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Cropping Pattern in Karnataka

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Abstract

The production of land under different crops at a given period is referred to as a cropping pattern. Since there is no cropping pattern that is perfect for every situation or location, it is a dynamic concept. It is primarily controlled by physical, cultural, and technological factors, and it shifts in space and time to meet requirements. The shift in cropping pattern in particular span of time clearly displays the changes that have taken place in the agricultural growth. The impact of socioeconomic factors is responsible for these shifts. Cropping patterns are explained by agriculture, and crop changes are examined. In this study, two sets of data (2003–2004 and 2017–2018) were collected. Cropping patterns are used to gather and examine secondary data.

Overview

One major activity that is impacted by political, economic, and sociophysioogical variables is agriculture. These elements have an impact on crop selection, farming practices, and land use intensity. People are drawn to the tertiary sector by the advancement of educational facilities and the rise in people's educational levels. The increased knowledge among the farmers has leaded them to attend camps relating agriculture – horticulture being organized in the area as well as in other portion of the state. The state's southern region receives ample irrigation, whereas the state's northern region was arid. The state's cropping pattern has altered as a result of the acceptance of technical expertise. Similarly, over the course of 15 years, a number of changes have occurred, which need to be examined using geographic knowledge along with newly developed instruments and methods. In the current investigation, an effort has been created to illustrate the modifications in the cropping pattern will emphasize a number of facts and comprehend a variety of Karnataka state issues.

Objective

The current study intends to explore the changes in Karnataka's cropping pattern.

Study Area

Karnataka, an Indian state, is situated between latitudes 11°30' North and 18°30' North and longitudes 74° East and 78°30' East. in the western portion of India's Deccan Peninsula. The state is bordered to the north and northwest by the states of Maharashtra and Goa, to the west by the Arabian Sea, and to the south by the states of Kerala and Tamil Nadu.

by the Eastern States of Telangana and Andhra Pradesh. Karnataka is roughly 750 km in length from north to south and 400 km in length from east to west. The Northern Karnataka Plateau, Central Karnataka Plateau, Southern Karnataka Plateau, and Coastal Karnataka Plateau are its four physiographic zones. There are mountain chains, with Mullayanagiri (1929 m) being the tallest.

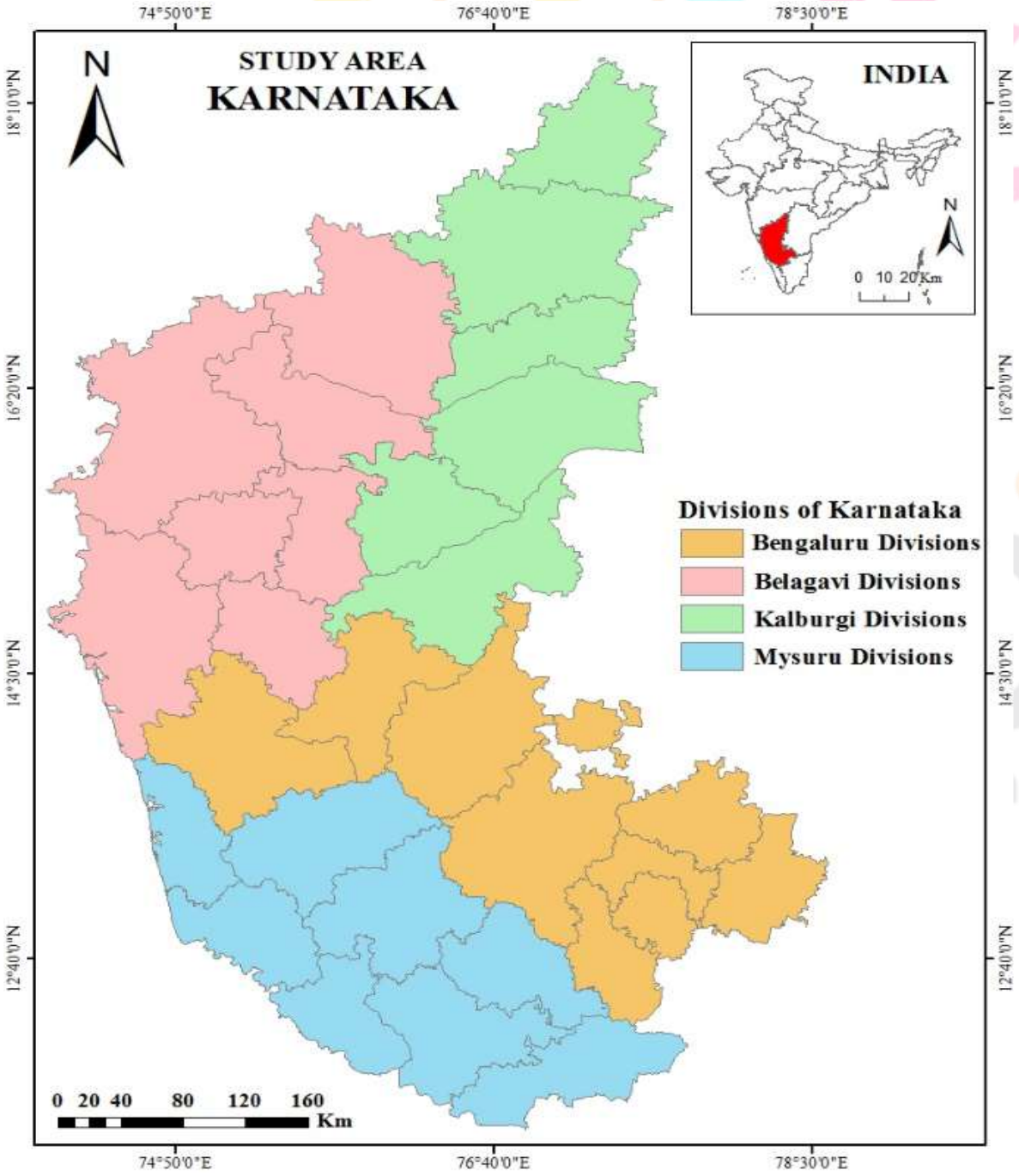

Figure 1 Map of Karnataka

Karnataka has a variety of soil types. Black soils are present in northern Karnataka whilst red and red loamy soils are prominent in southern Karnataka. The state's coastal and main land regions have laterite soils. Karnataka's forest environment is distinct and incredibly varied. Tropical evergreen, semi-evergreen, dry deciduous, thorny scrubs, shoals, and coastal mangroves are among the several types of vegetation. The state is traversed by numerous rivers. Among these, the Krishna, Cauvery, Godavari, Pennar, and Palar are the most well-known.

Methodology

The data used in this study came from secondary sources. Cropped area data for agriculture has been gathered from Karnataka at a glance. The thirty districts of the state of Karnataka are spread throughout the four administrative divisions listed below. For the years 2003–2004 and 2017–2018, the cropping patterns of the chosen crops—Paddy, Ragi, Jowar, Bajra, Maize, Wheat, Pulses, Sugar Cane, and Cotton—were evaluated. Based on the divisional areas of the state of Karnataka, this assessment of cropping pattern considers the temporal variations of individual crop cultivation for the area.

Table 1: Administrative Division of Karnataka State

Sl. No.	Bengaluru	Mysuru	Kalburgi	Belagavi
1	Bengaluru Urban	Udupi	Bellary	Belagavi
2	Bengaluru Rural	Chikkamagaluru	Kalburgi	Bagalkot
3	Chitradurga	Mandya	Bidar	Vijayapura
4	Chikkaballapura	Hassan	Raichur	Gadag
5	Davangere	Dakshin Kannada	Koppal	Dharwad
6	Kolara	Kodagu	Yadgir	Uttara Kannada
7	Ramanagara	Mysuru		Haveri
8	Shivamogga	Chamarajanagara		
9	Tumakuru			

Findings and Conversations

Modifications to the Cropping Pattern

Cropping pattern refers to proportion of area under different crops at different points of time. Cropping patterns are indicated by a variety of crop data, such as temporal variations in the area under cultivation, crop diversity, and crop combination. Since cropping patterns serve as a solid foundation for agricultural regionalization, studying them is a crucial component of agricultural geography. The crops are typically planted in combinations, and it is extremely uncommon to state that one crop takes up the entire land at any one moment. Crop areas' shapes may be determined by physical reasons, but their extent is determined by socioeconomic interactions.

Table 2: Cropping Pattern 2003-04 and 2017-18 in Karnataka

Crops	2003-2004		2017-2018		Change (%)
	Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
Paddy	1154783	14.9	883647	10.7	-4.2
Ragi	767148	9.9	756194	9.2	-0.7
Jowar	1786237	23.1	1043275	12.6	-10.4
Bajra	304581	3.9	217876	2.6	-1.3
Maize	649544	8.4	1304575	15.8	7.4
Wheat	246855	3.2	193242	2.3	-0.8
Pulses	2060601	26.6	2838650	34.4	7.8
Sugar	382719	4.9	531305	6.4	1.5
Cotton	393016	5.1	485331	5.9	0.8
Total Cropped Area	**7745484**	**40.7**	**8254095**	**43.3**	**2.7**

Source: Authors Calculation

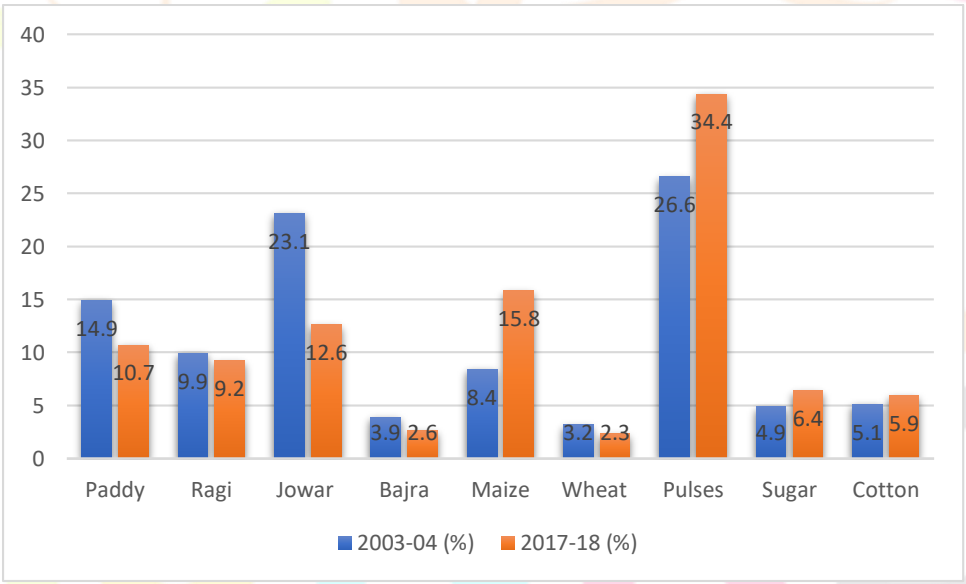

Figure 2 Cropping Pattern 2003-04 and 2017-18 in Karnataka

The cropping patterns of the main selected crops grown in the state of Karnataka in the years 2003–04 and 2017–18 are displayed in Table 2 and Figure 2. The principal crops include sugarcane, cotton, rice, ragi, jowar, bajra, maize, and pulses. The total geographical area of the state was 7745484 hectares, or 40.7%, in 2003–04; this increased to 8254095 hectares, or 43.3%, in 2017–18, with a 2.7% overall change. Pulses, or 7.8%, have had the largest positive shift, rising from 26.6% in 2003–04 to 34.4% in 2017–18.

Subsequently, maize (up from 8.4% in 2003–04 to 15.8% in 2017–18), sugarcane (up from 4.9% in 2003–04 to 6.4% in 2017–18), and cotton (up from 5.1% in 2003–04 to 5.9% in 2017–18) accounted for 7.4% of the total. This increase is due to the fact that these crops can be grown on any type of land and don't require

a lot of water. The state's cropping pattern for the chosen crops has seen a significant unfavorable change. Jowar changes the most among the crops, declining by -10.4% from followed by Paddy, or -4.2% (down from 14.9% in 2003–04 to 10.7% in 2017–18), and Bajra, or -1.3% (down from 3.9% in 2003–04 to 2.6% in 2017–18).

-0.8% for Wheat (down from 3.2% in 2003–04 to 2.3% in 2017–18), and -0.7% for Ragi (down from 9.9% in 2003–04 to 9.2% in 2017–18). The absence of irrigation facilities is the cause of this degradation.

Paddy

The temporal changes in paddy cultivation between 2003–04 and 2017–18 are depicted in Table 3 and Figure 3. The divisions of the state are Bengaluru, Belagavi, Kalburgi, and Mysuru. The overall geographical area of the state was 1154783 hectares, or 14.9%, in 2003–04; this reduced to 883647 hectares, or 10.7%, in 2017–18, with a total decline of -4.2%. The Kalburgi divisions show a good trend, rising from 10.5% in 2003–04 to 11.1% in 2017–18, or 0.6%. The Mysuru divisions, which saw a sharp decline from 31.7% in 2003–04 to 21.6% in 2017–18, are the most affected, followed by the Bengaluru divisions, which saw a decline from 20.0% in 2003–04 to 13.9% in 2017–18, and the Belagavi divisions, which saw a decrease from 9.1% in 2003–04 to 5.4% in 2017–18. The depletion is caused by urbanization, the conversion of agricultural lands into habitation areas, and the high-water requirements of paddy fields for irrigation. Less rainfall has prevented the Krishna Raja Sagara Dam from providing the necessary quantity of water needed for irrigation, which makes paddy farming difficult. The Kaveri water conflict between Tamil Nadu and Karnataka is another significant factor contributing to the decline in paddy farming.

Table 3: Temporal Changes of Paddy Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	**Bengaluru**	256158	20	167133	13.9	-6.1
2	**Belagavi**	249578	9.1	178816	5.4	-3.7
3	**Kalburgi**	259379	10.5	279756	11.1	0.6
4	**Mysuru**	389668	31.7	257942	21.6	-10.1
	Karnataka	1154783	14.9	88367	10.7	-4.2

Source: Authors Calculation

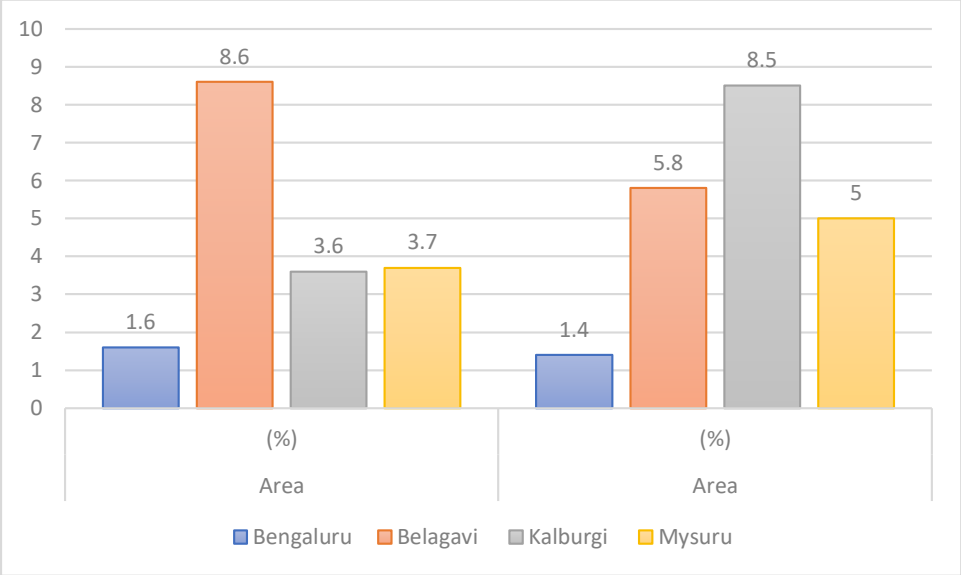

Figure 3 Temporal Changes of Paddy Cultivation 2003-04 and 2017-18 in Karnataka

Ragi

Table 4 and Figure 4 illustrate the variations in the timing of ragi cultivation between 2003–04 and 2017–18. The four divisions of the state are Bengaluru, Belagavi, Kalburgi, and sections in Mysuru. The total geographical area of the state was 767148 hectares, or 9.9%, in 2003–04; this decreased to 756194 hectares, or 9.2%, in 2017–18. This was accompanied by a overall variation of -0.7%. Bengaluru divisions saw the largest shift, rising from 34.0% in 2003–04 to 35.8% in 2017–18. Kalburgi divisions saw the second-highest change, at 1.8%. 0.4% (up to 0.7% in 2017–18 from 0.3% in 2003–04). The reason for the increase is that it can be grown in regions with water availability as well as drier conditions. Mysuru divisions, which had a decline of -0.4% (from 26.1% in 2003–04 to 25.7% in 2017–18), and Belagavi divisions, which saw a decrease of -0.1% (from 0.1% in 2003–04 to 0.0% in 2017–18), both saw negative changes.

Table 4: Temporal Changes of Ragi Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	**Bengaluru**	435970	34	430092	35.8	1.8
2	**Belagavi**	3934	0.1	625	0.00	-0.1
3	**Kalburgi**	6349	0.3	18805	0.7	0.4
4	**Mysuru**	320895	26.1	306672	25.7	-0.4
	Karnataka	767148	9.9	756194	9.2	-0.7

Source: Authors Calculation

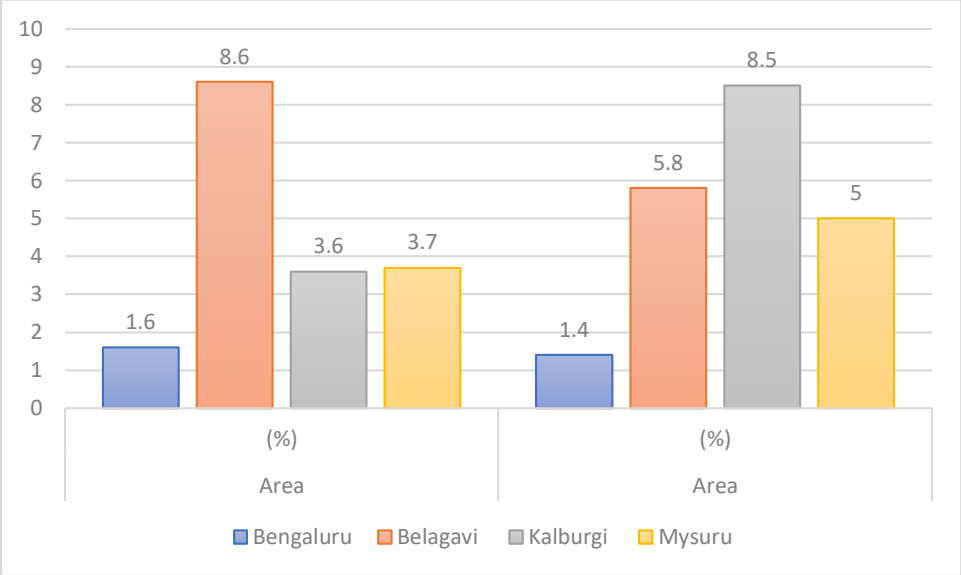

Figure 4 Temporal Changes of Ragi Cultivation 2003-04 and 2017-18 in Karnataka

Jowar

Table 5 and Figure 5 illustrate the changes in the cultivation of jowar over time in the years 2003–04 and 2017–18. The divisions of the state are Bengaluru, Belagavi, Kalburgi, and Mysuru. The total geographical area of the state was 1786237 hectares, or 23.1%, in 2003–04; this decreased to 1043275 hectares, or 12.6%, in 2017–18, with a total change of -10.5%. The state's divisions have undergone significant negative changes. The Belagavi divisions, at -16.4% (down from 33.6% in 2003–04 to 17.2% in 2017–18), have had the most drop, followed by the Kalburgi divisions, at -13.2% (down from 29.3% in 2003–04 to 16.1% in 2017–18). The Bengaluru divisions saw the least change, falling from 6.4% in 2003–04 to 1.6% in 2017–18, and the Mysuru divisions saw the least decline, at -4.8%. -0.5%, or 3.7% in 2017–18 as opposed to 4.2% in 2003–04. Jowar cultivation needs places with plenty of waterlogging, but due to increasing urbanization, inadequate irrigation, and the conversion of agricultural land into settlements, the cultivation is hindered, which has detrimental effects.

Table 5: Temporal Changes of Jowar Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	Bengaluru	82680	6.4	19092	1.6	-4.8
2	Belagavi	926437	33.6	571910	17.2	-16.4
3	Kalburgi	725686	29.3	408066	16.1	-13.2
4	Mysuru	51434	4.2	44207	3.7	-0.5
	Karnataka	1786237	23.1	1043275	12.6	-10.5

Source: Authors Calculation

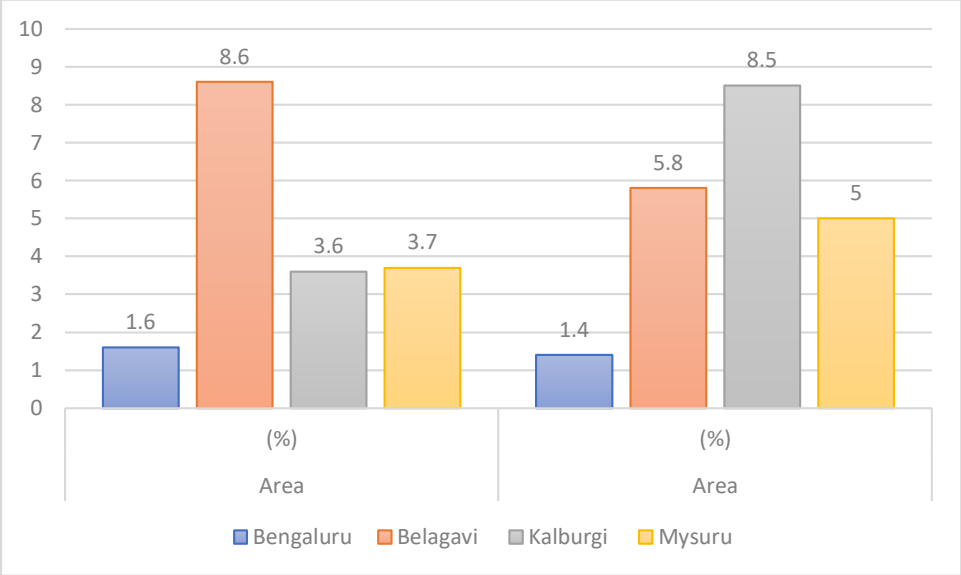

Figure 5 Temporal Changes of Jowar Cultivation 2003-04 and 2017-18 in Karnataka

Bajra

The Table 6 and Figure 6 illustrates the Temporal Changes in Bajra cultivation in the year 2003-04 and 2017-18. The divisions of the state are Bengaluru, Belagavi, Kalburgi, and Mysuru. The overall geographical area of the state was 304581 hectares, or 3.9%, in 2003–04; this decreased to 217876 hectares, or 2.6%, in 2017–18, with a total change of -1.3%. The Mysuru divisions have shown improvement, rising from 0.0% in 2003–04 to 0.1% in 2017–18. There are negative changes noted in Belagavi divisions i.e. -2.0% (decreased from 3.7% in 2003-04 to 1.7% in 2017-18) and Kalburgi divisions i.e. -1.9% (decreased from 8.0% in 2003-04 to 6.1% in 2017-18). The Bengaluru divisions have not changed in this way, or by 0.0%. The absence of irrigation facilities is the cause of this unfavourable development.

Table 6: Temporal Changes of Bajra Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	Bengaluru	4618	0.4	4682	0.4	0.00
2	Belagavi	102432	3.7	57530	1.7	-2.0
3	Kalburgi	196959	8.0	153960	6.1	-1.9
4	Mysuru	572	0.0	1704	0.1	0.1
	Karnataka	304581	3.9	217876	2.6	-1.3

Source: Authors Calculation

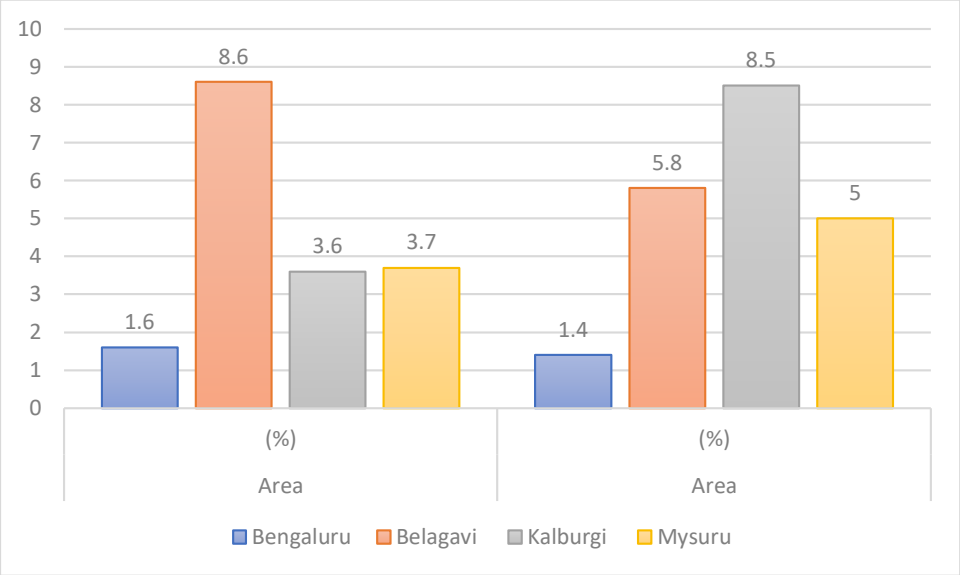

Figure 6 Temporal Changes of Bajra Cultivation 2003-04 and 2017-18 in Karnataka

Corn

The Table 7 and Figure 7 illustrates the Temporal Changes in Maize cultivation in the year 2003-04 and 2017-18. The divisions of the state are Bengaluru, Belagavi, Kalburgi, and Mysuru. The total geographical area of the state was 649544 hectares, or 8.4%, in 2003–04; this increased to 1304575 hectares, or 15.8%, in 2017–18, with a 7.4% overall change. Every division has seen significant improvements. Bengaluru divisions have experienced the largest change, rising from 18.8% in 2003–04 to 30.7% in 2017–18. Mysuru divisions have experienced the second-highest change, rising from 4.9% in 2003–04 to 16.0% in 2017–18. Kalburgi divisions have experienced the least change, rising from 3.0% in 2003–04 to 9.1% in 2017–18. Finally, Belagavi divisions have experienced the least change, rising from 9.9% in 2003–04 to 15.4% in 2017–18. The cause behind this growth is good water supply or good irrigation facility.

Table 7: Temporal Changes of Corn Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	**Bengaluru**	241734	18.8	369666	30.07	11.9
2	**Belagavi**	273289	9.9	513791	15.4	5.5
3	**Kalburgi**	74024	3.0	230529	9.1	6.1
4	**Mysuru**	60497	4.9	190589	16.0	11.1
	Karnataka	649544	8.4	1304575	15.8	7.4

Source: Authors Calculation

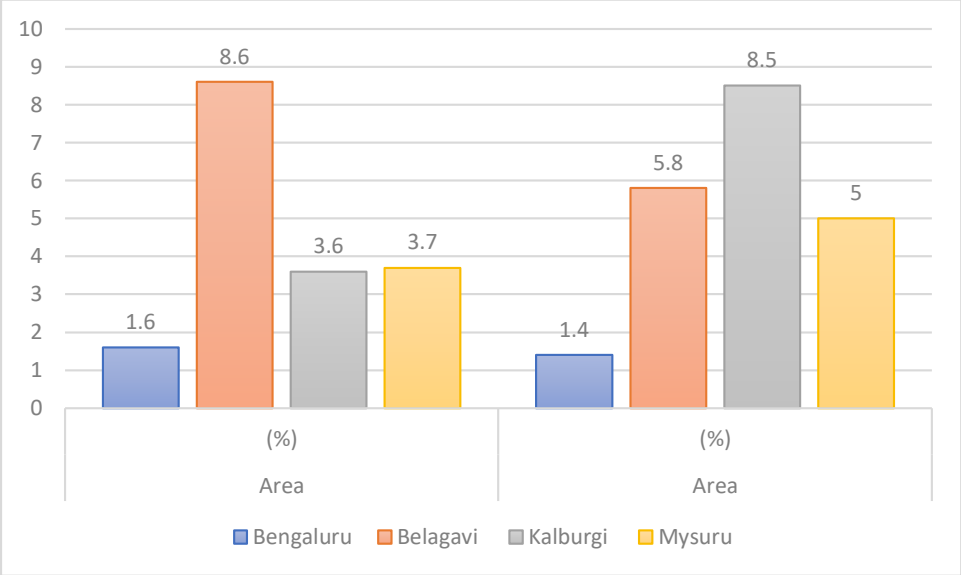

Figure 7 Temporal Changes of Corn Cultivation 2003-04 and 2017-18 in Karnataka

Wheat

The temporal changes in wheat cultivation between the years 2003–04 and 2017–18 are displayed in Table 8 and Figure 8. The divisions of the state are Bengaluru, Belagavi, Kalburgi, and Mysuru. The overall geographical area of the state was 246855 hectares, or 3.2%, in 2003–04; this reduced to 193242 hectares, or 2.3%, in 2017–18, with a total change of -0.9%. The state's divisions have changed negatively. Belagavi division has the greatest percentage, which is -2.1% (down from 7.2% in 2003–04 to 5.1% in 2017–18). Kalburgi divisions, with -0.9% (down from 1.8% in 2003–04 to 0.9% in 2017–18), and Bengaluru divisions, with -0.1% (down from 0.1% in 2003–04 to 0.0% in 2017–18), are the next divisions. The 0.0% Mysuru divisions remain unchanged. Negative outcomes can be attributed to factors such as urbanization, reduced rainfall, inadequate irrigation facilities, and inadequate water availability.

Table 8: Temporal Changes of Wheat Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	**Bengaluru**	1742	0.1	471	0.0	-0.1
2	**Belagavi**	199340	7.2	169615	5.1	-2.1
3	**Kalburgi**	45767	1.8	23156	0.9	-0.9
4	**Mysuru**	6	0.0	0	0.0	0.0
	Karnataka	246855	3.2	193242	2.3	-0.9

Source: Authors Calculation

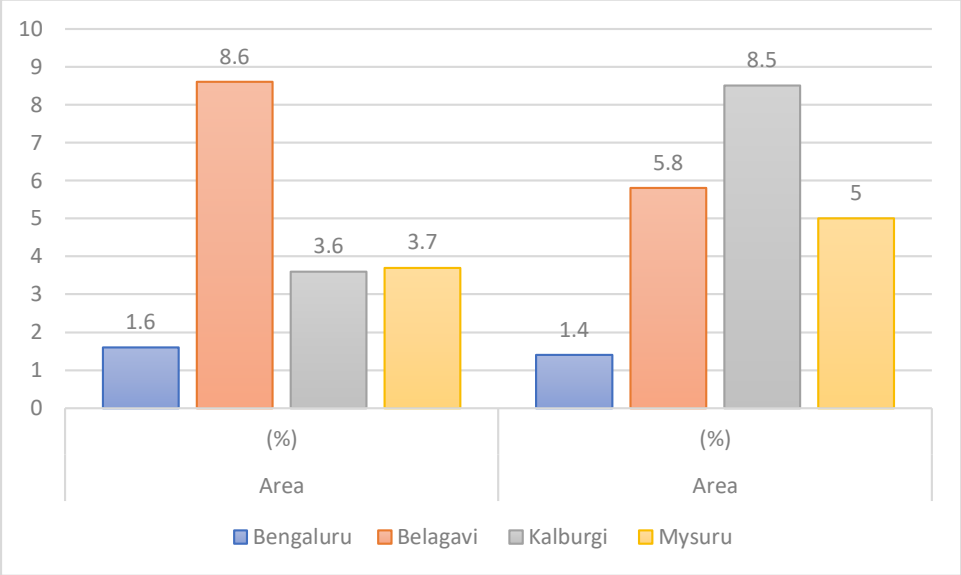

Figure 8 Temporal Changes of Wheat Cultivation 2003-04 and 2017-18 in Karnataka

Pulses

The temporal changes in the cultivation of pulses in the years 2003–04 and 2017–18 are displayed in Table 9 and Figure 9. The divisions of the state are Bengaluru, Belagavi, Kalburgi, and Mysuru. The overall geographical area of the state was 2060601 hectares, or 26.6%, in 2003–04; this increased to 2838650 hectares, or 34.4%, in 2017–18, with a total change of 7.8%. The divisions have witnessed significant improvements. The divisions in Belagavi, which went from 19.3% in 2003–04 to 36.8% in 2017–18, had the largest change, followed by the divisions in Kalburgi, which increased from 41.7% in 2003–04 to 44.6% in 2017–18, and the divisions in Mysuru, which increased from 23.7% in 2003–04 to 24.9% in 2017–18, with a percentage of 1.2%. Bengaluru divisions show a negative change of -0.2% (from 15.9% in 2003–04 to 15.7% in 2017–18). The good thing about this development is that pulses don't require a lot of water to flourish; they can be planted on any type of terrain.

Table 9: Temporal Changes of Pulses Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	Bengaluru	204324	15.9	189219	15.7	-0.2
2	Belagavi	533469	19.3	1225113	36.8	17.5
3	Kalburgi	1031708	41.7	1127609	44.6	2.9
4	Mysuru	291100	23.7	296709	24.9	1.2
	Karnataka	2060601	26.6	2838650	34.4	7.8

Source: Authors Calculation

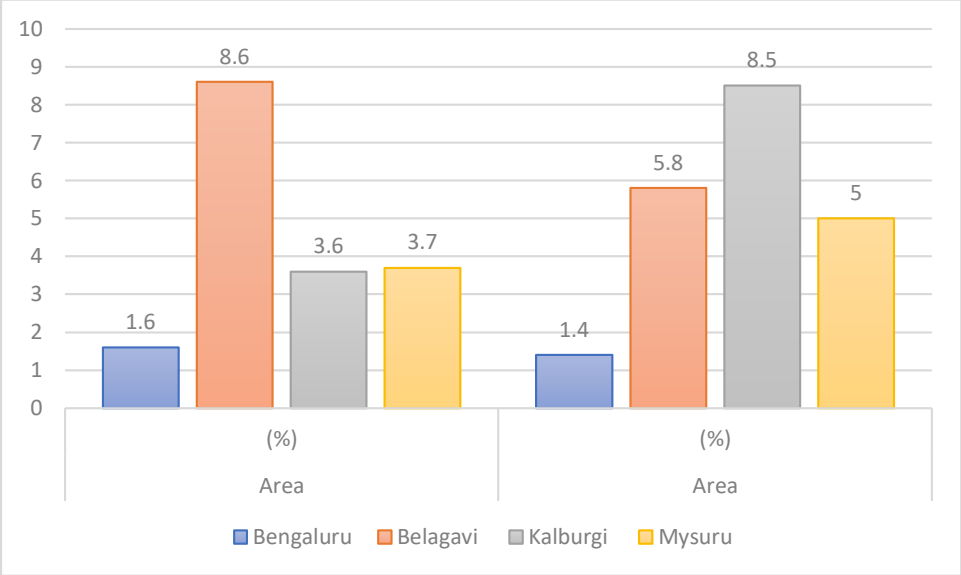

Figure 9 Temporal Changes of Pulses Cultivation 2003-04 and 2017-18 in Karnataka

Sugar Cane

The temporal changes in sugarcane cultivation between 2003–04 and 2017–18 are displayed in Table 10 and Figure 10. The four divisions of the state are Bengaluru, Belagavi,

Divisions of Kalburgi and Mysuru. The total geographical area of the state was 382719 hectares, or 4.9%, in 2003–04; this increased to 531305 hectares, or 6.4%, in 2017–18, with a 1.5% overall change. The Belagavi divisions, at 4.1% (up from 8.4% in 2003–04 to 12.5% in 2017–18), have experienced the largest positive development, followed by the Kalburgi divisions, at 1.1% (up from 1.8% in 2003–04 to 2.9% in 2017–18). There have also been negative shifts, with Mysuru divisions showing the largest reduction, at -2.7% (down from 5.7% in 2003–04 to 3.0% in 2017–18), and Bengaluru divisions, at -2.3% (down from 2.8% in 2003–04 to 0.5% in 2017–18). The reason behind the positive result is proper amount of water availability.

Table 10: Temporal Changes of Sugar Cane Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	**Bengaluru**	36082	2.8	6054	0.5	-2.3
2	**Belagavi**	230898	8.4	416122	12.5	4.1
3	**Kalburgi**	45308	1.8	73378	2.9	1.1
4	**Mysuru**	70431	5.7	35751	3.0	-2.7
	Karnataka	382719	4.9	531305	6.4	1.5

Source: Authors Calculation

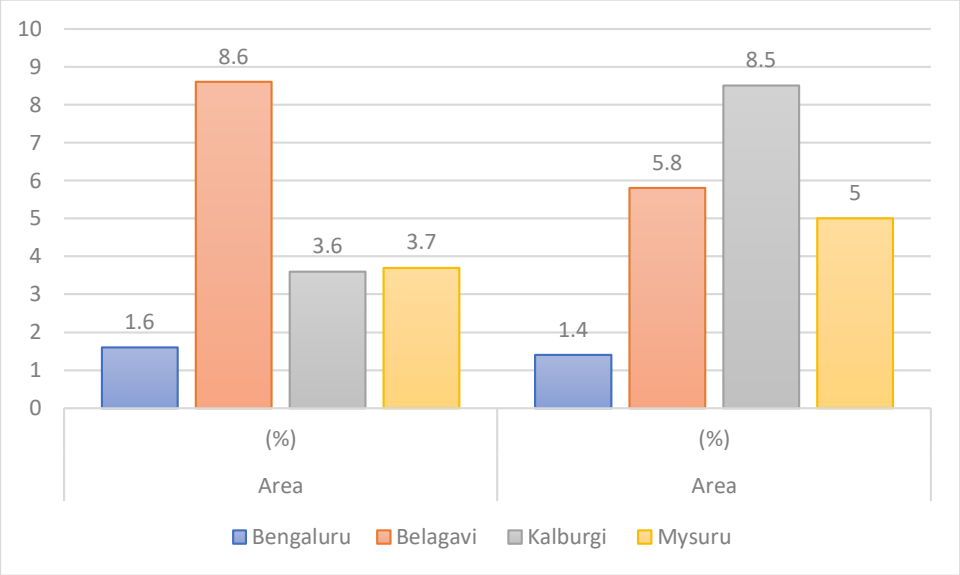

Figure 10 Temporal Changes of Sugar Cane Cultivation 2003-04 and 2017-18 in Karnataka

Cotton

Figure 11 and Table 11 illustrate the temporal variations in cotton cultivation in the years 2003–04 and 2017–18, respectively. The divisions of the state are Bengaluru, Belagavi, Kalburgi, and Mysuru. The overall geographical area of the state was 393016 hectares, or 5.1%, in 2003–04; this increased to 485331 hectares, or 5.9%, in 2017–18, with a total change of 0.8%. Positive changes have been observed in the divisions, with the largest percentage being recorded by the Kalburgi divisions, at 4.9% (up from 3.6% in 2003–04 to 8.5% in 2017–18), and the Mysuru divisions, at 1.3% (up from 3.7% in 2003–04 to 5.0% in 2017–18). There are also various unfavorable changes found in the divisions and the highest is indicated by the divisions of Belagavi, which are 2.8% (down from 8.6% in 2003–04 to 5.8% in 2017–18), and Bengaluru, which are -0.2% (down from 1.6% in 2003–04 to 1.4% in 2017–18). Cotton grows well in deep black, clayey soil since it doesn't need as much water to thrive. As a result, cotton agriculture has increased.

Table 11: Temporal Changes of Cotton Cultivation 2003-04 and 2017-18 in Karnataka

Sl. No.	Divisions	2003-2004		2017-2018		Change (%)
		Area (Hectares)	Area (%)	Area (Hectares)	Area (%)	
1	**Bengaluru**	20541	1.6	16328	1.4	-0.2
2	**Belagavi**	237843	8.6	193774	5.8	-2.8
3	**Kalburgi**	89397	3.6	215180	8.5	4.9
4	**Mysuru**	45235	3.7	60049	5.0	1.3
	Karnataka	393016	5.1	485331	5.9	0.8

Source: Authors Calculation

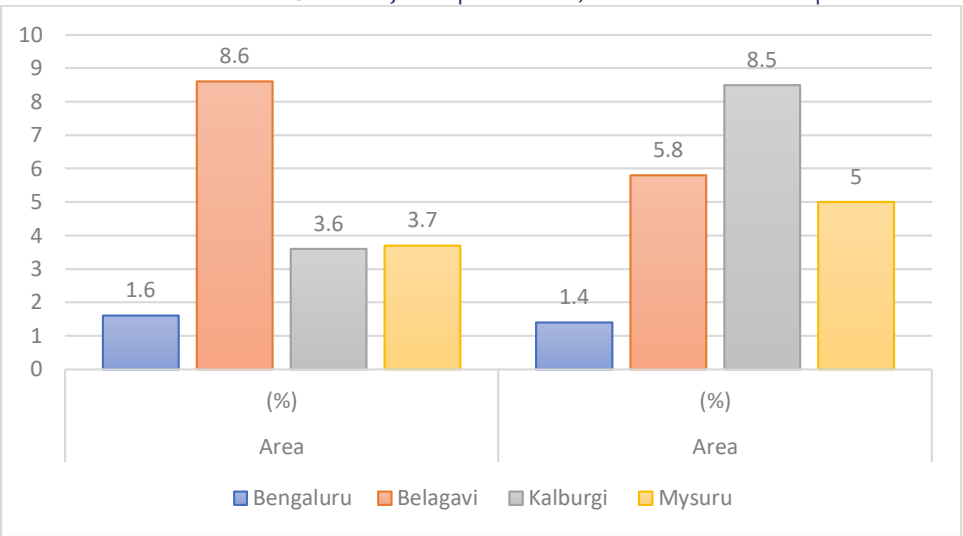

Figure 11 Temporal Changes of Cotton Cultivation 2003-04 and 2017-18 in Karnataka

Conclusion

This paper examines the cropping patterns in the state of Karnataka in detail. In 2003–04, the state's total cropped area covered 40.7%; by 2017–18, that number had risen to 43.3%. Consequently, Pulsus is the main crop, accounting for more than 34.4% of the net cultivated area in 2017–18. It is followed by paddy (10.7%), jowar (12.6%), and maize (15.8%). The present study demonstrates that the region as a whole has witnessed over 2.7% among them increase in the maize, legumes, sugar cane and cotton, whilst all other crops shows a falling tendency. With a growth rate of 7.8%, pulses are the main crop. States all around the country grow pulses.

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