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## Structural changes in land use and cropping pattern of Kolhapur district of Maharashtra

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### Abstract

Indian rural economy is basically considered to be crop economy. Agriculture forms the axis of the Indian economy. There is no other sector in India, which is so tied up with the prosperity of the economy. Agriculture is a way of life, a tradition for which centuries have shaped the thought, the outlook, the culture and the economic life to people of India. This paper an attempt is made to analysis the changes in land use and cropping pattern of Kolhapur district. For a period of 34 years (1980-91 and 2013-14) the scenario of land use and cropping pattern in the district were drastic change because of population growth, Industrialization. In 1980-81, out of the total agriculture area 54.60 of agriculture land was under food crops, but in 2013-14 the food crops cultivated area were decrease to 30.13% because remaining agriculture shifted to commercial crops like sugarcane, oilseeds and vegetables etc. Whereas, the area under forest was 146900 hectares (18.69 per cent) in 1980-81, which decreased to 140100 hectares in 2013-14, (4.42 per cent)., the decrease in area under forest may be due to industrialization, population in Kolhapur district The cropping pattern of the district has changed towards commercialization due to increase in irrigation facilities, transport, communication, market facilities etc. The diversified nature of land use pattern and cropping pattern of the Kolhapur district has increased the cropping intensity of the land.

**Keywords:** Land Use, Cropping pattern, Commercialization, Food crops, acreage Intensification, crop production Cropping intensity

### Introduction

Land is the important natural resource, which support evolution and development of all types of life on land. Land use especially affected by natural and human factors. So, the uses of land have been increasing as the science and technology increase. The developing countries need and improve the exploitation of land resource to achieve the maximum output crops and the productive capacity of the land. Land use and cropping pattern is an important aspect of geographical studies particularly relevant to agricultural geography. Given the fixed amount of land available on the earth and the simultaneous increases in population and the pressure on land has been increasing tremendously that's why the leads to change in land use and cropping pattern during 34 years. Cropping pattern have traditionally been dominated by food needs. Commercial crops were confined to some regions and on relatively larger farms. The system, we inherited at the time of independence became unsustainable as rapid population growth outstripped our capacity to produce food.

### Objective

This paper aims to evaluate changing land use, agriculture cropping pattern and crop intensity and to examine land use change in Kolhapur district during the 1981-2014.

### Database and methodology

The secondary data have been collected from socio-economic abstract of Kolhapur district for 1980-81 and 2013-14 to analyses the land use and cropping pattern. Simple statistical techniques (percentage and average) are used to analyses the changing trend in cropping pattern and crop intensity.

$$\text{Cropping intensity} = \frac{\text{Gross cropped area}}{\text{Net sown area}} \times 100$$

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### Study area

Kolhapur district is located between 15 43' and 17 17' North latitude and 73 40' and 74 42' East longitude of southern Maharashtra. The region receives average rainfall 1900 mm.

The total numbers of villages are 1196 and towns are 18. The district is consisting of 12 revenue tehsil's namely Shahuwadi, Panhala, Hatkanangale, Shirol, Karveer, Gaganbavada, Radhanagri, Kagal, and Bhudhargad.



### Results and discussion

#### Changes in Land Use pattern

It can be seen from Table 1 that the total geographical area was 785900 hectares in 1980-81 and it is decreased up to 776500 hectares in 2013-14. It decreases during the year 1995-96 and 2013-14. This variation in the total geographical area of Kolhapur district may be due to transfer of villages to the Kolhapur district during new tahsil formation for administrative purpose.

The area under forest was 146900 hectares (18.69 per cent) in 1980-81, which decreased to 140100 hectares in 2013-14, (4.42 per cent) over the base year. The decrease in area under forest may be due to industrialization, population in Kolhapur district.

The area under barren and uncultivable land was decreased from 5.34 per cent to 5.15 per cent. Land under non-agricultural use was increased from 31700 hectares to 35900 hectares during the period from 1980-81 to 2013-14. It was used for buildings, industries and other non-agricultural purposes. The cultivable waste land area showed decline, it was 65700 hectare, in 1980-81 and decreased upto 36900 hectares (4.75 per cent) of the total geographical area in 2013-14. There is more need to minimize cultivable waste land. The area under permanent pastures and land under miscellaneous trees increased over a period of time. Permanent pastures increased from 41500 hectares to 41800 hectares. The land under miscellaneous trees showed increasing trend continuously over the period of time.

The proportion of permanent pastures to the total geographical area from 1980-81 to 2013-14 is increasing

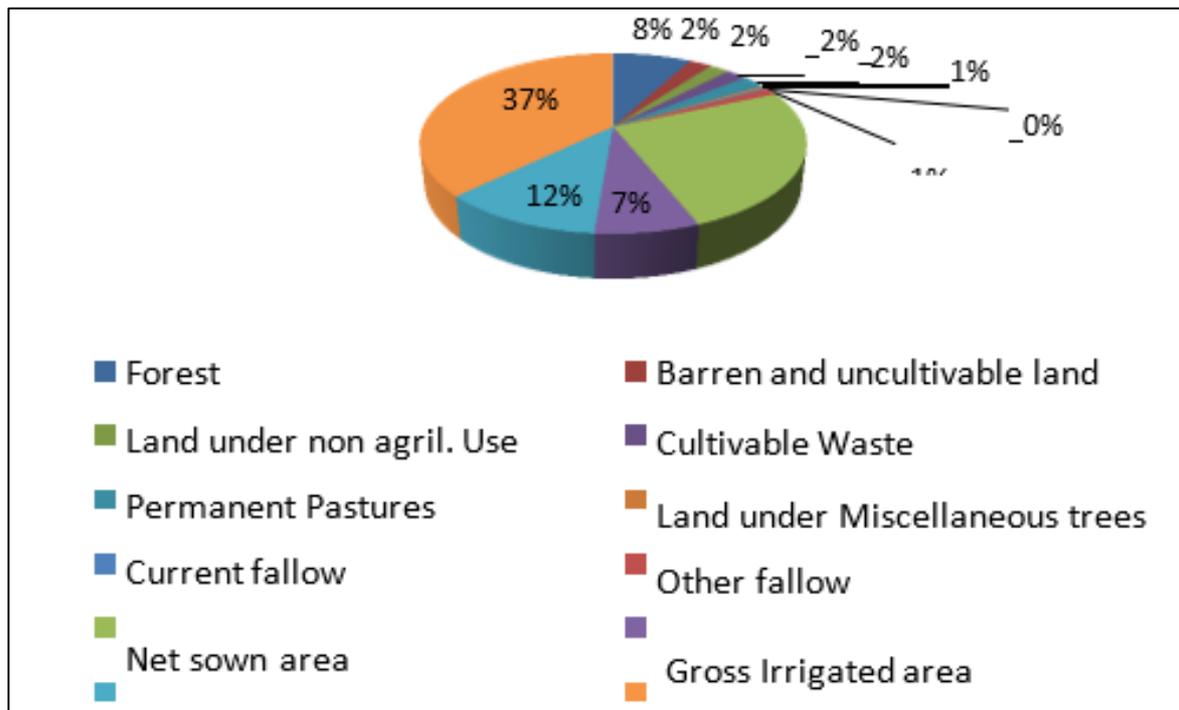
continuously. The current fallow land was 24100 hectares (3.06 per cent) of the total geographical area in 1980-81 which suddenly decreased to 10700 hectares in 1995-96 (1.39 per cent) and declined 4900 hectares in 2013-14 (0.63 per cent) As compared with the base year 1980-81, it was decreased by 1.37 per cent. The intensity of cropping which is measure of land use efficiency did not show considerable change during the period from 1980-81 to 2013-14. The range of cropping intensity was 104.69 to 134.43 per cent. It was increased in the period 1995-96 and in 2013-14. It was 115.85 and 154.43 per cent.

To sum up it can be said that the area under forests decreased and barren and cultivable land decreased. Land under non-agricultural use was increasing and cultivable waste is decreasing. The area under permanent pastures and land under miscellaneous trees increasing. Current fallow showed decreasing trend as compared to base year 1980-81. It was 24100 hectares in 1980-81 and in 2013-14 it decreased up to 4900 hectares. The area under other fallow decreased from 36400 hectares to 22000 hectares in 2013-14. Net sown area increased over II study period but it again declined in 2013-14. Irrigated area increased significantly from 71200 hectare to 131500 hectares. Due to increase in irrigated area, the unirrigated area shows decreasing trend. Also, the area sown more than once was increased. Total cropped area increased 56.69 to 77.17 per cent. The intensity of cropping had increased from 104.69 to 154.43 per cent during the period under study.

**Table 1:** Changes in the land Use Pattern (1980-81 to 2013-14) (Area in '00'ha)

Sr. No.	Particulars	Period I 1980-81	Period II 1995-96	Period III 2013-14	Change in land use pattern over base year	
					1995-96	2013-14
1	Geographical area	7859(100.00)	7765(100.00 )	7765 (100.00)	-1.19	-1.19
2	Forest	1469(18.69)	1466(18.31)	1401 (18.04)	-0.20	-4.42
3	Barren and uncultivable Land	422(5.34)	403(5.00)	400 ( 5.15)	-4.50	-5.21
4	Land under non agril. Use	317(4.03)	328(3.27)	359(4.62)	3.47	8.65
5	Cultivable Waste	657(8.35)	367(4.84)	369(4.75)	-25.57	-43.83
6	Permanent Pastures	415(5.28)	305(3.47)	418(5.33)	-26.50	0.72
7	Land under Miscellaneous trees	43(0.53)	47(0.61)	72(0.92)	9.30	67.44
8	Current fallow	241(3.06)	107(1.39)	49(0.63)	-55.60	-77.66
9	Other fallow	364(4.63)	162(2.11)	220(2.83)	-55.49	-39.85
10	Net sown area	4254(54.12)	4628(60.22)	4550(58.59)	8.79	6.95
11	Gross Irrigated area	712(9.05)	1219(14.63)	1315(16.54)	58.00	84.77
12	Area sown more than Once	202(2.57)	734(9.55)	2044(30.18)	263.36	911.39
13	Total cropped area	4456(56.69)	5362(69.77)	6650(77.17)	20.33	44.54
14	Cropping intensity (Percent)	104.69	115.85	154.43	10.66	47.51

Changes in the land Use Pattern (1980-81 to 2013-14) (Area in '00'ha) (Figures in parentheses indicate percentage to geographical area) Source: - District statistical abstract, Kolhapur

**Fig 1:** Changes in the land Use Pattern

### Changes in Cropping pattern

The details regarding the changes in the cropping pattern of Kolhapur district presented in Table 5.4. It can be seen from the Table 5.4 that the area under rice increased from 105100 hectares in 1980-81 to the 119300 hectares in 2013-2014. But it showed increasing trend over time period. In 1995-96 it was increased 107400 hectares. The area under Wheat decreased from 11800 hectares in 1980-81 to 8800 hectares in 2013-14 (2.64 per cent to 1.32 per cent) of the Gross cropped area. The area under Kharif Jowar increased in second, third period as compared to base year. Similarly the area under Rabi Jowar showed fluctuations. It was 2500, 7000, and 14000 hectares in 1980-81, 1995-96 and 2013-14 respectively. Area under Bajra

showed decreasing except in 1995-96, it increased over base year. The total cereals showed decreasing in second and third period study period. Area under Gram was 8900 hectares in 1980-81 and decreased up to 8500 hectares in 2013-14 (1.99 per cent to 1.27 per cent). The area under red gram declined also base year. The area under Green gram increased from 400 hectares to 3000 hectares from 1980-81 to 2013-14 (0.08 per cent to 0.45 per cent).

The area under total pulses decreased from 28800 hectares to 21800 hectares (6.46 per cent to 3.28 percent) over 1980-81 to 2013-14. The area under total food grains decreased from 243300 hectares to 200400 hectares from 1980-81 to 2013-14.

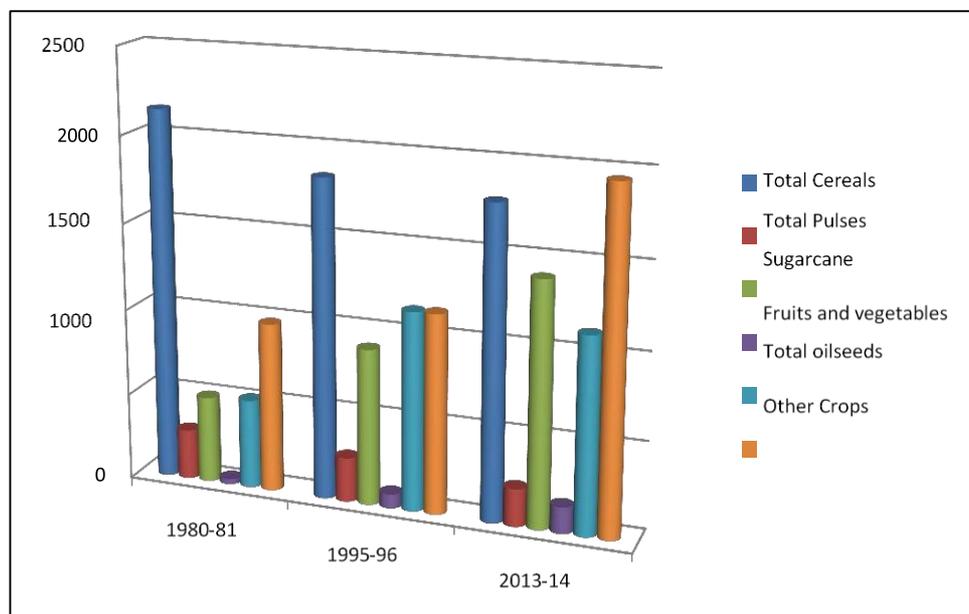
**Table 2:** Changes in the cropping pattern 1980-81 to 2013-14 (Area in '00' ha)

Sr. No.	Particulars	Period-I 1980-81	Period-II 1995-96	Period-III 2013-14	Percent change in cropping pattern over base year 1980-81	
					1995-96	2013-14
1	Rice	1051 (23.58)	1074 (20.02)	1193 (17.39)	2.1	6.08
2	Wheat	118 (2.64)	94 (1.75)	88 (1.32)	-20.33	-27.11
3	Kharif-Jowar	34 (0.76)	96 (1.79)	80 (1.20)	182.35	135.29
4	Rabi- Jowar	25 (0.20)	70 (0.05)	140 (2.10)	180.66	460.55
5	Bajra	26 (0.58)	58 (1.08)	4 (0.36)	123.07	-7.6
6	Other	907 (20.35)	512 (9.54)	365 (5.78)	-43.55	-59.75
	Total Cereals	2145 (48.13)	1837 (34.25)	1786 (26.85)	-14.35	-16.73
7	Gram	89 (1.99)	86 (1.60)	85 (1.27)	-3.37	-4.49
8	Red Gram	49 (1.09)	29 (0.54)	24 (0.36)	-40.8	-51.02
9	Green Gram	4.00 (0.08)	16 (0.29)	30 (0.45)	300	650
10	Black Gram	10 (0.22)	34 (0.63)	25 (0.37)	240	150
	Total Pulses	288 (6.46)	257 (4.79)	218 (3.28)	10.76	-24.30
	Total food grains	2433 (54.60)	2094 (39.05)	2004 (30.13)	-13.93	-17.63
11	Sugarcane	500 (11.22)	900 (16.78)	1399 (21.03)	80	179.8
12	Fruits and vegetables	29 (0.65)	81 (1.51)	153 (2.3)	179.3	427.58
13	Cotton	5 (0.11)	1 (0.0186)	0 (0)	-80	-100
14	Groundnut	500 (11.22)	610 (11.37)	583 (8.76)	-22	16.6
15	Soybean	20 (0.67)	98 (1.82)	554 (8.330)	198.66	1746.66
	Total oilseeds	516 (11.57)	1142 (21.29)	1124 (16.90)	121.31	117.82
16	Other Crops	978 (21.94)	1145 (21.35)	1952 (29.53)	17.07	99.59
17	Gross Cropped Area.	4456 (100.00)	5362 (100.00)	6650 (100.00)	20.33	49.23

(Figures in parentheses indicate percentage to gross cropped area) Source: - District statistical Abstract, Kolhapur.

Area under sugarcane showed tremendous increase in area. It was 50,000 hectares in 1980-81 and increased up to 139900 hectares in 2013-2014. Area under fruits and vegetables increased from 2900 hectares to 15300 hectares due to Maharashtra Governments orchard plantation programme like National Horticulture Board. Area under cotton showed

decreasing. Among oilseeds the groundnut showed fluctuation. Total oilseeds increased from 51600 hectares from 1980-81 to 2013-14. It is seen from the table that the area under commercial crops is increasing viz., sugarcane except cotton.

**Fig 2:** Changes in Cropping Pattern

### Conclusion and Recommendations

The increase population, the pressure on land to cause diversified nature of land use pattern and cropping pattern of the Kolhapur district has increased the cropping intensity of the land. The cropping pattern of the district has changed towards commercialization due to increase in irrigation facilities, transport, communication, market facilities etc. In present scenario the study region needs to adaptation of afforestation, changing in the cropping pattern, rural

communications, development of farmers and laborers. Hence, to promote agriculture development and restore the ecological balance in the region.

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