



## SPATIO TEMPORAL CHANGE CROPPING PATTERN IN KOLHAPUR DISTRICT

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### **Abstract:**

Agriculture plays a very significant role in the economic development in India. Where 70% of the population is directly or indirectly depends on agriculture for their survival. Cropping pattern is an important aspect of geographical studies particularly related to agricultural geography. The growth of population leads to change in cropping pattern. This paper an attempt is made to analysis the changes in cropping pattern of Kolhapur district. In the last two decades (1990-91 and 2010-2011) In 1990-91, out of the total agriculture area 66.06% of agriculture land was under food crops, decrease to 58.49% because remaining agriculture shifted to commercial crops like sugarcane, oilseeds and fruits and vegetables etc. The cropping pattern of the district has changed towards commercialization due to use of irrigation, implementation, fertilizer consumption (organic and inorganic) transport, communication, market facilities etc.

**Key words:** cropping pattern.

### **INTRODUCTION-**

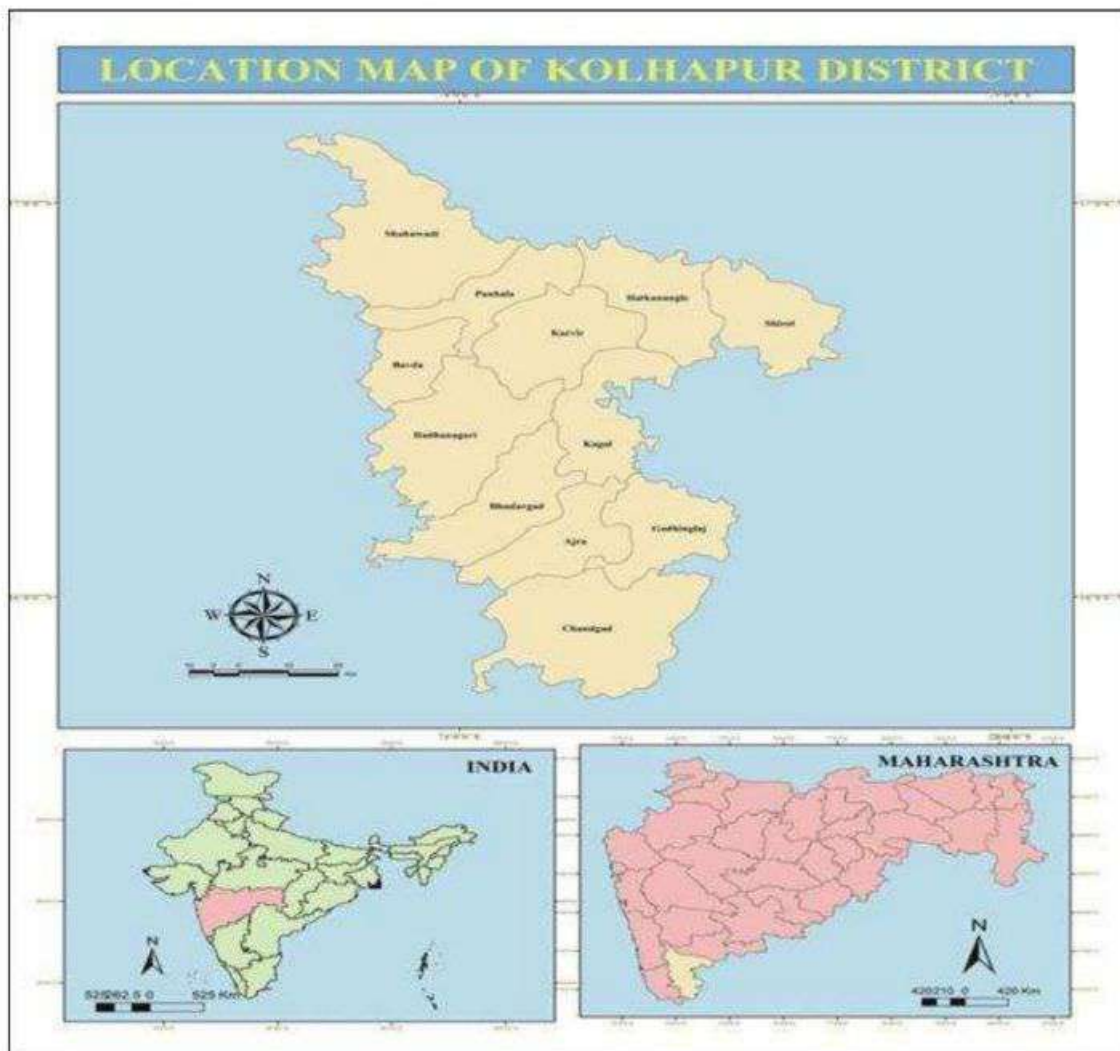
Cropping pattern simply means the proportion or measure of area under different crops at a point of time; whereas change in cropping pattern refers to vary in proportion of area under different crops at two different times. Such changes though governed by socio-economic, ecological situation and technological factors also determine which of the feasible crop the farmer will choose. Present paper deals with the study of cropping pattern as an important part of agricultural technology in Kolhapur district with its spatial and temporal feature and an evaluation of its impact on crop productivity too. The nature of cropping pattern in considered as an important factor in determining the growth prospects for agriculture.

### **OBJECTIVE-**

To highlight the spatio-temporal changes of cropping pattern in Kolhapur district.

### THE REGION-

The Kolhapur district is one of the southernmost districts of Maharashtra state. The district's courtiers a total area of 7,685 sq. kms. It lies between 16° 0' 0"N to 17° 0' 0" North latitude and 74° 0' 0" to 75° 0'0" East longitude. The length of the district south to north is 160 Kms. and east to west is 60 Kms. The Sahyadri ranges to the west and Warna river to the north, the river Krishna and Belgaum district to the south and east, forms the natural boundaries of the district. The region receives average rainfall 1900 mm.





#### **METHODOLOGY:**

The study is based on data collected from primary and secondary sources. The collected data from different sources were processed and represented by employing different statistical and quantitative techniques like percentage change. Most of secondary sources of data collected from reports published by institutions like Directorate of Economics and statistics, Department of agriculture and co-operation, Ministry of agriculture, Government of India, National sample survey, State Statistical Abstracts, Gazetteer of Kolhapur district etc.

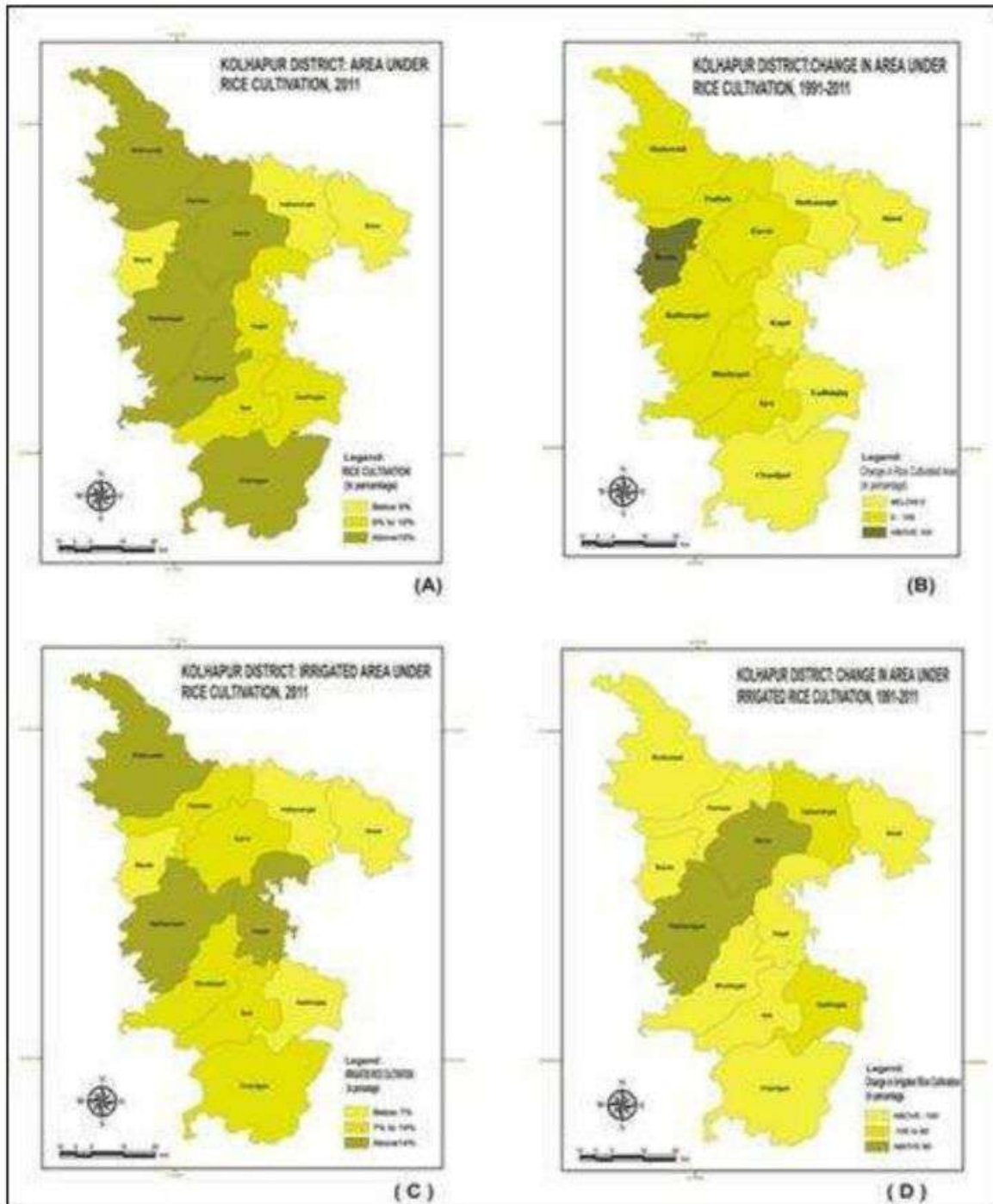
#### **Rice:**

Most important rice crops grow best at a pH of 5-8. Rice is the staple food of Chandgad, Shahuwadi and Karvir in north and south part of Kolhapur district. Rice occupies about 18.29 % of total cropped area (15.14 lakh hectares state) having more variation at tehsil level. The south western hilly tract, particularly Chandgad, Shahuwadi, Bhudargad, Panhala, Radhanagari and Karvir has high proportion of rice (above 10 %) the central part like Ajra, Kagal, and Gadhinglaj having moderate (5 % to 10 %) proportion. This is due to high rainfall and undulating topography, whereas very low share (below 5 %) of this crop is confined to the Gaganbavada and eastern most tehsils namely Hatkanangale and Shirol.

Gaganbavada tehsil experiences highest (above 100 %) increase in region. because rice is dominant crop. The moderate proportion of rice having Shahuwadi, Panhala, Karvir, Radhanagari, Bhudargad and Ajra. The significant decreases (below 0 %) are noted in the Shirol, Hatkanangale, Kagal, Gadhinglaj and Chandgad because sugarcane and vegetables are growing some farmers in this tehsils.

Rice occupied about 1.99 % of the total irrigated area in the region. (Table 1.1 (B)). Its spatial distribution resembles with the general distribution. More than 14 % of total irrigated area is occupied by paddy cultivation in Radhanagari, Shahuwadi and Kagal in 2011

The moderate proportion of rice having Bhudargad, Panhala, Karvir, Chandgad, Ajra and Chandgad (7% to 14%). The significant decrease (below 7 %) in the area under rice has been found Gaganbavada, Hatkanangale, Gadhinglaj and Shirol. This might be because of tough completion of rice crop like sugarcane and vegetables. High yielding varieties, increasing irrigation facilities and attractive prices have encouraged cultivation in this region. However only Radhanagri, Shahuwadi and Kagal have shown an increasing trend.



The decrease of 1.99 % in irrigated area under the rice is experience from 1991-2011. Karvir tehsil and Radhanagari experience highest increase in region. Shirol tehsil experience highest



decrease in region. The significant decrease is noted in these tehsils where sugarcane has replaced this crop and in remaining two tehsils. Panhala and Hatkanangale decrease because some farmers are grown vegetables.

**Table 1.1 (A)**  
**Cropping pattern (area under different crops (1991-2011))**

Crop	1991		2011		percentage difference (increase/decrease)	
	Area in hect.	% of gross cropped area	Crop	Area in hect.		% of gross cropped area
Rice	58308	17.81	Rice	106325	18.29	0.47
Wheat	5537	1.69	Wheat	8491	1.46	-0.23
Jowar	0	0.00	Jowar	21761	3.74	3.74
Other Cereals	416	0.13	Other Cereals	0	0.00	-0.13
<b>Total cereals</b>	<b>121819</b>	<b>37.22</b>	<b>Total cereals</b>	<b>172531</b>	<b>29.67</b>	<b>-7.55</b>
Other pulses	7041	2.15	Other pulses	4442	0.76	-1.39
<b>Total pulses</b>	<b>55140</b>	<b>16.85</b>	<b>Total pulses</b>	<b>202921</b>	<b>34.90</b>	<b>18.05</b>
<b>Total Foodgrain</b>	<b>176959</b>	<b>54.06</b>	<b>Total Foodgrain</b>	<b>375452</b>	<b>64.57</b>	<b>10.50</b>
Sugarcane	118547	36.22	Sugarcane	108669	18.69	-17.53
Fruits &vegetables	10635	3.25	Fruits &vegetables	23198	3.99	0.74
<b>Total food crops</b>	<b>216221</b>	<b>66.06</b>	<b>Total food crops</b>	<b>340122</b>	<b>58.49</b>	<b>-7.57</b>
Groundnut	57890	17.69	Groundnut	69265	11.91	-5.77
Soyabean	13533	4.13	Soyabean	0	0.00	-4.13
Other oil seed	2750	0.84	Other oil seed	64562	11.10	10.26
<b>Total oil seed</b>	<b>74173</b>	<b>22.66</b>	<b>Total oil seed</b>	<b>134153</b>	<b>23.07</b>	<b>0.41</b>
<b>Total non-food crop</b>	<b>111088</b>	<b>33.94</b>	<b>Total non-food crop</b>	<b>241345</b>	<b>41.51</b>	<b>7.57</b>
<b>Gross cropped area</b>	<b>327309</b>	<b>100.00</b>	<b>Gross cropped area</b>	<b>581467</b>	<b>100.00</b>	<b>0.00</b>

Source-Socio-Economic review,1991-2011

The major observed in Hatkanangale and Kagal tehsil is the increased irrigation facilities caused shifting the farmer from jowar cultivation to sugarcane cultivation.

#### **Total foodgrain:**

This group includes cereals and Pluses. The total share of cereals and Pluses is 29.67% and 34.90 % respectively out of the total cropped area. This group has occupied 64.57 %. During the period of observation it share has been increased by 10.50 %. It is mainly because the



foodgrain could not compete with cash crop in sharing the increased irrigation area. The total pulses have increased by 18.05 % but area under wheat has decreased by 0.23 %. (Table 1.1(A))

The spatial distribution of foodgrain reveals that Chandgad,Shahuwadi, Kagal, Karvir, Bhudargad ,Panhala, Radhanagari, Gadhinglaj and Ajra tehsils are having above 8% of gross cropped area under foodgrain. The moderate percentage (4% to 8%) under foodgrain is observed in only one Hatkanangale tehsils. The eastern part of Kolhapur Shirol and Gaganbavada is having below 4 % area under foodgrain of gross cropped area.

**Table 1.1 (B)**

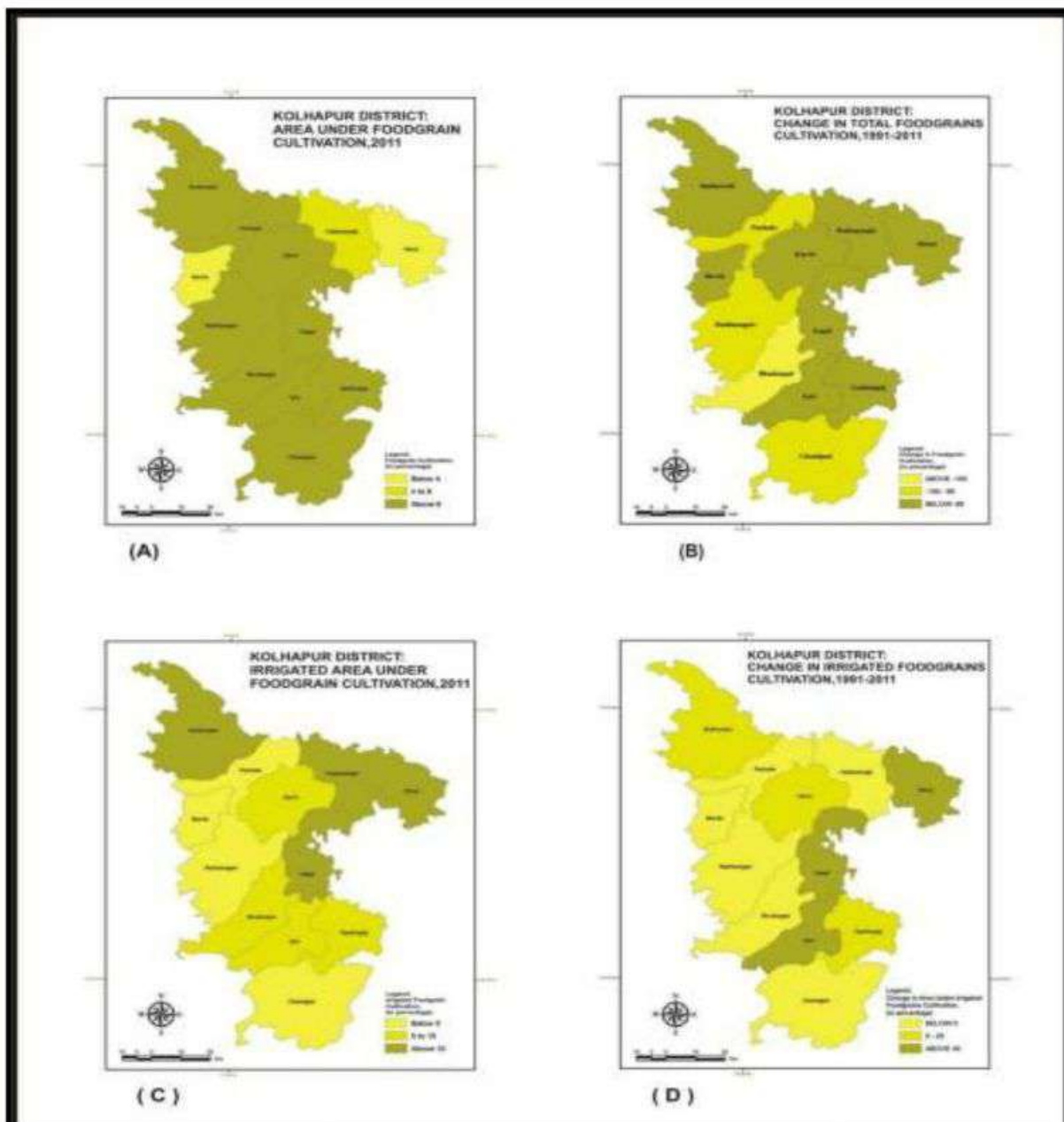
**Cropping pattern (irrigated area under different crops (1991-2011))**

Crop	1991		Crop	2011		percentage difference(increase /decrease)
	Area in hect.	% of gross cropped area		Area in hect.	% of gross cropped area	
Rice	3891	4.00	Rice	2996	1.99	-2.02
Wheat	0	0.00	Wheat	7922	5.25	5.25
Jowar	0	0.00	Jowar	1341	0.89	0.89
Other Cereals	50	0.05	Other Cereals	0	0.00	-0.05
<b>Total cereals</b>	<b>11819</b>	<b>12.16</b>	<b>Total cereals</b>	<b>12259</b>	<b>8.13</b>	<b>-4.03</b>
Other pulses	0	0.00	Other pulses	116	0.08	0.08
<b>Total pulses</b>	<b>3560</b>	<b>3.66</b>	<b>Total pulses</b>	<b>1526</b>	<b>1.01</b>	<b>-2.65</b>
<b>Total Foodgrain</b>	<b>15379</b>	<b>15.82</b>	<b>Total Foodgrain</b>	<b>13785</b>	<b>9.14</b>	<b>-6.68</b>
Sugarcane	69802	71.80	Sugarcane	108669	72.05	0.24
Fruits &vegetables	1417	1.46	Fruits & Vegetables	9801	6.50	5.04
<b>Total food crops</b>	<b>96022</b>	<b>98.77</b>	<b>Total food crops</b>	<b>137541</b>	<b>91.19</b>	<b>-7.58</b>
Groundnut	1100	1.13	Groundnut	2370	1.57	0.44
Soyabean	0	0.00	Soyabean	0	0.00	0.00
Other oil seed	0	0.00	Other oil seed	2764	1.83	1.83
Total oil seed	1100	1.13	Total oil seed	3464	2.30	1.17
<b>Total non-food crop</b>	<b>1194</b>	<b>1.23</b>	<b>Total nonfood crop</b>	<b>13293</b>	<b>8.81</b>	<b>7.58</b>
<b>Gross cropped area</b>	<b>97216</b>	<b>100.00</b>	<b>Gross cropped area</b>	<b>150834</b>	<b>100.00</b>	<b>0.00</b>

Source-Socio-Economic review,1991-2011

However increase above 10 % in irrigated area under total foodgrain is observed in Kagal, Shirol, Hatkanangale and Shahuwadi. 5 % to10% in irrigated area under total foodgrain is observed in Gadhinglaj, Ajra, Karvir and Bhudargad tehsils. Panhala, Radhanagari, Chandgad and Gaganbavada have lost less area as compare to other, because of a trend of practicing

sugarcane seem to be dominant. Among the irrigated crop these crop together share about 9.14 % area. The proportion of irrigated land under this crop has decreased by 6.68 %. Table-1.1(B).Bhudargad have decreases area under total foodgrain.





### **Sugarcane:**

Sugarcane is one of the major crops of India. This country is one of the significant producers of sugarcane in the world. Kolhapur has the largest surface area under sugarcane and its production is also the highest in the Maharashtra. Sugarcane a premier cash crop has occupied 18.69 % of total cropped area (10.43 lakh hectares in Maharashtra) and uses 72.05 % of gross area irrigated, while ranking first among all irrigated crops.

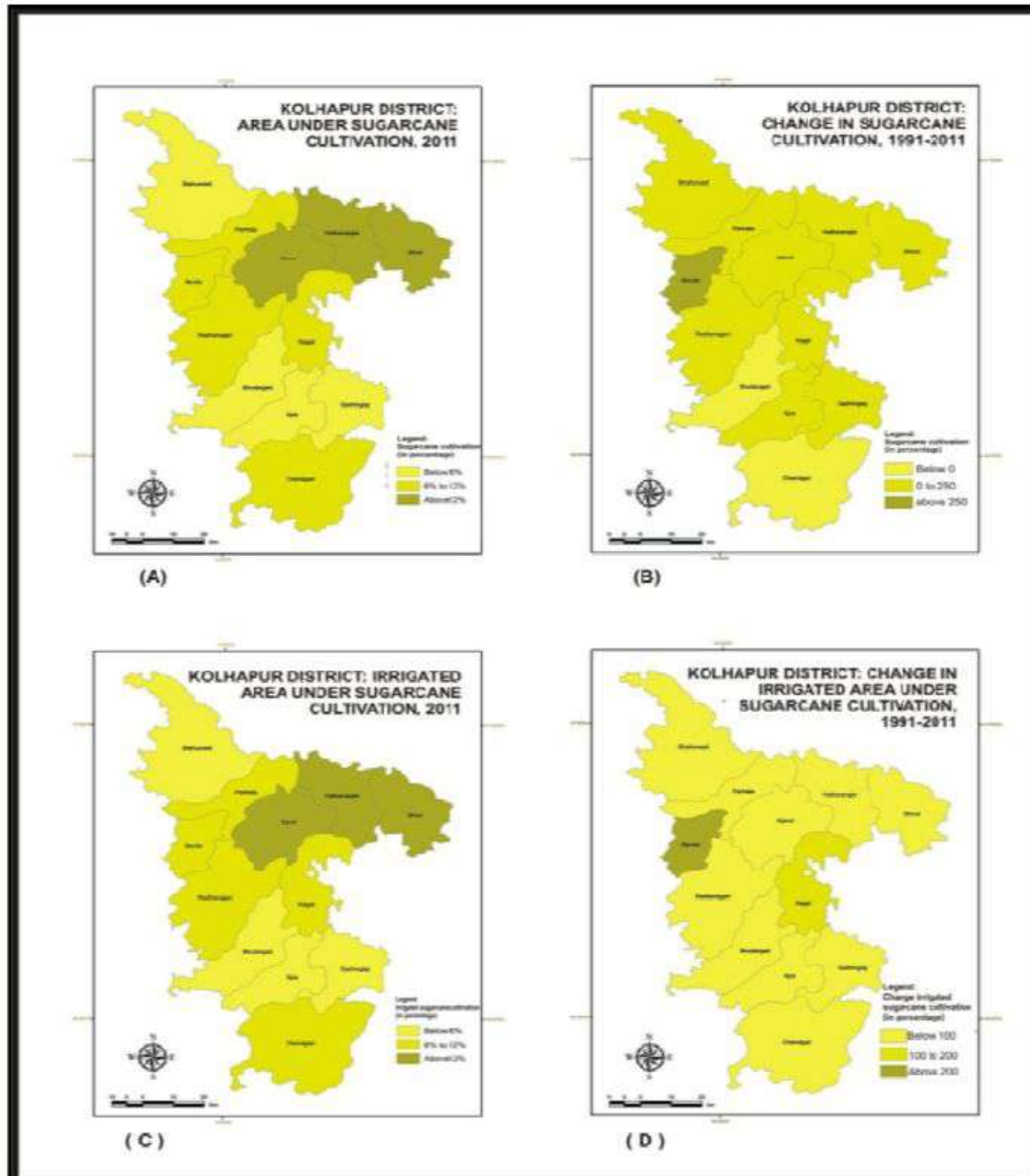
Relatively significant (above 12 %) of cultivated area under sugarcane is confined to the Karvir, Shirol, and Hatkanangale. This is the area where irrigation facilities and supply are comparatively more developed. Besides the fertile alluvial tracts. Vicinity of sugar factories and market, well developed network of transportation, suitability of moisture and temperature condition and other contributory factors which have stimulated the extension of cane cultivation in this part of the region. By contrast low proportion (below 6%) is noted in the northern and Ajra, Bhudargad, Shahuwadi and Gadhinglaj which can be well attributed to the poor irrigation facilities, less fertile soil (alkaline soil) and moisture deficiency in these part.

The spatial distribution however is uneven and largely controlled by physiographic condition, nature and mode of irrigation and human response to it. In particular the highest percentage of irrigated area under this crop is found in Karvir and Shirol. It is mainly because most of irrigated area available in the tehsils.

High proportion (above 12 %) of irrigated area under this crop is observed in Karvir , Shirol and Hatkanangale. Mainly due to the increase in perennial (lift) source of irrigation and also increase well irrigation. The moderate percentage (6 % to 12 %) of the irrigated area under this crop is observed in Gaganbavada ,Panhala, Chandgad, Kagal, Radhanagari tehsils. The insignificant area under cane cultivation is noted in the Shahuwadi tehsil located to north western part of region. The seasonal source of water (well) seem to have been responsible for them. Nevertheless the spatial distribution of sugarcane is largely related to perennial source of irrigation. The low percentage (below 6 %) of this crop is observed in Gadhinglaj, Ajra, Shahuwadi and Bhudargad. Temporal change of sugarcane crop in Gaganbavada because high rainfall and Atmosphere is not good for vegetables cultivation in this area, so sugarcane crop is dominant crop in this tehsil. The moderate change in Kagal, Panhala, Hatkanangale, Radhanagari, Shirol, Karvir, Ajra and Gadhinglaj, Shahuwadi. Chandgad and Bhudargad is low



cultivation of sugarcane crop. Harvesting machinery used for the sugarcane cutting in Kolhapur region. on the contrary notable decrease (below 6 %) is observed mainly in Bhudargad, Shahuwadi and Ajra tehsil. Though it is a traditional cane cultivation area of region, recently farmers prefer other irrigated crops like rice, wheat and fruit and vegetables etc.



As per the change in proportion of sugarcane crop in irrigated area the concern region experience 0.24 % increase.(Table-1.1(B)).As a whole above 12 % increase has been observation



Karvir ,Hatkanangale and Shirol tehsils which show the increase tendency of sugarcane cropping in irrigated area.. The increase is also found in Gaganbavada, Panhala, Chandgad, Kagal and Radhanagari, tehsils. On the contrary Gadhinglaj, Bhudargad, Shahuwadi and Ajra tehsils observed decrease in proportion on of sugarcane cropping in irrigated area.

The temporal change of sugarcane crop in Gaganbavada because high rainfall and atmosphere is not good for vegetables cultivation in this area. The moderate change in Kagal. Low cultivation of sugarcane crop in Panhala, Hatkanangale, Radhanagari, Shirol, Karvir, Ajra,Gadhinglaj,Shahuwadi ,Chandgad and Bhudargad.

The total area under cereals decreased 37.22 % to 29.67 % and the total pluses increased 16.85 % to 34.90 % from 1991-2011.The other oilseeds (10.26 %) and total non-food crop (7.57 %) increase in area. Soyabean (-4.13%), Groundnut (-5.77%) and total fruit and vegetables (-0.74 %) decrease in area.

#### **Conclusion :**

This paper an attempt is made to analysis the changes in cropping pattern of Kolhapur district. In the last two decades (1990-91 and 2010-11) the situation of cropping pattern in the district was drastic change because increase in transport, irrigation facilities, market facilities, fertilizer consumption etc. The diversified nature of cropping pattern of the Kolhapur district has increased the cropping intensity of the land.

The district exhibits a mixed cropping pattern. Kolhapur district holds a leading rank in respect of rice and sugarcane cultivation and sugar industry. The laterite soil in Gaganbavada, Panhala, Radhanagari and Shahuwadi tehsils are conducive for raising hill millets. Paddy is grown in the tehsil of Chandgad, Ajra, Bhudargad, Gadhinglaj, Shahuwadi, Karvir, Radhanagari, Panhala and some parts of Kagal, Shirol ,Hatkanangale and Gaganbavada talukas which have rich and fertile soils. Rice, jawar and groundnut are cultivated in kharip season. Sugarcane and vegetable are grown where irrigation facilities are available. The eastern taluka of Hatkanangale and Shirol focus on sugarcane, groundnut and jawar together with fruits and vegetables cultivation. Shirol tehsil is leading in different vegetables production.

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