

International Journal of Statistics and Applied Mathematics

ISSN: 2456-1452
Maths 2023; SP-8(5): 386-388
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<https://www.mathsjournal.com>
Received: 16-07-2023
Accepted: 15-08-2023

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Absolute and relative change in area, production and productivity of different districts of Mung bean crop in Rajasthan

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Abstract

The 10 years (2010-11 to 2019-20) data were collected from various Rajasthan Agricultural statistics at a glance (<http://www.agriculture,rajasthan.gov.in/>). as a whole Sikar district recorded maximum increase in their area by 676.38 thousand hectares and production by Nagour district 210.65 thousand tones. On the basis of percentage relative change in area, production and productivity were maximum in area Sikar district by 5509.35%, production Churu district by 1595.34% and productivity Churu district by 106.28% respectively. The minimum Absolute change in area and production was found in Barmier district by 2.70 thousand hectares and -3.03 thousand tones on the basis percentage relative change the area and production reduce by 5.05%, -11.22% Barmier district respectively. The minimum relative change in productivity Bikaner district -42.83%.

Keywords: Mung bean crop, Rajasthan agricultural statistics, production of mung bean

Introduction

Mung bean (*Vigna radiata* L.) wilczek is also known as green gram, celera bean, and mung bean. In Asia, mung bean is a legume that is grown for its eatable seeds and sprouts. When ingested whole, green gramme is a fantastic source of high-quality protein (24-25%), minerals (3.5%), fat (1.3%), and carbohydrate (56%) that is easily digestible. variously sprouted grains, dales, and grains. Split and Dehusked corn that has been fried in fat ads value and is a wonderful snack option. Green plants are fed to the cattle after the pods have been harvested. The seed's husk is also fed to cattle. Using green gramme improves blood pressure control and weight management.

India is the origin of the green gram. The crop is mostly farmed in Rajasthan, Maharashtra, Andhra Pradesh, Gujarat, Bihar, and Karnataka's arid regions, as well as to a lesser amount in Uttar Pradesh and Madhya Pradesh. Several regions of the world, including southern and eastern Asia, Africa, Australia, Brazil and South Africa, and America, also grow the crop.

India is the world's top producer of green gram, and it is grown in practically every State. It is grown on roughly 4.5 million hectares, producing 2.5 million tonnes in total (2019-2020) with a yield of 548 kg/ha, making up 10% of the overall production of pulses.

Rajasthan is the highest state in area, production and yield green gram about 23.22 lakh hecter, 1.29 lakh tones, 559 kg/ha. Respectively (Directorate of agriculture, Rajasthan 2019-20). Sikar district it is highest area and production followed by Nagour, Jodhpur, Churu, Jaipur and other district.

Materials and Methods

The whole state of Rajasthan was studied as a unit of its research, because Rajasthan is very different in soil and climate. On the basis of Proposals which ten districts were selected which are as follows Jaisalmer, Barmier, Bikaner, Jodhpur, Nagour, Churu, Jaipur, Hanumangarh, Alwar and Sikar. Suggested great variation in farming pattern in area production and productivity in different part of the state prevails in agro-climatic and economic conditions.

Selection of the study period and data needed

The post period was selected for this study from 2010-11 to 2019-20. The year 2010-11 was selected as the base year 2019-20 was selected as the current years. The data on area production and productivity of Mung bean crops for each Districts taken separately for the same period.

Source of data

The district wise information on area, production and productivity of Mung Bean was collected from various Rajasthan Agricultural statistics at a glance. (<http://www.agriculture,rajasthan.gov.in/>)

Absolute and Relative change:

Absolute change as well as relative change were estimated included in the present study for area, production and productivity of mung bean.

Absolute change

$$\text{Absolute change} = Y_n - Y_o$$

Relative change

$$\text{Relative Change (\%)} = (y_n - y_o) / y_o * 100$$

Where,

Y_n = Mean value (area, production and productivity) for the current triennium ending (2019-20)

Y_o = Mean value (area, production and productivity) for the base triennium ending (2010-11)

Results and Discussion

Absolute change and relative change

Analysis of the absolute change and relative change in the area, production, and yield of mung bean across districts of Rajasthan has taken into consideration both the base year average (starting triennium year 2010-11 to 2011-12) and the current year average (ending triennium year 2018-19 to 2019-20).

Table 1: Absolute and relative changes in area, production and productivity of different Districts of Green gram crop in Rajasthan (2010-11 to 2019-20)

SI. No.	Districts	Area in (000 ha)		Production in (000 Tones)		Productivity in (kg/ha.)	
		Absolut Change	Relative Change	Absolute Change	Relative Change	Absolute Change	Relative Change
1	Jaisalmer	43.742	345.46	14.37	182.58	-227	36.55
2	Barmier	2.70	5.05	-3.03	-11.22	-78	-15.45
3	Bikaner	41.63	718.72	13.26	368.38	-266	-42.83
4	Jodhpur	215.65	212.92	161.10	225.70	29	4.11
5	Nagour	344.99	120.50	210.65	109.56	-34	-5.06
6	Churu	248.62	722.78	122.52	1595.34	237	106.28
7	Jaipur	38.45	47.65	25.20	44.66	-14	-2
8	Hanumangarh	5.55	18.28	5.01	56.85	95	32.76
9	Ajmer	32.50	39.12	8.68	13.88	-136	-18.09
10	Sikar	676.38	5509.35	45.02	549.88	299	63.08
	state	1272.96	121.23	647.13	99.17	-62	-9.98

Absolute and relative change in Area

The data presented in table 1 shows that absolute change in area of mung bean in Rajasthan was found to be 2322.998 thousand hectare (2019-2020). The maximum increase in area was observed for Siker district in 688.660 thousand ha. Followed by Jaipur (119.126 thousand hectare), Barmier (56.146 thousand ha.), Bikaner (47.420 thousand ha.), Jodhpur (316.927 thousand ha.), Nagour (631.291 thousand ha.), Churu (28.3021 thousand ha.), Hanumangarh (35.900 thousand ha.), Ajmer (115.588 thousand ha.), Jaisalmer (56.404 thousand ha) In base year 67.12 percent of the total area of mung bean in the state is confined to ten Districts. Jaisalmer, Barmier, Bikaner, Jodhpur, Nagour, Churu, Jaipur, Hanumangarh, Ajmer, Sikar while in current year these ten districts account for 98.13 per cent of the area of the state. This shows that distribution of the area affected by Mung bean has undergone a significant Chang in the state over a period of time.

The data presented in table 4.1 shows that relative change in area of mung bean in Rajasthan found to be 121.23 percent in current year over base year. The maximum increase in area was observed in Sikar district (5509.35%) followed by Churu (722.78%), Bikaner (718.72%), Jaisalmer (345.46%), Jodhpur (212.92%), Nagour (120.50%), Jaipur (47.65%), Ajmer (39.12%), Hanumangarh (18.28%), and Barmier districts (5.05%).

This shows that the maximum increase in area is reported for Sikar district (676.38 thousand ha.) and for the state as a whole it was 1272.96 ha. This clearly indicated that the absolute

change in area of Mung bean in Rajasthan is mainly attributed to Sikar district (>52.74%).

Absolute and relative change in Production

The data presented in table 1 shows that absolute change in production of mung bean in Rajasthan was found to be 652.525 thousand tons. The maximum increased in production was observed for Nagour (210.65 thousand tons) followed by Jodhpur (161.10 thousand tons), Churu (122.52 thousand tons), Sikar (45.02 thousand tons), Jaipur (25.20 thousand tons), Jaisalmer (14.37 thousand tons), Bikaner (13.26 thousand tons), Ajmer (8.68 thousand tons), and Hanumangarh (5.01 thousand tons). The production was also found to be decreased in Barmier (-3.03 thousand tons).

The data also shows that relative change in production of Mung bean in Rajasthan was found to be 99.17 percent despite of 121.22 percent increase in area reflecting towards decline in productivity over period of time. The maximum increase in production was noted for Churu (1595.34%) followed by Sikar (549.48%), Bikaner (368.38%), Jodhpur (225.70%), Jaisalmer (182.58%), Nagour (109.56%), Hanumangarh (56.85%), Jaipur (44.66%), and Ajmer (13.88%). The decline in production in Barmier (-11.22%).

In base year 58.61 percent of the total production of mung bean in the Rajasthan state is confined to four district Nagour, Jodhpur, Ajmer and Jaipur while in current year 65.162 percent of the production of cluster bean of the state is confined to Nagour, Jodhpur, Churu, and Jaipur. This clearly indicated that

during the period of time agro-climatic distribution of production of mung bean is changes drastically in the state.

The data clearly revealed that over a period of time the production of mung bean in the state does not increase substantially and Agri-climatic distribution of production is also changed.

Absolute and relative change in Productivity

The data presented in table 1 shows that the absolute change in productivity of mung bean in Rajasthan was showing decline in productivity by 62 kg/ha over the period of time. Maximum decrease in productivity was found in Bikaner by (-266 kg/ha) followed by Jaisalmer (-227 kg/ha) Ajmer (-136 kg/ha) Barmier (-78 kg/ha) Nagour (-34 kg/ha.) and Jaipur (-14 kg/ha.). It was found to be increased by 299 kg/ha, 237 kg/ha 95 kg/ha and 29 kg/ha in Sikar, Churu, Hanumangarh and Jodhpur respectively.

The data presented in table also shows that the relative change in productivity of mung bean in Rajasthan was found to be -9.98 per cent showing decrease in productivity over the period of time. Maximum relative decrease in productivity was found in Bikaner (-42.83%) followed by Jaisalmer (-36.55%), Ajmer (-18.09%) Barmier (-15.45%), Nagour (-5.06%) and Jaipur (-2%). It was found to be increased by 106.28%, 63.08%, 32% and 4.11% in Churu, Sikar, Hanumangarh and Jodhpur respectively.

The data also shows that in the base year the productivity of mung bean was very high in Ajmer, Jodhpur, Jaipur, Nagour, Jaisalmer, and Bikaner but during current year it was very high in Sikar (773 kg/ha.), Jodhpur (734 kg/ha.), Jaipur (685 kg/ha.), Nagour (638 kg/ha.), and Ajmer (616 kg/ha.) that five district were high increase in productivity of mung bean as compared to average productivity of the state. Overall decline in productivity is major concern because over the period of time area was increased by about 4.63 lakh ha but this increased area does not converted in simultaneous increase in production on account of stagnation in productivity.

Conclusion

The data also shows that in the base year the productivity of mung bean was very high in Ajmer, Jodhpur, Jaipur, Nagour, Jaisalmer, and Bikaner but during current year it was very high in Sikar (773 kg/ha.), Jodhpur (734 kg/ha.), Jaipur (685 kg/ha.), Nagour (638 kg/ha.), and Ajmer (616 kg/ha.) that five district were high increase in productivity of mung bean as compared to average productivity of the state. Overall decline in productivity is major concern because over the period of time area was increased by about 4.63 lakh ha but this increased area does not converted in simultaneous increase in production on account of stagnation in productivity.

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