

Cropping Patterns And Trends Of Growth In Agricultural Food Crops In Karnataka

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Abstract:

Before canalizing the cropping pattern and growth levels in respect of area, production and yield of selected food crops in Karnataka, it would be worthwhile to preface this study with some basic ideas about crops, their sowing and harvesting seasons. Since this study is based on selected food crops, therefore, it would be worthwhile to examine their relative position with respect to area, production and yield. The crops selected are: Rice, Ragi, Jowar, Bajra, Maize, Wheat, Other Cereals, Gram, Tur, Other Pulses, Groundnut, Sugarcane and Cotton.

Keywords: food crops, Trends of Growth in Area, Production and Yield, cropping pattern, productivity and development etc.

Introduction:

There are two main crop seasons in Karnataka viz., Kharif or the season of summer crops, and the Rabi or the season of winter crops. Therefore, sowing in Karnataka, in the Kharif season begins generally on the onset of southwest monsoon in mid-June, while the Rabi season starts at the beginning of cold weather season, i.e., at the end of October or early November, when the monsoon has receded. The main food crops grown in Kharif season are: Rice, Ragi, Jowar, Bajra, Maize, Pigeon-pea, Greengram, Black gram, Groundnut, and Sugarcane. These crops require high temperature and plentiful supply of water. The food crops of Rabi season are: wheat, Lentils, Barley, Bengal gram, Peas, Tur, Cotton and Patatoes. These crops require cool weather and moderate supply of water.

In order to ascertain the crop intensity in each district during the period under study the area under thirteen major crops were added up into four distinct broad categories identifying as Cereals, Pulses, Oilseeds and Cash Crops. and Fig 5.1 show the total average area under specific heads, i.e., Cereals, Pulses, Oilseeds and Cash crops and their proportion to the sum of area under all the crops. It is evident from Table No.5.1, that in four districts of the state a major portion of cropped area is dominated by Cereals, the share being more than 80 percent of the cropped area; among these four districts, three districts, namely, Dakshina Kannada (including Udupi), Kodagu and Uttara Kannada belong to the Malnad area. The other four districts of the state namely, Bangalore Urban, Bangalore Rural, Shimoga and Hassan have areas ranging from 70 to 80 percent under cereals. These two sets of districts constitute about one-third area of the state under cereals.

As regards pulses, area under its cultivation in the Gulbarga and Bidar districts is highest in the whole of Karnataka. In the entire region pulses occupy over 50 percent of the cropped area. The cultivation of pulses in other districts namely, Hassan and Mandya of the Maidan division occupy a place next to cereals. In these districts the average area under pulses is 20.66 and 21.63 percent respectively. In other four districts the cultivation of pulses covers an area ranging between 15 and 20 percent. Ten districts show cultivation of pulses between 10 to 15 percent. Among these, districts namely, Bagalakote and Bijapur fall in the bank of Krishna, Ghataprabha, Malprabha, Tungabhadra, Doni and Bhima rivers, and in Uttara Kannada and Dakshina Kannada including Udupi, rivers are Sharawati and Netravati. Uttara Kannada, Dakshina Kannada, Shimoga and Dharwad (including Gadag and Haveri) districts form the western part of the state. Other four districts i.e., Bidar, Gulbarga and Raichur (including Koppal) and Bellary form the eastern part of the state. Five districts show the area under pulses' cultivation between 1 and 9 percent. In these five districts, four districts lie in the Malnad and one district in coastal area. In these districts the pulses are sparsely cultivated and the share of area is less than 9 percent. The cultivation of oilseeds does not exceed 40 percent of the cultivated area. There are only two districts namely, Tumkur and Bellary where oilseeds occupy 35.39 and 39.47 percent of the total cropped area respectively. Besides these two districts, three districts show the cultivation of oilseeds between 20 and 35 percent of the area. In ten districts namely, Bangalore (Rural), Bijapur, Bagalkote, Belgaum, Dharwad (including Gadag, and Haveri), Gulbarga, Raichur and Koppal its cultivation ranges between 10 and 17 percent. In three districts, out of the remaining ten districts the cultivation of oilseeds is between 2 and 8 percent of the cropped land, but in the remaining districts area under oilseeds is less than 2 percent.

The cultivation of cash crops (Sugarcane and Cotton) is restricted mainly to the sugarcane cultivation belts in Karnataka. Extensive area under cash crops cultivation lie in the districts of Belgaum, Dharwad (including Gadag, and Haveri), and

Bellary. Here Sugarcane and Groundnut cultivation occur next in importance to cereals. These two crops together occupy more than 20 percent of the cropped area. Another group of the five districts namely, Shimoga, Mysore including Chamarajanagar, Raichur and Koppal shows the cultivation of cash crops from 10 to 15 percent of the cropped area, besides these two major groups of districts, the cultivation of cash crops in other districts ranges between 5 and 10 percent, and in some districts less than 5 percent., the whole of the Maidan and Malnad tracts and also most of the southern part of the state.

Spatial Patterns and Trends of Growth in Area, Production and Yield under Food Crops

Since the beginning of the 'Green Revolution' in 1966-67 considerable changes have taken place in cropping pattern and production in Karnataka. An attempt has been made here to examine the relative changes in the levels of Area, Production and Yield per hectare of the selected food crops at the state as well as at the district levels. A comparison of Figs 5.2 to 5.34 shows the levels and the relative changes in the area, production and yield of thirteen crops district wise for each of the twenty districts (indulging new seven districts) over a period of 15 years i.e. from 1993-94 to 2007-08. With the help of linear regression technique, the crop wise linear growth rates (in order of increase or decrease or static position) for each district in area, production and yield were assessed for the corresponding period.

The changes in the levels of area, production and yield per hectare in the state as a whole and in some selected typical districts (instead of taking in to account all the twenty districts including new seven districts) were also assessed. The selection of districts for studying the relative levels of the above three aspects has been made with a view:

- 1) To examine the general performance of agriculture with respect to area, Production and Yield for each district and for each crop from initial year (1993-94) to the year (2007-08) and
- 2) To select the district as the representative of each of the physical divisions of state.

Area, Production and Yield under the crops-state as a whole the relative levels of area, production and yield under thirteen crops-year wise from 1993-94 to 2007-. The average area under cereals for the state as a whole was 53.91 lakh hectares during 1993-94 to 2007-08. Whereas, total pulses accounted for 15.09 lakh hectares, oilseeds 11.92 lakh hectares and cash crops 9.21 lakh hectares during the same period. During the same period the state produced 88.60 lakh tonnes of cereals, 11.93 lakh tonnes of pulses, 10.27 lakh tonnes of oil seeds, about 279.29 lakh tonnes of sugarcane and 8.38 lakh tonnes of cotton.

Among the individual crops, Rice followed by Jowar accounted for the highest growth in Karnataka with respect to area, production and yield per hectare. During 1993-94, Rice occupied 13.74 lakh hectares and registered a production of 47.72 lakh tonnes with an average Yield of 35.56 Qnt/ha. Subsequently, an area of 3.09 lakh hectares decreased up to 2001-02 (but increased by 2.88 lakh hectares brought under Rice cultivation in 2005-06 as compared to 2001-02). This reduction of area brought the declining production of 2.39 lakh tonnes of rice in 2001-2002 as compared to 1993-94 and 1.08 lakh tones in 2007-08 when compared to 2001-2002.

Table 1: Estimates of Area, Production and Yield per Hectare in Karnataka (1993-94 to 2007-08)

Crop/Year		1993-94	1996-97	2001-02	2005-06	2007-08	Average
RICE.	A	13.74	12.96	10.65	13.59	13.53	12.89
	P	47.72	47.49	45.33	48.15	32.57	44.25
	Y	35.56	38.58	37.72	37.31	24.99	35.03
RAGI	A	10.29	9.44	10.2	10.35	9.39	9.93
	P	15.67	13.53	16.18	14.95	12.73	14.61
	Y	15.03	15.08	16.7	15.2	14.28	15.45
JAWAR	A	20.85	21.65	19.76	19.99	18.97	20.24
	P	18.95	15.38	17.17	18.98	12.97	13.1
	Y	9.57	7.96	9.15	10	5.96	8.72
BAJRA.	A	3	2.94	4	4.17	3.02	3.43
	P	1.84	1.18	2.69	2.7	1.33	1.95
	Y	5.44	4.23	7.09	5.83	4.63	5.44
1 MAIZE.	A	3.18	3.44	3.65	4.46	5.61	4.06
	P	9.47	9.87	11.42	13.85	15.11	11.94
	Y	31.41	30.25	32.94	32.72	28.33	31.13
WHEAT	A	2.37	2.44	2.19	2.48	2.51	2.4

	P	1.92	1.76	1.46	1.9	1.18	1.64
	Y	8.52	7.61	7.01	8.07	4.98	7.23
OTHER CEREALS.	A	1.18	1.04	0.91	0.92	0.75	0.96
	P	0.61	0.54	0.4	0.4	0.38	0.47
	Y	5.16	4.9	4.39	4.34	5.06	4.77
GRAM	A	12.43	12	11.92	12.85	10.4	11.92
	P	11.99	9.46	11.39	11.47	7.14	10.29
	Y	10.15	8.29	10.06	9.4	7.23	9.03
TUR	A	3.61	3.02	4.24	4.45	4.22	3.91
	P	1.55	1.19	2.02	2.29	0.98	1.61
	Y	4.53	4.16	5.01	5.41	2.42	4.31
OTHER PULSES	A	0.3	0.3	0.21	0.23	0.22	0.26
	V	0.03	0.03	0.02	0.03	NEG	0.027
	Y	1.15	1.15	1.12	1.13		1.14
GROUND NUT	A	12.43	12	11.92	12.85	10.4	11.92
	P	11.99	9.46	11.39	11.47	7.07	10.27
	Y	10.15	8.29	10.06	9.4	7.15	9.01
SUGARCANE.	A	3.01	3.45	3.23	2.82	3.09	3.12
	P	265.03	230.93	275.58	233.74	289.99	279.25
	Y	93	0.1	90	87	99	94
*COTTON.	A	5.71	6.36	5.78	6.6	5.02	5.09
	P	7.73	8.15	9.63	10.09	5.34	8.38
	Y	2.42	2.29	2.54	2.74	2.26	2.45

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A => Area in Lakh Hectares.

P => Production in Lakh tonnes

Y => Average Yield in qnt./Hectare (but in case of Sugarcane Tonnes/Hectare, Cotton Bales Bales/Hectare).

* => Cotton in Bales of 170 Kgs. (In lint form).

Source: Compiled From

1. Economic Survey 2007-08 Govt, of Karnataka Bangalore.
2. Reports of Directorate of Economic and Statistics and Commissionerate of Agriculture, Bangalore.
3. Reports of Directorate of Economic and Statistics, Ministry of Agriculture GOI.
4. Various issues of Karnataka at a Glance, 1993-94 to 2008-09, Directorate of Economics and Statistics, Bangalore, Govt, of Karnataka.
5. Statistical Abstracts and Fully Revised Estimates of Principal Crops in Karnataka for the year 1992-93 to 2008-09 Directorate of Economics and Statistics, Bangalore, Govt, of Karnataka. - 1994 to 2009

The average Yield rose from 35.56 qnt. /ha. (In 1993-94) to 37.72 qnt./ha. (In 2001-2002) and but decreased to 24.99 qnt. /ha. In 2007-08. However, there were some individual years in which rice recorded maximum and minimum records other than the instances cited above. During 1993-94, Rice cultivation was at the highest point, covering an area of 13.74 lakh hectares and during the year 2005-06 the production amounted to 48.15 lakh tonnes, thereby showing an increase of 0.43 lakh tonnes over the previous year. During the same year 2005-06 yield per hectare was higher by 0.75 qnt. /ha. Compared to 1993-94.

Jowar covered an area of 20.85 lakh hectares during 1993-94 in the state. It further expanded to 21.65 lakh hectares in the subsequent year 1997-98, but decreased in the latter years slightly. Although it recorded an insignificant increase in area, but the production and yield per hectare achieved significant decreases. The quantum of production declined from 18.75 lakh tonnes in 1993-94 to 17.17 lakh tonnes in 2001-02 and again to the level of 12.97 lakh tonnes in 2007-08. Similarly, the yields decreased from 9.57 qnt. /ha. In 1993-94 to 7.96 qnt. /ha. In 1997-98 and further to 5.96 qnt. /ha. During 2007-08.

Besides these two cereal crops (Jowar and Rice), Sugarcane and Cotton also show a significant increase both in terms of

area and production. Under sugarcane, the area increased from 3.01 lakh hectares in 1993-94 to 3.23 lakh hectares in 2001-2002. The production of sugarcane increased from 265.03 lakh tonnes in 1993-94 to 275.58 lakh tonnes during 2001-2002 and 289.99 lakh tonnes in 2007-08. The state shared the peak production in Sugarcane (330.93 lakh tonnes) in 1997-98. Subsequently, the average yield of Sugarcane has remained almost constant. Towards the beginning of the period under consideration the state had an average yield of sugarcane 93 tonnes/ha. Which increased gradually to the maximum level of 101 tonnes/ha., during 1997-98 and slightly lower than this during 2007-08 about 99 tonnes per hectare. In the remaining years of Nineties the average yield registered more than 90 tonnes/ha.

In the case of cotton, there have been a marginal increase in area. During 1993-94 cotton covered 5.71 lakh hectares and with fractional increases year wise the coverage reached the level of about 5.36 lakh hectares during 1997-98 and covering an average area of 5.09 lakh hectares. A significant change in the quantum of cotton production can easily be observed from table 5.2. The production of cotton recorded about 7.73 lakh bales during 1993-94 in the state; which further increased to about 8.15 lakh bales in 2001-2002 and 10.09 lakh bales during 2008-06. The figures of yield per hectare followed the same trend as the production. The trend in yield per hectare showed an upward trend in subsequent years about 2.46 qnt. /ha. In 2001-02., 2.54 qnt./ha. in 2005-2006 and the year 2002-03 recorded the highest yield of 2.74 qnt /ha.

Maize shows the same accelerated growth from 1993-94 to 1997-98 and during the subsequent years, i.e. 2001-02 to 2005-06 the area under maize increased. In the early 2007-08 maize covered an area of 5.61 lakh hectares which ranked highest in the entire period. As regards the total production and yield, the results are well convincing during the period under consideration. During 2005-06 the production reached about the level of 13.85 lakh tonnes with an average yield of 32.72 qnt. /ha.

The other cereals (Bajra and Ragi) come next to maize in importance. The area and production of Bajra and Ragi need to be increased as both these cereals (millets) show frequent fluctuations or negative trends yearly from 1993-94 to 2007-08. There is a steep fall in area under Ragi which shows a decrease of 0.90 lakh hectares in 2007-08 compared to 1993-94. The yield per hectare was on an average 15.45 qnt. /ha. During the entire period. The same position is obtained too in case of Bajra. This crop covered an average area of 3.43 lakh hectares, with a production of 1.95 lakh tonnes and accounted a yield of 5.44 qnt. /ha. During 1993-94 to 2007-08. The maximum area under Bajra during 2005-06 was about 4.17 lakh hectares in the state. But the maximum production and yield of 2.69 lakh tonnes and 7.09 qnt. /ha. Respectively was obtained in the year 2001-2002.

Although there are some indications of increase in the cultivation of cereals (especially in case of Wheat and Rice) a disquieting development has taken place in case of Pulses and Oilseeds in the state. The area under Pulses shows an increasing order and production has followed suit. Among the Pulses account for a decrease of area of about 0.09 and 0.08 lakh hectares respectively in 2001-2002 and 2007-08 as compared to 1993-94. The production of pulses has also come down during Nineties and consequently the yield per hectare has also declined. The area and production under groundnut (oilseed) decreased from 12.43 lakh hectares and 11.99 lakh tonnes to 11.92 lakh hectares and 11.39 lakh tonnes respectively starting from 1993-94 to 2001-2002; thereafter also area as well as production declined with the exception of two years which show remarkably good harvest of groundnut, i.e. 2005-06 when groundnut covered an area of 12.85 lakh hectares and produced about 11.47 lakh tonnes and 2001-2002 groundnut, occupied an area of 11.92 lakh hectares and produced 11.39 lakh tonnes of groundnut.

Conclusion:

It will thus be seen, that in the regions of 2 crop-combination, Ragi and Groundnut was a common component in three districts and Rice and Other Pulses was a common component in remaining three districts. Among the four districts representing 3 crop combination, three of them show Rice and Pulses as the common components. In the regions of 4 crop - combination Ragi, Rice, Maize were associated with Groundnut in Chitradurga (including Davangere) district and in case of Shimoga district Groundnut replaced by Cotton. In five crop combination regions, Jowar and Groundnut were common components in three districts forming the northern maidan region. In the Mysore (including Chamarajnagar) district Rice, Ragi, Other Pulses, Jowar and Cotton as the common components. In six crop combination regions, Jowar, Cotton, Groundnut and Rice were common components in two districts forming northern maidan region first in the Hasan district Rice, Ragi, Other Pulses, Sugarcane, Jowar and Groundnut crops are common components of six crop combination and last in the Bangalore Urban district Ragi, Rice, Other Pulses, maize, Groundnut and Tur constitute the most common crops.

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