



Monitoring of Sugarcane Crop in Osmanabad District (MS)

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Abstract

Sugarcane is a cash crop and is an important crop used for sugar and jaggery production. Due to high demand for sugarcane in the market, sugarcane is grown in areas where irrigation facilities are more developed. Sugarcane is grown more in the western part of Maharashtra. The present paper reveals the monitoring of sugarcane crop in Osmanabad district of Maharashtra in the year 2012-13 and 2016-17 with the help of satellite data.

Keywords: Sugarcane, monitoring, satellite data, cultivation, high, low, moderate

Introduction

Maharashtra state has second largest producer of sugarcane in India. During the period of 2016-17 total area under sugarcane in Maharashtra state was recorded 6.20 lakh hector and production near about 372.45 lakh tones. The average productivity of sugarcane in Maharashtra state found 68.04 tones in per hector and the recovery 11.24%. Osmanabad district is the part of Marathwada region and sugarcane is the main cash crop in this region. Present paper has discussed the monitoring of sugarcane crop during 2012-13 and 2016-17 in the Osmanabad district with the help of satellite data.

Objectives

The specific objectives of the present discussion is mentioned as follows,

- 1) To study the monitoring tahsil wise cultivation of sugarcane in the study region.
- 2) To study the change in sugarcane monitoring in the study region.

Data Source and Research Methodology

Present discussion is based on the secondary source of data and it was collected from Water Resource Management Support, Maharashtra, from the website of bhuvan. The tahsil wise data is arranged in the table and their distribution is shown on the map of the study region. The change during 2012-13 to 2016-17 is presented in the bar graph.

Study Area

Osmanabad district is southern most districts in Maharashtra state and part of Aurangabad division. The geographical expansion of the district is in between 17°35' and 18°40' north latitudes and 75°16' and 76°40' east longitudes. Total area of the district is 7512.4 sqkm and it is 24th in Maharashtra state in respect of total geographical area. Study region is bounded on the south-west by the Solapur district, on the north-west Ahmednagar district, on the north by Beed district, on north-east and east by Latur district and south by Bidar and Gulbarga districts of Karnataka state.

Monitoring of Sugarcane Crop (2012-13):

On the website of ISRO sugarcane satellite data is available of Osmanabad district. This data is available for tahsil wise analysis of the year 2012-13, therefore the present analysis is based on the satellite data of the year 2012-13

Table No 1 represents tahsil wise according to village level sugarcane crop in Osmanabad district. There are total 765 villages are present in the study region and total 35442.49 hector area is cultivated under sugarcane. The percentage of sugarcane area to the total district's sugarcane cultivated area is divided into three categories i.e. below 10% is considered as low cultivation area, 10 to 15% as moderate cultivation area and above 15% is considered as high cultivation area of sugarcane crop.

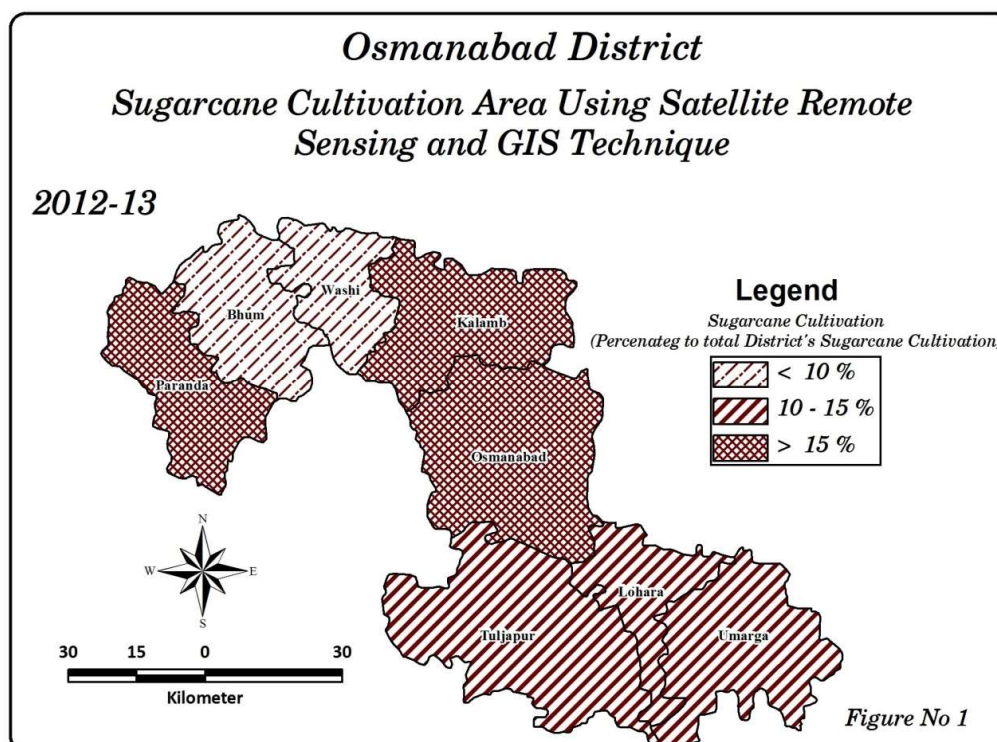
Low Cultivation of Sugarcane Crop:

In Osmanabad district Washi (5.36%) and Bhum (6.57%) tahsils has recorded the low cultivation of sugarcane cultivation compare to the other tahsils of the region. Total 1899.82 hector area of Washi and 2327.04 hector area of Bhum tahsil is under in sugarcane cultivation which is found lowest in the entire district.

Table No. 1: Measuring Village Level Sugarcane Crop in Osmanabad District (2012-13), Using Satellite Remote Sensing and GIS Technique

Tahsil	No. of Villages	Area of Village in Hector	Sugarcane by SRS in Ha	Percentage to Total District's Sugarcane Cultivation
Osmanabad	133	135968.37	6614.55	18.66
Bhum	88	77966.59	2327.04	6.57
Kalamb	95	93850.34	5602.92	15.81
Lohara	50	54577.25	4669.52	13.17
Paranda	115	84565.91	5544.98	15.65
Tuljapur	124	149933.8	4193.05	11.83
Umarga	97	98903.82	4590.61	12.95
Washi	63	61190	1899.82	5.36
Total	765	756956.06	35442.49	100%

Source: Water Resource Management Support, Maharashtra, (<https://bhuvan-app1.nrsc.gov.in/mwrds/index.php>)



Moderate Cultivation of Sugarcane Crop:

In the region total three tahsils Tuljapur (11.83%), Lohara (12.95%) and Umarga (13.17%) recorded moderate cultivated area under sugarcane according to the year 2012-13. There area 10 to 015% area of each tahsil under in this crop out of total sugarcane cultivated area in the district. Tuljapur tahsil has maximum number of villages in the entire district and also maximum area. Compare to total area of this tahsil sugarcane area is low due to the influence of other crops cultivation in Tuljapur tahsil (Figure No 1).

High Cultivation of Sugarcane Crop:

In the district Paranda (15.65%), Kalamb (15.81), and Osmanabad (18.66) tahsils has found more than 15% area under sugarcane out of total sugarcane area in the district. Osmanabad tahsil has recorded highest in the region, Osmanabad tahsil is the main tahsil in the district and transport network as well as market centers are available in this tahsil. These all impacts the maximum cultivation of sugarcane in Osmanabad tahsil.

Paranda and Kalamb tahsil are situated near to the Osmanabad tahsil and impact of this tahsils also shows on these two tahsils.

Monitoring of Sugarcane Crop (2016-17)

According to the satellite data for the year 2016-17 total sugarcane cultivated area is slightly decreased in Osmanabad district. Table No 2 shows the sugarcane crop cultivation using satellite data of the year 2016-17. In the year 2016-17 total 35002.13 hector areas is recorded under sugarcane crop and it is quite decreased than 2012-13 data. The percentage of sugarcane area to the total district's sugarcane cultivated area is divided into three categories as same as 2012-13.

Low Cultivation of Sugarcane Crop:

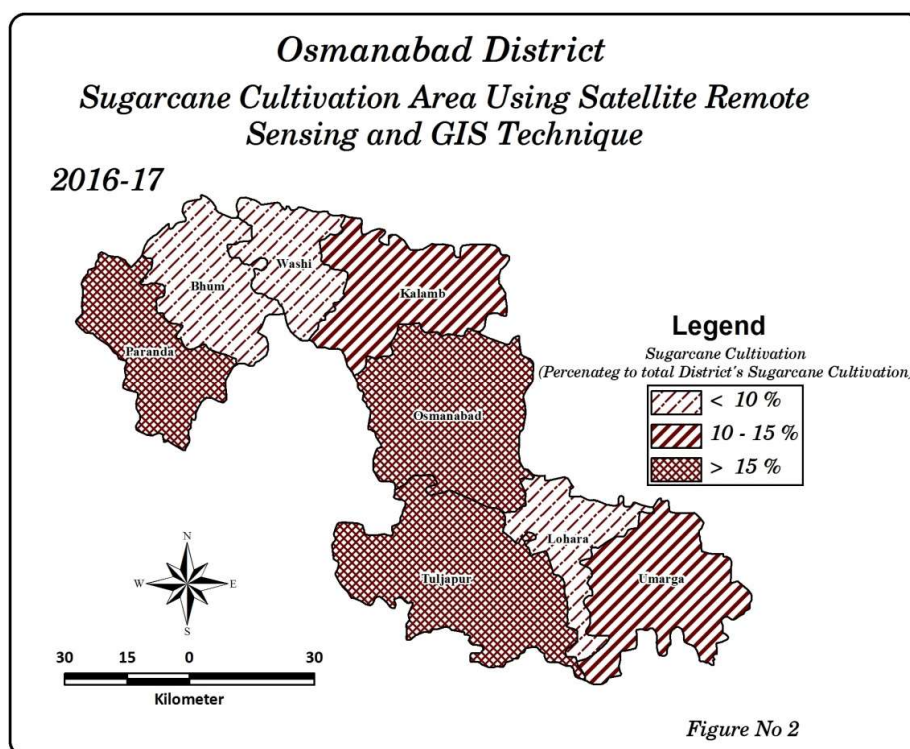
In the district Washi (3.43%), Lohara (5.73%), and Bhum (6.04%) recorded the lowest cultivation of sugarcane in the year 2016-17 compare to the remaining tahsils the district. Lohara tahsil was the moderate cultivation in previous year 2012-13 and in 2016-17 it is included in lowest category because decreasing maximum part under sugarcane cultivation.

Table No. 2

Measuring Village Level Sugarcane Crop in Osmanabad District (2016-17), Using Satellite Remote Sensing and GIS Technique

Tahsil	No. of Villages	Area of Village in Hector	Sugarcane by SRS in Ha	Percentage to Total District's Sugarcane Cultivation
Osmanabad	133	135968.37	5495.33	15.70
Bhum	88	77966.59	2113.24	6.04
Kalamb	95	93850.34	5071.22	14.49
Lohara	50	54577.25	2004.37	5.73
Paranda	115	84565.91	8281.10	23.66
Tuljapur	124	149933.8	5819.56	16.63
Umarga	97	98903.82	5016.22	14.33
Washi	63	61190	1201.09	3.43
Total	765	756956.06	35002.13	100%

Source: Water Resource Management Support, Maharashtra, (<https://bhuvan-app1.nrsc.gov.in/mwrds/index.php>)



Moderate Cultivation of Sugarcane Crop:

In the district Umarga (14.33%) and Kalamb (14.49%) recorded moderate cultivated area under this crop i.e. 10 to 15% area of sugarcane to the total cultivated of this crop (Figure No 2). Kalamb tahsil was included in high cultivated zone in previous year but after 4 years it found moderate cultivated zone. The rate of sugarcane cultivation area decreased is greater in Kalamb tahsil.

High Cultivation of Sugarcane Crop:

Osmanabad (15.70%), Tuljapur (16.635), and Paranda (23.66%) tahsil recorded highest area under sugarcane cultivation. Tuljapur tahsil was moderate in 2012-13 but in 2016-17 area under sugarcane is increased and therefore the share of total sugarcane cultivation is also found greater in this year 2016-17.

Change in Sugarcane Cultivation

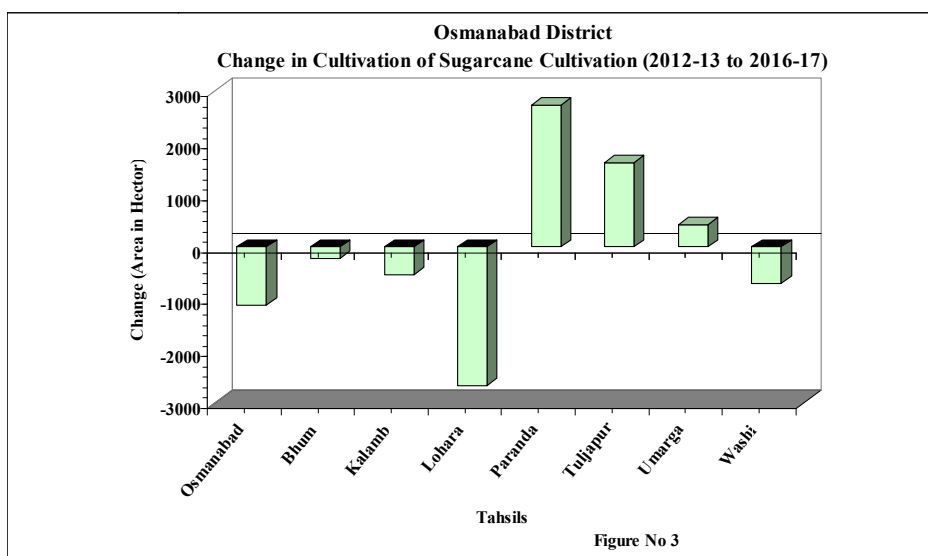
Tahsil wise change in sugarcane cultivation using satellite data is presented in table 3.

Table No. 2 - Change in Cultivation of Sugarcane Cultivation of Osmanabad District (2012-13 to 2016-16)

Tahsil	Change (Hector)
Osmanabad	-1119.2
Bhum	-213.8
Kalamb	-531.7
Lohara	-2665.2
Paranda	2736.12
Tuljapur	1626.51
Umarga	425.61
Washi	-698.73
Total	-440.36

Source- Computed by Author

In the study region total 440.36 hector areas is decline under sugarcane during the period of 2012-13 to 2016-17. The area under sugarcane is increased only in Paranda, Tuljapur and Umarga tahsil. In other part of the district the sugarcane cultivation is decreased during this period.



The maximum area is declined from Lohara tahsil more than two thousand hector and then in Osmanabad tahsil more than one thousand hector respectively. In other tahsils it decreased 200 to 700 hectors during this period.

Conclusions and Suggestions

Monitoring of sugarcane crop using Remote sensing data is an advance technique to evaluate the cultivation of crop in any region. Sugarcane is the major source of sugar and near about 90% sugar production is made by sugarcane. Osmanabad tahsil is till high zone cultivated area but the share of its cultivation is quite decreased 2016-17. The maximum area under sugarcane is increased in Paranda tahsil. Paranda tahsil was also high in 2012-13 and in 2016-17 the share of this crop is increased. The variations are found in the cultivation of sugarcane in the study region. The decreased are under sugarcane crop is shows the low production in per hector in Lohara, Kalamb, Washi and Bhum tahsil also non development of irrigation facilities and cultivation pattern. Study region is the part of rain shadow region and maximum agricultural production is based on direct rain water. Therefore is necessary to develop the irrigation facilities and improve the pattern of sugarcane cultivation for the well growth and increasing production.

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