

## **Change In The Cultivation And Productivity Of Sugarcane In Kolhapur District**

**By**

**Dr. Jyotsana M Shivankar**

Head, Department Of Geography Yashvantrao Chavhan (Kmc) College, Kolhapur

Email: [Jyotsanamshivankar@gmail.com](mailto:Jyotsanamshivankar@gmail.com)

### **Abstract**

Sugarcane Is A Major Cash Crop. In Maharashtra, Sugarcane Is Grown In Large Quantities In Western Maharashtra. Among These, Kolhapur District Is An Important Sugarcane Producing District. Sugarcane Is Used In Various Industries, Thus Sugarcane Cultivation Has Gained Importance. In The Present Research Paper, The Area Of Sugarcane Cultivation In Kolhapur District And The Variation In Its Production Has Been Studied Tehsil Wise.

**Keyword:** Sugarcane, Agriculture, Cultivation, Productivity, Change

### **Introduction**

It Is A Herbaceous Plant. Sugarcane Is Mainly Grown For Jaggery And Sugar. It Is Mainly Planted In India And Brazil. In India, Maharashtra And Uttar Pradesh Are The Leading States In Sugarcane Cultivation. Sugarcane Is An Annual Crop. A New Plant Is Planted From A Sugarcane Seed (Stem Piece). Sugarcane Needs Black Firm Soil, Because Sugarcane Needs A Lot Of Nutrients. Sugar Is Made From Sugarcane In Sugar Factories. Mali, Ethanol And Bagyas-Chipad (Juice Left Over) Are The By-Products Obtained From Sugarcane. Alcohol Can Be Made From The Plant. Paper Is Made From Sugarcane Chips. Electricity Is Generated Using The Gardens.

Kolhapur Is One Of The Important Districts For The Cultivation Of Sugarcane. Present Paper Reveals The Analysis Of Change In Sugarcane Cultivation And Production.

### **Objectives**

Specific Objectives Of The Present Research Paper Are As Follows.

- 1) To Analysis The Tehsil Wise Cultivation Of Sugarcane In Kolhapur District
- 2) To Analysis The Tehsil Wise Productivity Index Of Sugarcane In Kolhapur District
- 3) To Evaluate The Change In Cultivation And Productivity Index Of Sugarcane In Kolhapur District.

### **Data Source And Methodology**

Present Research Work Is Carried Out With The Help Of Secondary Source Data. The Related Data Is Complied From District Agricultural Statistical Office, Socio-Economic Reviews, And Previously Published Research Papers.

The Discussion And Analysis Of The Present Paper Is Based On The Year 2011-12 And 2021-22. Productivity Index Of Sugarcane Is Calculated With The Help Of Following Formula By Mohammad Shafi'S Method.

$$P = \frac{Y}{Y_n} \div \frac{T}{T_n}$$

P – Productivity Index

Y – Yeild Of Sugarcane In One Tehsil

Y<sub>n</sub> – Yeild Of Sugarcane In District

T– Area Under Sugarcane In One Tehsi

T<sub>n</sub> – Area Under Sugarcane In District

Change = Current Value – Last Known Value

### Study Region

The Geographical Location Of Kolhapur District Is Between 15°42'39" North Latitude To 17°09'58" North Latitude And 73°39'06" East Longitude To 74°38'46" East Longitude.

Kolhapur District Has 1 Municipal Corporation And 9 Municipalities And 2 Nagar Panchayats. Administratively, Kolhapur District Has Four Revenue Subdivisions Namely Karveer (Kolhapur), Ichalkaranji, Gadhinglaj And Radhanagari. , Radhanagari, Gargoti, Ajra, Gadhinglaj And Chandgad Are Divided Into 12 Tehsil Subdivisions. There Are About 1,216 Villages And 13 Towns In Kolhapur District.

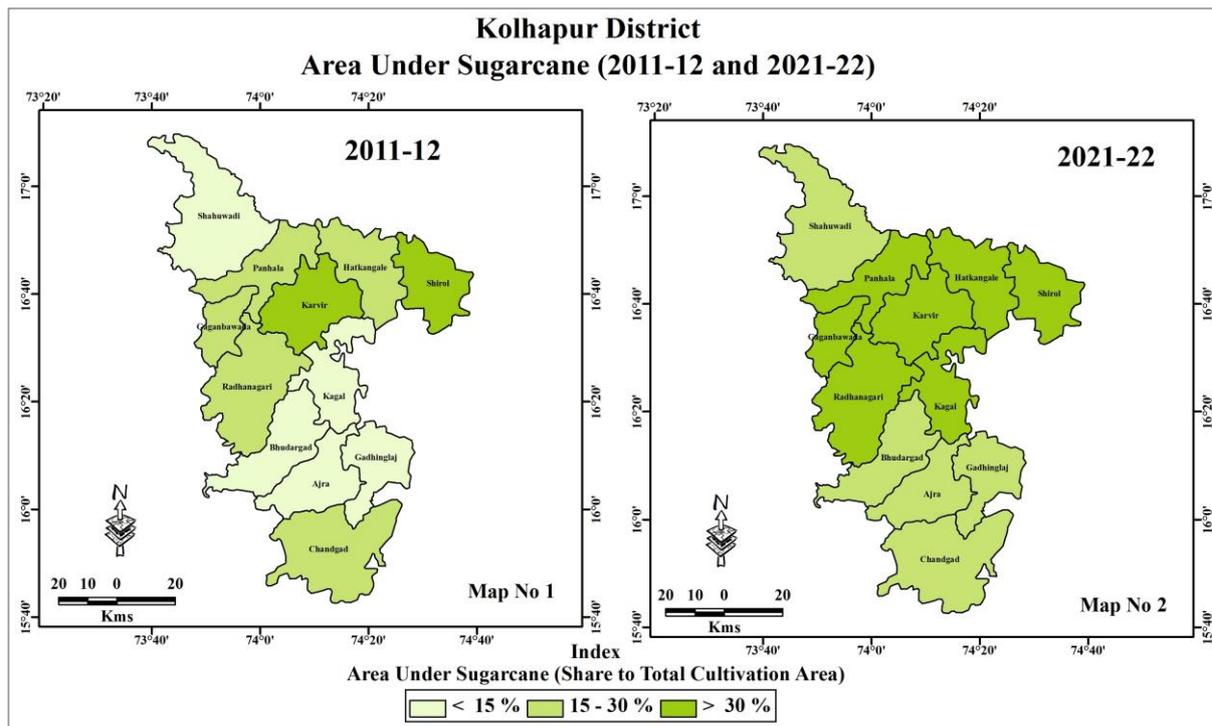
### Area Under Sugarcane

Tehsil Wise Area Under Sugarcane, Its Share To The Total Cultivation Is Presented In Table No.1

**Table No. 1: Kolhapur District – Area Under Sugarcane (2011-12 And 2021-22)**

Tehsils	2011-12		2021-22	
	Area (Hector)	% To Total Cultivation	Area (Hector)	% To Total Cultivation
Shahuwadi	2672	7.42	7315	29.21
Panhala	9404	26.09	12555	36.77
Hatkanganle	13989	20.73	23198	44.54
Shirol	17883	30.42	25302	75.55
Karvir	19936	34.67	23266	54.16
Gaganbavda	10244	28.19	3320	51.28
Radhanagari	7339	21.59	12215	41.93
Kagal	8212	13.40	23257	48.13
Bhudargad	3362	8.96	6970	24.38
Ajra	2364	6.17	4706	17.33
Gadhinglaj	4984	6.96	9800	18.60
Chandgad	8280	17.75	11464	24.98
<b>Total</b>	<b>108669</b>	<b>18.69</b>	<b>163368</b>	<b>38.35</b>

Source: District Agriculture Office, Kolhapur



According To The Year 2011-12 There Are Total 1086699 Hector Area Is Found Under Sugarcane Cultivation And It Is 18.69% To The Total Cultivated Land Of The District. In The Year 2021-22 Sugarcane Cultivation Is Increased And This Year Total 163368 Hector Lands Is Found Under Sugarcane Crop. This Year Sugarcane Share Is 38.35% To The Total Cultivation.

In The Year 2011-12 Karvir (34.67%) And Shirol Tehsil Found Highest Cultivation Of Sugarcane In The District. More Than 30% Cultivated Land Is Under Sugarcane In These Two Tehsils. Gaganbavda (28.19%), Panhala (26.09%), Radhanagari (21.59%) And Hatkanganle (20.73%) Tehsils Found 20 To 30% Sugarcane Cultivation. Chandgad (17.75%) And Kagal (13.40%) Tehsils Are Recorded 13 To 18% Sugarcane Area Of Their Total Cultivation. Other Tehsils In The District Has Found Less Than 10% Land In Sugarcane Crop In Total Cultivated Area. Ajra (6.17) Is Observed Lowest In The District.

In The Year 2021-22 Sugarcane Cultivation Is Increased In Every Tehsil Of The District. This Year Shirol (75.55%) Is Recorded Highest Area Under Sugarcane. More Than 75% Area Of Cultivation In Shirol Tehsil Is Found Under Sugarcane Crop. Karvir (54.16%) And Gaganbavda (51.28%) Tehsil'S More Than 50% Cultivation Is Found Under Sugarcane. Gadhinglaj (18.60%) And Ajra (17.33%) Tehsils Again Found Lowest Sugarcane Share In Total Cultivation, But Their Share Is Increased Than 2011-12. Remaining Part Of The District Found Sugarcane Area In Between 20 To 50%.

In Both Years 2011-12 And 2021-22 Total Area Of Sugarcane Is Under Irrigation.

### ***Productivity Of Sugarcane***

Total Production Of The Sugarcane In 2011-12 Is Recorded 12652.8 Metric Tone And In 2021-21 It Is Recorded 16125.72 Metric Tone. During The Period 2011-12 To 2021-22 The Growth In Production Is Found In The District.

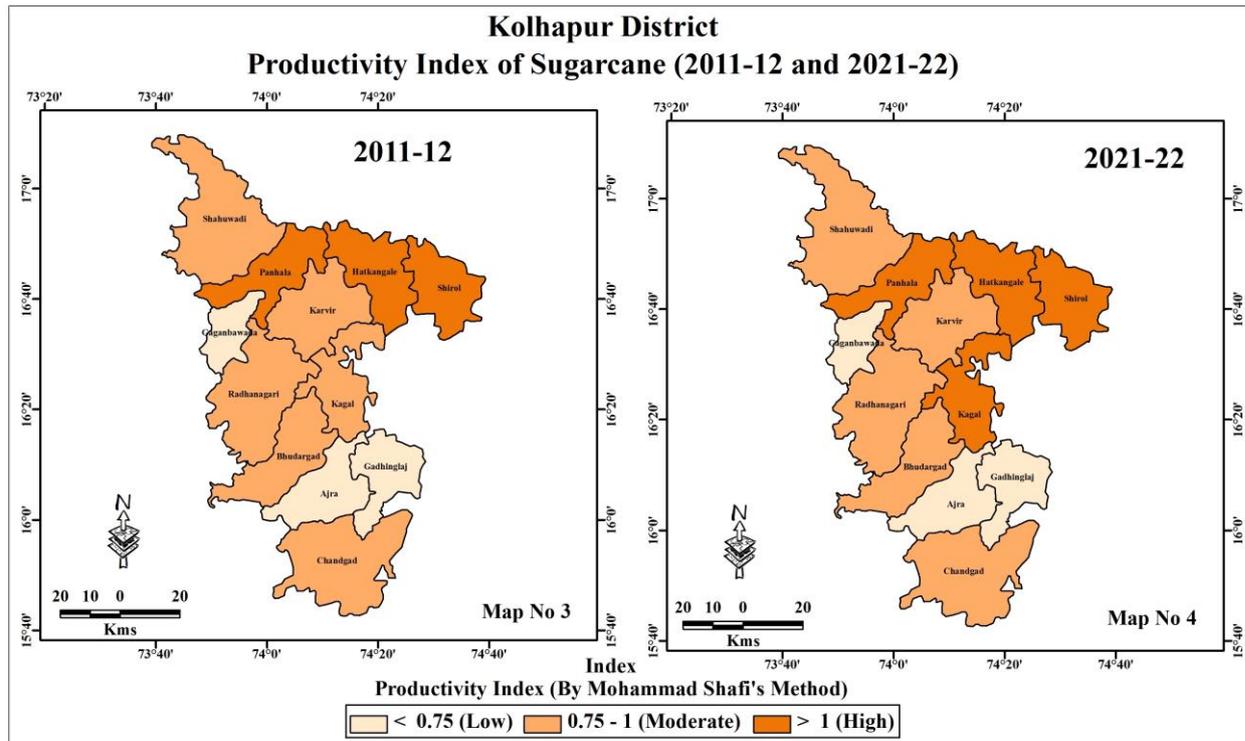
In The Period 2011-12 Panhala (1.16), Hatkanganle (1.06) And Shirol (1.13) Tehssils Found Highest Productivity Index Of Sugarcane. The Index Of In Thesils Is Found More Than 1. Production Compare To The Sugarcane Cultivation Is Satisfactory In These Tehsils. Productivity Index Is Found Less Than 1 In Other Remaining Tehsils. Gadhinglaj (0.64) And Gaganbavda (0.52) Are The Lowest In The District.

Table No 2 Shows The Tehsil Wise Productivity Index Of Sugarcane In The District.

**Table No. 2: Kolhapur District – Productivity Of Sugarcane (2011-12 And 2021-22)**

Tehsils	2011-12	2021-22
	Productivity Index (Shafi's Method)	Productivity Index (Shafi's Method)
Shahuwadi	0.88	0.90
Panhala	1.16	1.21
Hatkanganle	1.06	1.17
Shirol	1.13	1.17
Karvir	0.91	0.93
Gaganbavda	0.52	0.44
Radhanagari	0.87	0.90
Kagal	0.84	1.09
Bhudargad	0.79	0.84
Ajra	0.71	0.73
Gadhinglaj	0.64	0.70
Chandgad	0.78	0.81

Source: Productivity Index Is Calculated By Author



In The Period 2021-22 Again Panhala (1.21), Hatkanganle (1.17) And Shirol (1.17) Found Highest Productivity In The District. In This Year Kagal (1.09) Is Also Found Productivity Index More Than 1. Productivity Index Is Less Than 1 In Ther Remaining

Tehsils. Gaganbavda (0.44) Is Lowest And Index Is Less Than 0.50. Index In Ther Tehsils Found 0.70 To 0.93.

### ***Change In Sugarcane Cultivation And Productivity***

Thesil Wise Area Under Sugarcane And Productivity Is Shown In Table No 3.

**Table No. 3: Kolhapur District - Change In Sugarcane Cultivation And Productivity (2011-12 To 2021-22)**

<b>Tehsils</b>	<b>Change In Sugarcane Cultivation %</b>	<b>Change In Productivity Index</b>
Shahuwadi	21.78	0.02
Panhala	10.68	0.05
Hatkanganle	23.81	0.11
Shirol	45.14	0.04
Karvir	19.49	0.02
Gaganbavda	23.09	-0.08
Radhanagari	20.34	0.03
Kagal	34.72	0.25
Bhudargad	15.42	0.05
Ajra	11.16	0.02
Gadhinglaj	11.64	0.06
Chandgad	7.24	0.03
<b>Total</b>	<b>19.66</b>	<b>-</b>

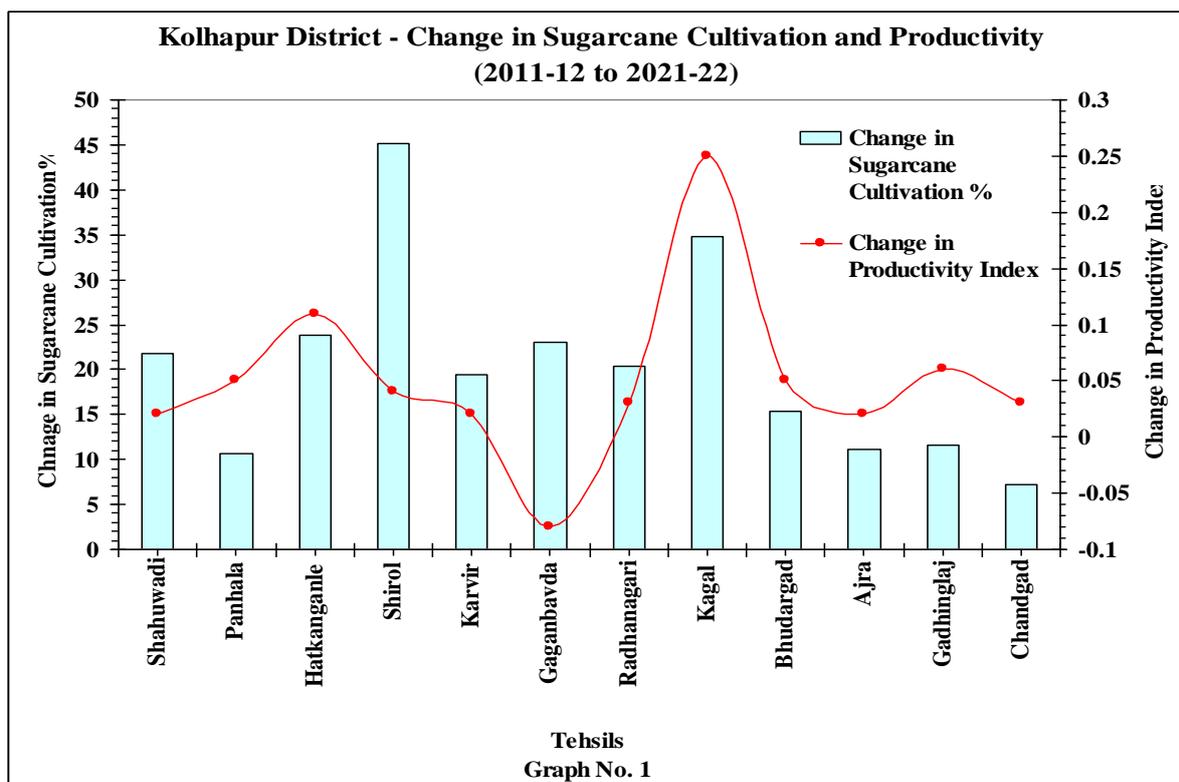
Source – Author

### ***Change In Sugarcane Cultivation %***

During The Period 2011-12 To 2021-22 Total 19.66% Area Under Sugarcane Is Increased In The District. Positive Changes Are Found In All Tehsils Of The District In Sugarcane Cultivation. Highest Change Is Found In Shirol Tehsil, Total 45.14% Area Under Cultivation Is Increased During Last Decade. Total 34.72% Area Is Increased In Kagal Tehsil. Lowest Growth Is Found In Chandgad (10.68), Ajra (11.16) And Gadhinglaj (11.64) Tehsil. In Other Tehsil This Change Is Found In Between 15 To 30%

### ***Change In Sugarcane Productivity***

Productivity Is Increased In Every Tehsil Except Gaganbavda Tehsil During 2011-12 To 2021-22. Productivity Index Is Decreased By 0.08 In Gaganbavda Tehsil. In Other All Tehsil Positive Change Is Occurred In Productivity. Maximum Productivity Is Increased In Kagal (0.25) And Then In Hatkanganle (0.11) Tehsil. In Other Tehsil This Productivity Index Is Increased By 0.02 To 0.06.



## Conclusions And Suggestions

Both Sugarcane Area And Production Have Increased During The Period 2011-12 To 2021-22 In Kolhapur District. But The Production Has Not Increased In Proportion To The Increase In Cultivated Area. Hence The Increase In Productivity Index Is Very Low.

Kolhapur District Has Already Grown Sugarcane On A Large Scale. Also The Entire 100% Area Of Sugarcane Is Under Irrigation. However, The Increase In Production Is Not Seen As Expected. The Production Of Sugarcane Has Increased By 3472.92 Mt In The Last Ten Years In The District, But As It Is Less Compared To The Cultivated Area, The Productivity Index Has Increased Less.

Sugarcane Is A Major Cash Crop. There Is A Huge Demand For Sugarcane In The Market, So It Is Necessary To Increase The Production Of Sugarcane Per Hectare. For Proper Growth And Yield Increase Of Sugarcane Crop Mainly The Following Factors Need To Be Addressed.

In Order To Accustom The Sugarcane Crop To Bear Water Stress In Summer, It Is Necessary To Increase Each Cycle Of Water By Two To Three Days From December 1 To February End. This Increases The Plant's Natural Ability To Withstand Water Stress. Due To This, The Roots Of The Crop Go Deeper And Use The Available Water In The Lower Layer.

- ❖ Water Should Be Given Only When The Amount Of Available Water In The Soil Decreases To Around 50 Percent. Drip Or Mist Irrigation Method Should Be Adopted. This Method Saves Water And Increases Production.
- ❖ Excess Amount Of Palash Fertilizer (60 Kg Per Hectare) Should Be Applied From The Soil At The Time Of Planting.

- ❖ At The Time Of Planting, Bene Should Be Dipped In Two Percent Solution Of Murate Of Potash Fertilizer Or Four Percent Manganese Sulfate Solution Or Four Percent Hyracus (Ferrous Sulfate) Solution For Five Minutes And Then Applied.
- ❖ A Combined Solution Of Urea 2 Percent, Murate Of Potash 2 Percent Should Be Prepared And Sprayed On The Crop On The 60Th, 120Th And 180Th Days Of Its Age.
- ❖ In Case Of High Temperature And Lack Of Water, 8% Kaolin Vapor Retardant Should Be Sprayed.
- ❖ Micro-Irrigation Method I.E. Drip Irrigation Method Should Be Adopted In Places Where There Is Scarcity Of Water, Instead Of Regular Watering Method.

If The Sugarcane Crop Is Cultivated And Taken Care Of As Above, Both The Yield And Productivity Of The Sugarcane Crop Will Increase. Thus, The Economic Income Of The Farmers Will Increase And The Agricultural Development Of The District Will Be Boosted.

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