considering the importance of a rapeseed-mustard group of the crop in the Indian economy, the urgent need for undertaking the basic & strategic research for stabilizing and increasing the production & productivity of mustard in our country.

### Objective of the study

The important objective of this paper is to analyze the trends in the area, production, and yield of mustard in Bharatpur Region of Rajasthan.

### Methodology

Agricultural development is a complex problem. Therefore, reliable collection and 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 2001 to 2015, 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 mustard crop in Bharatpur region of Rajasthan, data were collected for the period from 2001-02 to 2014-15.

### Trends in Area, Production, and Yield of mustard crop

Production of rapeseed and mustard has increased 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 & Kenneth, 2003)

The trend analysis not only depicts the past behavior pattern of the dependent variable but also provides forecast about its prospects. The trend analysis of the area, production and yield of the mustard crop for 15 years from 2001 to 2015 has been divided into seven sub periods starting from 2001-03 to 2013-15. There have shown considerable changes in the area, production and yield of the mustard crop in Bharatpur region of Rajasthan during this period.

### Trends in area of mustard crop

Two-year averages of the area for the mustard crop are presented in table 1. Figure 1 illustrates the trends in the area of the mustard crop in five districts of Bharatpur region of Rajasthan and total of Bharatpur region also included. In Bharatpur region of Rajasthan area under mustard crop increased from 5.31 lakh ha in 2001-03 to 8.66 lakh ha in 2005-07. During the year 2007-09 area under the crop declined and reached a level of 7.61 lakh ha but again increased from 2011 to 13. Area for the mustard crop in Bharatpur region is fluctuating. In all of five districts of Bharatpur region, the highest increasing trend in the area of the mustard crop can be seen in Sawai Madhopur which is 0.71 lakh ha in 2001-03 and by increasing reached at the level of 1.98 lakh ha during 2005-07. It decreased during 2007-09 and 2009-11 but again get the position of increasing, and in 2013-15 it became 0.83 lakh ha. Alwar and Bharatpur are the most important districts for the mustard crop regarding the area.

In figure 1 red line is the trend line for the mustard crop in Bharatpur region which shows the increasing trends in the area for the mustard crop in Bharatpur region of Rajasthan.

**Table1**

**Area of Mustard in lakh hect.**

s.no.	District	2001-03	2003-05	2005-07	2007-09	2009-11	2011-2013	2013-15
1	Alwar	2.02	2.56	2.88	2.34	2.52	2.55	2.34
2	Bharatpur	1.66	2.14	2.25	2.07	2.01	2.2	2.04
3	Dholpur	0.54	0.79	0.72	0.6	0.63	0.7	0.66
4	Sawai Madhopur	0.71	1.66	1.98	1.56	1.55	1.76	1.85
5	Karoli	0.37	1.48	0.97	0.84	0.75	0.82	0.83
	Bharatpur Region	5.31	7.9	8.66	7.61	7.46	8.03	7.72

Source: Agricultural statistics at a Glance 2001-02 to 2014-15

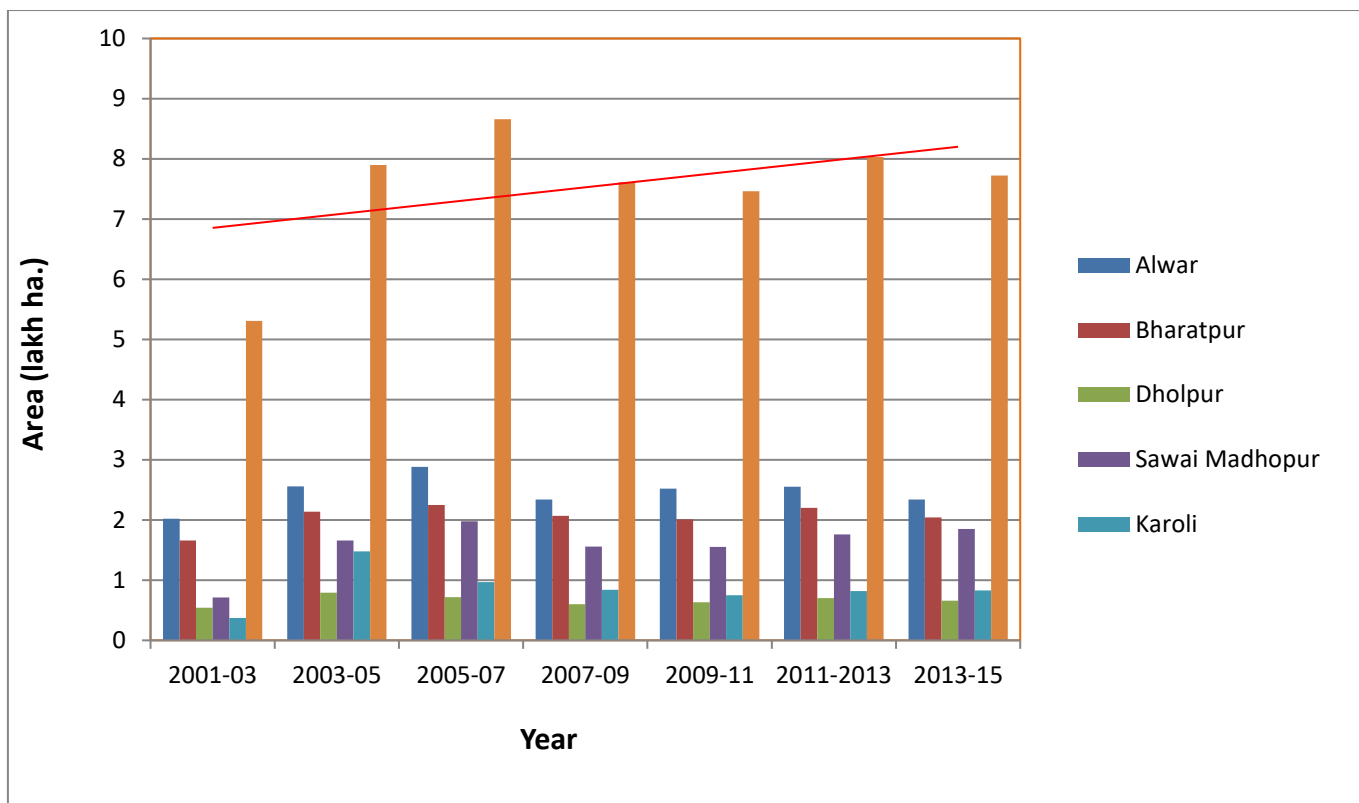


Figure1: Trends in area (lakh ha.) of mustard crop

#### Trends in production of mustard crop

The production of mustard in Bharatpur region which was about 5.25 lakh tonnes in 2001-03 increased sharply and had doubled 11.85 lakh tones during 2009-11. However, there is some slightly declining position in mustard production during 2013-15. Lower production of mustard crop was due to lower sowing and fall in sowing was delay in monsoon arrival. Also delayed harvesting of kharif crops ensured a delayed sowing of Mustard crop. Higher temperature during sowing period also had an adverse impact on the sowing which directly affected the production of mustard crop. In all of five districts, Alwar and Bharatpur are the largest mustard producer districts of Bharatpur region.

In figure 2 orange line is the trend line which shows the increasing trend in mustard production in Bharatpur region of Rajasthan.

**Table2: Production of Mustard in Bharatpur Region (lakh tonnes)**

S.no.	District	2001-03	2003-05	2005-07	2007-09	2009-11	2011-13	2013-15
1	Alwar	2.1	3.51	3.31	3.67	4.09	3.61	3.35
2	Bharatpur	2	2.89	2.96	3.04	3.6	3.59	2.9
3	Dholpur	0.82	0.97	1.04	0.83	1.02	1.01	0.79
4	Sawai Madhopur	0.59	1.75	2.3	1.53	1.98	2.16	2.1
5	Karauli	0.43	1.11	1.21	1.13	1.15	1.22	1.25
	<b>Bharatpur Region</b>	<b>5.95</b>	<b>10.24</b>	<b>10.82</b>	<b>10.2</b>	<b>11.85</b>	<b>11.59</b>	<b>10.41</b>

Source: Agricultural statistics at a Glance 2001-02 to 2014-15

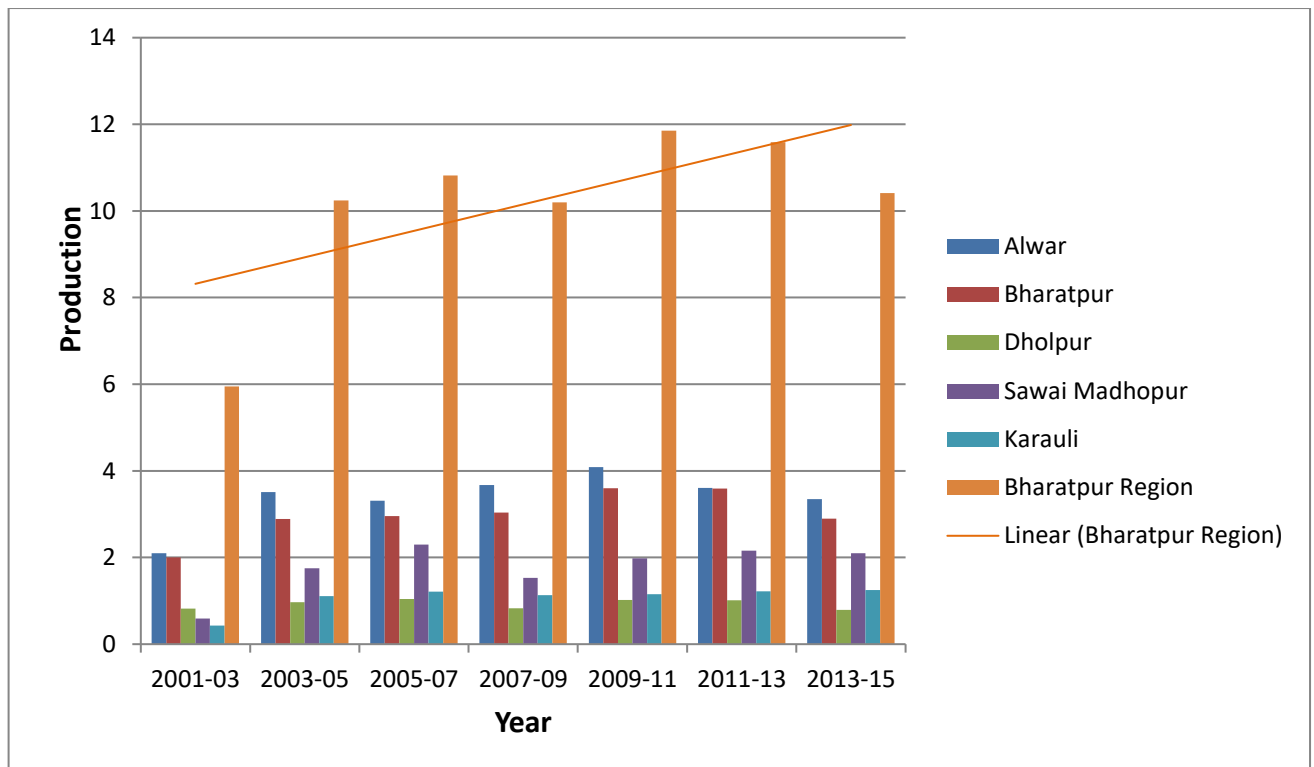


Figure2: Trends in production(lakh tones) of mustard crop

### Trends in yield of mustard crop

The yield of the mustard crop in Bharatpur region has also increased from 1057.5 kg/ha in 2001-03 to 1587.5 kg/ha in 2009-11. Alwar and Bharatpur districts are the most abundant districts in mustard productivity than any other districts of Bharatpur region. Crop damaged due to high temperature in Sawai Madhopur. The productivity may decrease due to deficient rains and a phase of severe hot weather in 2013-15. Farmers were concerned about the negative impact of the hot waves on yield. (Mustard crop survey report 2013-14)

**Table3: Yield of Mustard in Bharatpur Region ( kg/ha.)**

S.no.	District	2001-03	2003-05	2005-07	2007-09	2009-11	2011-13	2013-15
1	Alwar	1018	1390	1222.5	1440	1624.5	1420.5	1426.5
2	Bharatpur	1047.5	1359	1311	1451.5	1788	1635.5	1424
3	Dholpur	1271.5	1215.5	1457	1356.5	1618	1438	1205
4	Sawai Madhopur	724	1069.5	1152	969.5	1283.5	1226	1139.5
5	Karoli	1108.5	1563.5	1246	1326	1537	1495	1506.5
	Bharatpur Region	1057.5	1325	1269.5	1326.5	1587.5	1443.5	1347.5

Source: Agricultural statistics at a Glance 2001-02 to 2014-15

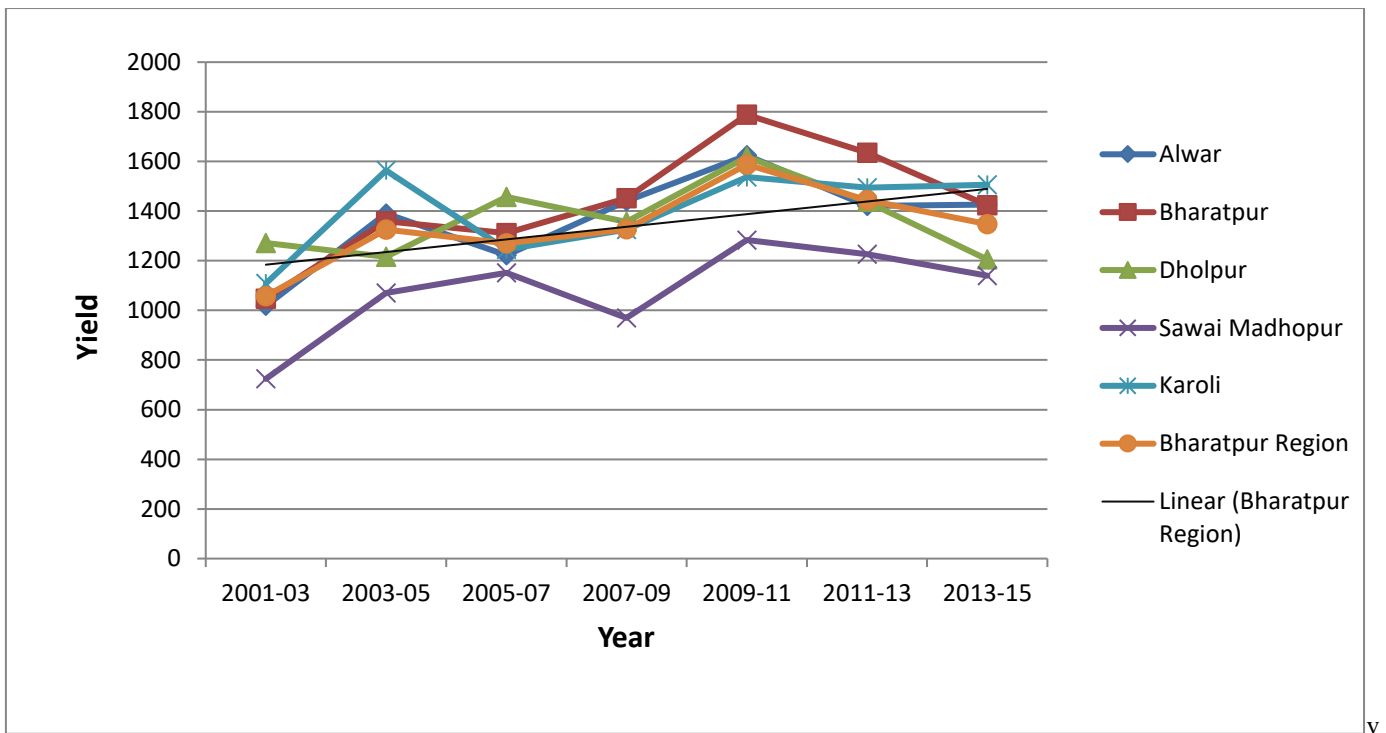


Figure3: Trend in yield (kg/ha.) of mustard crop

According to table 4, the area for the mustard crop in Rajasthan is 14.75 lakh ha. In 2001-03 which has increased and became 26.08 lakh ha. At 2013-15. In Bharatpur region, the area for mustard crop has increased from 5.31 lakh ha. in 2001-03 to 35.98 lakh ha. In 2013-15 which is 35.98% Rajasthan in 2001-03 and it remains 29.6% in 2013-15. Production of the mustard crop has also increased in Rajasthan from 15.43 lakh tones in 2001-03 to 32.49 lakh tones in 2013-15.

In Bharatpur region, the production for the mustard crop is 5.95 lakh tones in 2001-03 which is 38.56% of Rajasthan, and it has increased in 2013-15 by 10.41 lakh tones, and it is 32.02% of Rajasthan. As similarly in comparison to Rajasthan the yield for the mustard crop is 1057.5 kg/ha in 2001-3 which is 102.02% of Rajasthan and in 2013-15 it is 1347.5 which is 108.49% of Rajasthan.

**Comparison in Area(lakh ha.) ,Prod.(lakh tones) & Yield(kg/ha.) of Bharatpur Region to Rajasthan**

**Table 4:**

YEAR	Rajasthan			Bharatpur Region			% to Rajasthan		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
2001-03	14.75	15.43	1036.5	5.31	5.95	1057.5	35.98	38.56	102.02
2003-05	26.74	32.76	1240	7.9	10.25	1325	29.54	31.28	106.85
2005-07	33.29	40.76	1223.5	8.66	10.82	1269.5	26.02	26.55	103.75
2007-09	25.98	29.09	1111.5	7.61	10.2	1326.5	29.31	35.07	119.34
2009-11	23.51	33.98	1438	7.46	11.85	1587.5	31.75	34.87	110.39
2011-13	25.83	33.55	1294.5	8.02	11.6	1443.5	31.08	34.57	111.51
2013-15	26.08	32.49	1242	7.72	10.41	1347.5	29.6	32.02	108.49

Source: Agricultural statistics at a Glance 2001-02 to 2014-15



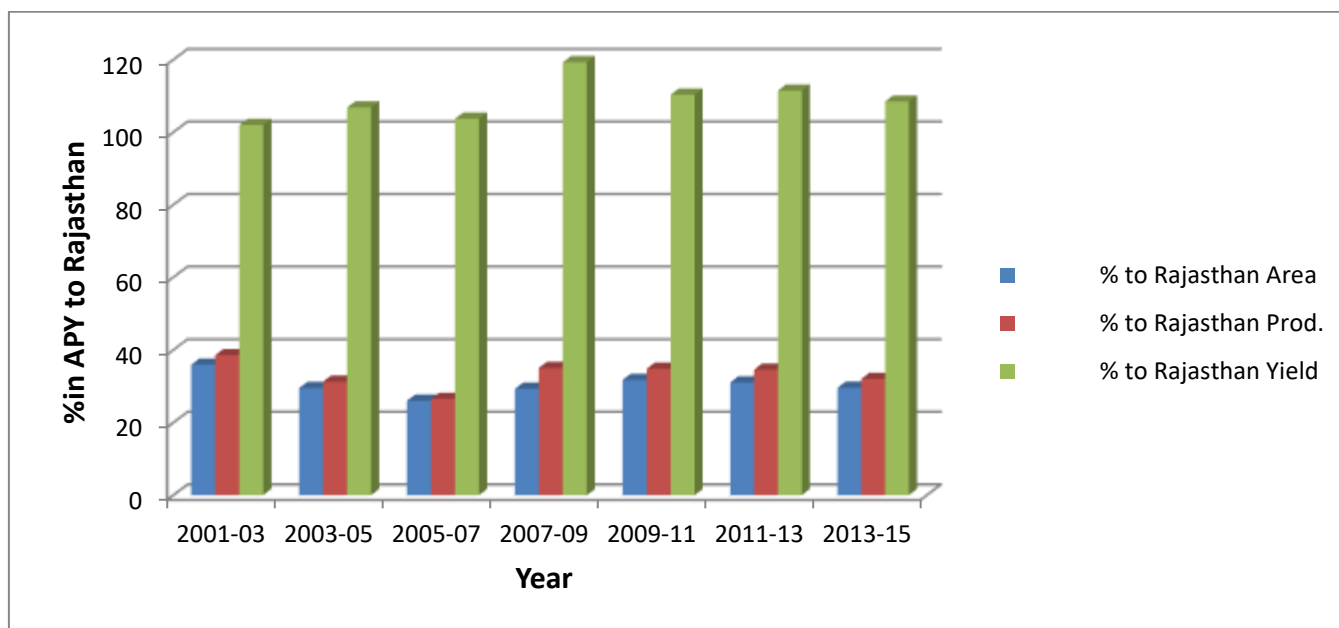


Figure 4: Comparison trends in APY of Bharatpur region to Rajasthan  
A: Area P: Production Y: Yield

### Conclusion

The Present study has discussed the trends of the area, production, and yield for the mustard crop in Bharatpur region of Rajasthan. The production of the mustard crop in Bharatpur region has been witnessing an increasing trend since the 2001-2013 decade due to increasing usage of mustard seed oil in food. Moreover, high domestic demand for it was also one of the reasons for the rise in production. Despite moderate decline in area under mustard seed cultivation, there was a drastic fall in the production during 2013-15 (Figure 4) mainly because of dramatic fall in the yield level from 1443.5 kg/ha in 2011-13 to 1347.5 kg/ha in 2013-15 due to unfavorable weather condition. Lower sowing is also one of the reason of lower production. (Mustard seed survey report 2013-14)

Bharatpur and Alwar districts raise rapeseed-mustard percent with irrigation facility. Alwar, Bharatpur and Sawai Madhopur districts are having the most extensive sown area and largest producers of the mustard crop.

The current level of mustard production and the prevailing trends in the area, production, and productivity of mustard oils availability in the country are way below the requirements. This scenario needs to be reversed if the country has to achieve self-sufficiency in mustard production and reduce our dependence on imports of edible oils. The major avenues for future increases in mustard 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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