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Research Paper

Performance of major crops and changes in cropping pattern in Akola district

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ABSTRACT : The study has been examined the growth rates of area, production and productivity of major crops and changes in cropping pattern in Akola district of Vidarbha. The present study was based on secondary data collected from different government publications. The data covered a period of 15 years *i.e.*, 1995-96 to 2009-10. In all 6 crops were considered for study. These crops covered more than 80 per cent of the total cropped area of the study area. The growth rate was used to examine performance of major crops, Simple tabular analysis was used to examine the changes in cropping pattern in Akola district. The analysis showed that the area under *Kharif* jowar has found to be decreased in of Akola district. Area under soybean crop was increased in Akola district. The area under wheat has found to be increased and Cotton still remains as major crop of the district.

KEY WORDS : Cropping pattern, Compound growth rate, Productivity, Crop performance

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INTRODUCTION :

Maharashtra is one of the top economic states with respect to per capita income in India. Agriculture is the mainstream of Maharashtra's economy. Analytical studies related to agricultural growth would provides valuable information for future planning and projections of agricultural out put. The adoption of better cropping pattern optimally suited to the technological changes is also an important factor for augmenting growth of agriculture. The study was undertaken with the following objectives:

- To examine the performance of major crops.
- To study the changes in cropping pattern.

MATERIALS AND METHODS :

The study has been confined to the Akola district of Vidarbha region of Maharashtra State. For the present study, the major crops namely cotton, soybean, wheat, *Kharif* jawar, tur and gram were selected. These six crops occupied more than 80 per cent of the gross cropped area in the district. The study was based on secondary data. The secondary data on the area, production, productivity of selected crops, of Akola district were collected from 1995-96 to 2009-10.

Analytical tools :

Analysis of examination of the performance of major crops :

For examining performance of different crops growth rates of area, production and productivity were estimated using exponential model.

$$Y = ab^t$$

where,

Y = area, production and yield

a and b = are the parameters to be estimated from exponential model

CGR = [Antilog (log b) – 1] × 100

Analysis of changes of cropping pattern :

Cropping pattern refers to distribution of the acreages expressed as a percentage of the gross cropped area under different crops. The data on cropping pattern at different point of time collected from the District Supritendant Agriculture Office (DSAO).

The entire study was spilt in to four sub-periods. The sub-period formed was as below,

Period I : 1995-96

Period II : 2000-01

Period III : 2005-06

Period IV : 2009-10.

The data collected were tabulated and analyzed by using suitable statistical measures (Panse and Sukhatme, 1967).

RESULTS AND DATA ANALYSIS :

The findings of the present study as well as relevant discussion have been presented under following heads :

To examine the performance of major crops :

Growth rate of area, production and productivity :

Performance of major crops in Akola district can be ascertained through studying the growth in area, production and productivity. Compound growth rate of area, production and productivity of major crops were worked out for the period 1995-96 to 2009-10 and discussed below.

The growth rate study is restricted for entire study period as the minimum requirement of time series data for computing growth rate is 10 + 1 *i.e.*, eleven year as such it is not possible to split up entire period into two or more sub periods (Desai and Patel, 1983 and Johl and Sidhu, 1988).

Growth rate of area, production and productivity of major crops in Akola district :

The compound growth rates of area, production and productivity of major crops in Akola district are presented in Table 1.

From the Table 1, it is revealed that the area under Soybean was positively significant at 1 per cent level indicated the area under soybean was decreased by 11.60 per cent. It is also observed from the table that area under cotton, *Kharif* jowar and tur was negative but significant indicated that decreasing by 5.84 per cent, 8.56 per cent and 2.67 per cent (Alshi and Joshi, 1984 and Arya and Rawat, 1990).

In case of production most of the crops shows non-significant growth rate in production. Soybean is only crop recording positive and significant growth rate of 4.73 per cent per annum (Kalyankar and Ghulghule, 1997; Kumar and Mittal, 2003 and Mitra, 1990).

In case of productivity the table revels that the growth rate of cotton and wheat, shows positively significant at 1 per cent and 5 per cent level which indicated increased the productivity of cotton 4.77 per cent and wheat 3.02 per cent, respectively. The productivity of soybean, tur, *Kharif* jawar and gram shows non-significant results.

To study the changes in cropping pattern :

The changes in cropping pattern have been examined for Akola district. The changes in the cropping pattern were estimated for the period 1995-96 to 2009-10. The area under selected crops and the relative share of each crop in the gross cropped area at different points of time have been used to study the changes in cropping pattern (Shetty, 1970 and Singh *et al.*, 1970).

Changes in cropping pattern in Akola district :

The changes in cropping pattern in Akola district during 1995-96 to 2009-10 are presented in Table 2.

The changes in the cropping pattern of Akola district

Table 1 : Compound growth rate of area, production and productivity of major crops in Akola district

Crops	Area	Production	Productivity
Cotton	-5.84 ***	-0.64	4.77 *
Soybean	11.60 ***	4.73**	-6.06
Wheat	3.67	6.25	3.02 **
Kharif Jawar	-8.56 ***	0.04	1.74
Tur	-2.67 **	-4.74	-2.02
Gram	4.09	4.98	1.72

*, ** and *** indicate significance of values P=0.1, 0.05 and 0.01, respectively

Table 2 : Changes in cropping pattern in Akola district (Area in ha)

Sr. No.	Crops	Period							
		1995-96	2000-01		2005-06		2009-10		
		1995-96	2000-01	% change over 1995-96	2005-06	% change over 1995-96	2009-10	% change over 1995-96
1.	Cotton	377200(45.19)	227800(45.52)	-47.64	197500(35.63)	-39.60	164100(27.40)	56.50
2.	Soybean	24000(2.87)	28900(5.77)	155	61200(11.04)	20.41	85600(14.30)	256.67
3.	Wheat	19800(2.37)	9700(1.93)	-43.43	11200(2.02)	-51.0	26500(4.43)	33.84
4.	*Kharif* jawar	185600(22.23)	86100(17.19)	-53.34	86600(15.62)	-98.79	54600(9.12)	-70.58
5.	Tur	24000(2.87)	28900(5.79)	155	61200(11.04)	20.41	95600(15.97)	298.33
6.	Gram	42000(5.07)	22000(4.39)	-42.61	42000(7.59)	94.76	54500(9.10)	29.76
7.	Other crops	161962(19.40)	97200(19.41)	-41.63	94531(17.06)	-39.98	117856(19.68)	-27.23
8.	Gross cropped area	834562 (100)	500600(100)	-33.59	554231(100)	-40.01	598756(100)	-28.26

Figures in the parentheses are percentages over gross cropped area

during 1995-96 to 2009-10 are presented in Table 2. *Kharif* jawar and cotton contributed 22.23 and 45.19 per cent of gross cropped area. In the span of 15 years cropping pattern has changed substantially. The proportion of jawar was 22.23 per cent in the year 1995-96 has reduced to 9.12 per cent in 2009-10. In case of cotton, its share over gross cropped area has increased to the level of 0.33 per cent in 2000-01 from 45.19 per cent in 1995-96, but thereafter decreased to 27.40 per cent in 2009-10 (Jahagirdar and Ratnalikar,1996). The proportion of area under gram over gross cropped area was increased in the year 1995-96 to 2000-01 (Sridharan and Radhakrishnana, 1978 and Tripathy and Gowda, 1999). Increased proportion of area under soybean and tur was highest in 2009-10 *i.e.*, 14.30 per cent and 15.76 per cent, respectively. Proportion of area under wheat was highest in 2009-10 *i.e.*, 4.43 per cent. Similar work related to the present topic was also done by Marawar *et al*. (2004) and Venkataramanan and Prahaladachar (1980).

Conclusion :

The analysis of cropping pattern changes in Akola district revealed that cotton, soybean and tur were the major crops of Akola district. Soybean is emerging as one of the major crop of the district. The tahsilwise proportion of area under soybean in Akot (11.49%), Balapur (19.45%), Murtijapur (29.88%) and Patur (28.23%) during 2009-10. The area under jowar is found to be decreasing in all tahsils (*i.e.*, study area) of Akola district.

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