

Evolution of Crop Patterns in Haryana: A Comparative Study of Bajra and Jowar

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ABSTRACT

The cropping pattern can be defined as the spatial sequence of cropping under various crops for a given area at a certain time. There have been a lot of changes which have taken place in cropping pattern of Haryana since Green revolution. The Haryana government has been encouraging the farmers to cultivate Bajra as a part of the crop diversification drive and procure Kharif at MSP. Haryana is the only state in the country where the government procure Bajra under MSP. The present paper is attempted to present an analytical account of Bajra and Jowar crops in the state of Haryana. The paper reveals the spatial and temporal variations in both the crops for the time period from period of green revolution to 2019-20. The data has been sourced from Statistical Abstract of Haryana. Secondary data from books, journals, periodicals etc. has been used to draw conclusions for the present paper. The paper finds that the change in cropping pattern of the crops has largely been affected by the changing market- oriented farming of the crops which has in turn, affected the soil fertility, nutritional value of crops and environment as well.

KEYWORDS- Agriculture, Cropping Pattern, Bajra, Jowar, Green revolution.

Introduction

Haryana is predominantly an agricultural economy dominated by agricultural and cropping practices. Millets are a group of grasses grown mostly in arid and semi- arid regions across the world. Millets are very essential for their high nutritional value and other benefits. The United Nations has designated year **2023** as the “**International Year of Millets**”. Bajra and Jowar also belong to this category. Jowar, also called as Sorghum, is grown in the semi arid and arid regions which receive only 400-500 mm rainfall every year. On the other hand, Bajra also known as Pearl millet is also one of the most important coarse grains which is a major staple crop for specially marginalised sections of the society. Bajra and Jowar constitute around 50 per cent of the total cereals consumption even today (Das, 2015).

The Haryana government through its crop diversification drive, has also been encouraging the farmers to cultivate and procure Bajra at MSP. Crop diversification enables one to shift from regional dominance of some crop to other crops. Haryana being the only state to do so, it is introducing schemes like “**Mera pani Meri Virasat Scheme**” in order to diversify the production of crops so as to

neutralise the negative effects on water table as a result of increased production of crops like rice and wheat as a result of green revolution.

Cropping pattern refers to the share of land under different crops at a point of time. With this, the study tries to capture the spatial and temporal variations in cropping pattern of Bajra and Jowar crops for the time period from 1966-67, that is, from the time of green revolution upto 2019-20.

Review of Literature

Handral and Sethy (2017) studied the growth patterns and instability in productivity and production for Jowar and Bajra crops from 1990 to 2013 in India. He studied the increase in productivity of both owing to availability of improved varieties and hybrids for their high nutrition values. It resulted in a steady positive growth in productivity and area in the 1990's and the 2000 decade in Haryana. But for Jowar, he recorded the production growth rate on negative side inspite of the yield rates being positive and rising.

Meena and Nandal (2016) analysed the productivity and production of some principal crops in Haryana from 1966-67 to 2013-14 using compound annual growth rate (CAGR) and exponential growth rate (EGR). It concluded that CAGR remained positive in case of Bajra while the EGR remained negative for the same. And in case of Jowar, both CAGR and EGR remained negative.

Ramphul (2012) conducted a study to analyse the cropping pattern and performance for different crops in various districts of Haryana using different measures like location quotient and crop versatility index for the period 1991-92 to 2008-09. He concluded that district Rewari had specialisation in crop Bajra and district Rohtak and Faridabad had specialisation in production of crop Jowar.

Research Methodology

The present study is based on the Secondary data scanned from various sources which includes Statistical Abstract of Haryana, Economic Survey of Haryana and HAFED.

The results of the study have been presented using simple statistics and various linear as well as non linear growth rates. Simple analytical tools like Average, Growth Rates are used to analyse the data using which the trends for area, production and yield for both the crops have been studied.

Objectives

The objective of the present study is to analyse the spatial and temporal variations in the cropping pattern of Bajra and Jowar crops for the time period from 1966-67, that is, from the time of green revolution upto 2019-20.

Data and Statistics

Table 1- Bajra-Temporal Distribution

(Area in 000 ha.) (Production in 000 Tonne) (Yield in Kg. per ha.)			
Time Period	Area	Production	Average Yield per hectare

1966-67	893.0	373	418
1970-71	879.6	826	939
1980-81	870.3	474	544
1990-91	608.6	526	864
2000-01	608.3	656	1,079
2010-11	659.6	1,183	1,792
2017-18	449.3	721	1,609
2018-19	424.7	878	2,068
2019-20	492.9	1,101	2,235

Source: Statistical Abstract of Haryana 2020-21

Table 2- District wise distribution- Bajra

(Area in 000 ha.)

(Production in 000 Tonne)

(Yield in Kg. per ha.)

<i>District</i>	<i>A</i>	<i>P</i>	<i>Y</i>
Ambala	0.1	-	2,000
Bhiwani	80.8	133	1,644
Charkhi Dadri	55.2	109	1,980
Faridabad	3.9	9	2,218
Fatehabad	2.2	5	2,349
Gurugram	31.3	87	2,772
Hisar	27.1	54	1,990
Jhajjar	38.1	91	2,376
Jind	7.9	16	2,073
Kaithal	0.6	1	1,350
Karnal	0.1	-	2,000
Kurukshetra	0	0	0
Mahendragarh	113.5	283	2,492

Nuh	30.1	83	2,765
Palwal	10.5	28	2,654
Panchkula	1.2	3	2,467
Panipat	0.3	-	1,331
Rewari	67.2	145	2,158
Rohtak	10.6	22	2,016
Sirsa	5.4	15	2,818
Sonipat	6.7	17	2,562
Yamunanagar	0.1	-	2,000

Source: Statistical Abstract of Haryana 2020-21

Table 3- Jowar- Temporal Distribution

(Area in 000 ha.)
(Production in 000 Tonne)
(Yield in Kg. per ha.)

Time Period	Area	To Production	Average Yield per hectare
1966-67	270.0	49	181
1970-71	207.3	57	277
1980-81	136.9	48	354
1990-91	129.4	65	497
2000-01	109.4	23	208
2010-11	70.8	38	535
2017-18	47.5	24	519
2018-19	40.0	21	528
2019-20	29.9	16	527

Source: Statistical Abstract of Haryana 2020-21

Table 4- District wise distribution- Jowar

District	(Area in 000 ha.) (Production in 000 Tonne) (Yield in Kg. per ha.)		
	A	P	Y
	Ambala	-	0
	Bhiwani	0.6	-
Charkhi Dadri	0	0	0
Faridabad	1.2	1	527
Fatehabad	0	0	0
Gurugram	0.5	-	527
Hisar	0	0	0
Jhajjar	0.3	-	527
Jind	0	0	0
Kaithal	-	-	527
Karnal	-	0	527
Kurukshetra	0	0	0
Mahendragarh	-	-	527
Nuh	11.7	6	527
Palwal	6.6	4	527
Panchkula	0	0	0
Panipat	-	-	527
Rewari	0.6	-	527
Rohtak	3	2	527
Sirsa	0.1	-	527
Sonipat	5.3	3	527
Yamunanagar	0	0	0

Source: Statistical Abstract of Haryana 2020-21

Table 5- Bajra Procurement:

Year	MSP (Rs./Qtl.)	Qty. Produced (In MTs)
2017-18	1,425	25,114
2018-19	1,950	95,920
2019-20	2,000	19,160
2020-21	2,150	50,6421
2021-22	2,250	823.50
2022-23	2,350	80,382

Source: Food Grains Procurement, HAFED

Results and Findings

BAJRA CROP

Table 1 shows the area sown, total production and average yield per hectare of the Bajra crop under study. Area under Bajra crop has on an average declined regularly from the green revolution era uptill present 2019-20 from 8,93,000 hectares to 4,92,900 hectares owing to the less procurement and MSPs as compared to other crops like Paddy and Wheat. However, a fluctuating trend is being observed in case of total production trends in Bajra crop from the year 1966-67 at 3,73,000 tonnes and peaking in the year 2010-11 at 11,83,000 tonnes when the area under the crop also peaked at a high of 6,59,600 hectares and production declining further and again rising in 2019-20 at 11,01,000 tonnes. All through this the average yield per hectare of the crop has been on an increasing trend since then from being as low as 418 kg per hectare in the year 1966-67 to being as high as 2,235kg per hectares at latest. This rising yield accrues to the improved technology patterns, more support from government level and encouraging the crop diversification schemes and increasing awareness about these nutri-cereals.

And when the spatial study is done with the help of Table 2, the district wise data shows the area production and yield being variably high in separate districts. The table shows the maximum area under Bajra crop in Mahendragarh district which is 1,13,500 hectares and the least in case of Kurukshetra at 0. Mahendragarh also tops in the production level being highest for Bajra at 2,83,000 tonnes and least for Kaithal at 1000 tonnes. On the other hand the average yield per hectare is considered, Sirsa records the highest in number at 2,818 kg per hectare while for Least for Kurukshetra at 0.

JOWAR CROP

Table 3 depicts the temporal distribution for the area, production and average yield per hectare or Jowar crop. The area under Jowar crop has declined continuously from being at 2,70,000 hectares in 1966-67 to falling down to 29,900 hectares in 2019-20. The production level was recorded highest at 65,000 tonnes in the year 1990-91 to being lowest at 16,000 tonnes in the year 2019-20. On the other hand, the average yield per hectare was recorded as low as 181 kg per hectare to peaking at as high as 535 kg per hectare in the year 2010-11.

The spatial study depicts the district wise distribution of area, production and yield levels of Jowar crop as presented in the Table 4. As per the data, the district of Nuh records the largest area under the Jowar crop at 11,700 hectares and the smallest area under district of Sirsa at 100 hectares. The production level of the Jowar crop was recorded the highest for district of Nuh at 6000 tonnes while the lowest production level was recorded for Faridabad district at 1000 tonnes. The average yield per hectare was distributed evenly among various districts with production of Jowar at 527kg per hectare.

MSP Procurement

Table 5 represents the procurement of Bajra crop at MSP by the state and the quantities procured at that price. The MSP provided by the state government for procurement of Bajra has continuously increased in the recent years to encourage farmers to shift from cultivation of crops like wheat and paddy and shift to these water efficient crops like Bajra and other millets. Presently, for the year the

government has announced the MSP rate for the Kharif at a high of 2,350 rupees per quintal and has procured an amount of 80,382 million tonnes of the crop.

Conclusion

Haryana is one of the major food producing states in India. And since Green revolution there was much stress on cultivation of 2 crops rice and wheat thus laying less stress on cultivation of other crops like millets like bajra and jowar. But since time progressing, the temporal and spatial study of both the crops signify a significant shift towards the cultivation of these crops accruing to its greater water and resource efficiency and its nutritional values and also the support given by the Government.

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