



CHANGE IN COMPETITION INDEX OF COTTON CROP IN YAVATMAL DISTRICT OF MAHARASHTRA STATE

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DR. VISHAL S. MOON

Assistant Professor, Department of Geography
Sahakarbhushan S. K. Patil College, Kurundwad.
Tal. Shirol, Dist. Kolhapur
vishalsmoon@gmail.com

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ABSTRACT

Agriculture is the main occupation in India. Also the economy of India is mainly depending on agriculture. Cotton is one of the main cash crops in Indian agriculture. Yavatmal district is famous for the cotton production in Maharashtra state. The soil of this district is known as the soil of white gold. In last few decades the cultivation of cotton is slightly decreased due to the impact of some other crops. Present paper is based on the discussion of competition index and change in cotton crop of Yavatmal district.

KEY WORDS: Competition Index, Cotton, Change, Area, Production

Introduction

In every field some crop dominates and competes with other crops. Competition index is the yield of a single crop and it shows the competition of other crops grown in a particular area. In areas where this index is high, there is less competition from other crops and that crop is more dominant, while in areas where the index is low, competition from other crops is more visible.

In the present research paper, the competition index of cotton crop in Yavatmal district and its changes have been studied tehsil wise.

Objectives

Main objectives of the present research work is as follows,

- 1) To study the tehsil wise competition index of cotton crop in Yavatmal district.
- 2) To study the tehsil wise change in competition of cotton crop in Yavatmal district.

Data Source and Methodology

The present analysis is depending on the secondary source of data. The necessary data is collected from District Agriculture Office and 'Crop and Season Report'. The competition is calculated by using following formula suggested by Dr. Agrwal (2011).

$$CI = \frac{(Yaa - Yab) \times (Ybb - Yba)}{Yaa \times Ybb}$$

CI – Competition Index of Cotton Crop

Yab – Cultivated Area under Crop

Yba – Cultivated Area of All Crops

Yaa – Production of Cotton Crop

Ybb – Production of All Crops

Change = Current Known Value – Last Known Value

The analysis is based on the year 2002, 2012 and 2022. The calculated values are presented in tables and distribution is shown in the map of the

study region. Also the change is shown with the help of 'bar graph'

Study Region

The latitudinal extent of Yavatmal district is between 19°26' to 20°42' north and the latitudinal extent is between 77°18' east to 79°09' east longitude. The total area of the district is 13584 sq km which is 4.40% of the total area of Maharashtra state. Yavatmal district ranks 6th in terms of area in the state.

The total population of Yavatmal district according to 2011 census is 27,72,348 out of which 14,19,965 are males and 13,52,383 are females, while the sex ratio is 952.

Cotton Crop in Yavatmal District

A hot and humid climate is ideal for cotton cultivation. About 70% of cotton is non irrigated. Clear sunlight and adequate humidity are essential during budding. Moisture stress from 60 days to 120 days directly reduces yield. More sunshine and warm humid climate favors the growth of cotton crop. Low temperature at the time of boll opening creates difficulty in harvesting. The climate in Yavatmal district suitable for cotton.

Yavatmal district mainly produces long and medium varieties of cotton. It is observed that in the year 2022, the amount of cultivation of cotton crop has increased in the district. In Wani tehsil this proportion is higher where more than 62% area is under cotton crop. In Ralegaon, Zarijamani and Kelapur tehsils 55 to 60% of the area under cotton is under cotton crop and in Ghatji, Arni and Maregaon tehsils between 40 and 50% of the cultivated area is under cotton crop. Umarkhed and Ner tehsils have the lowest percentage of cotton crop which is between 15 to 20%. In the rest of the tehsil, the percentage of cotton crop is between 20 and 40%.

Competition Index of Cotton Crop in Yavatmal District

Tehsil wise competition index of cotton crop is presented in table no.1

Table No. 1

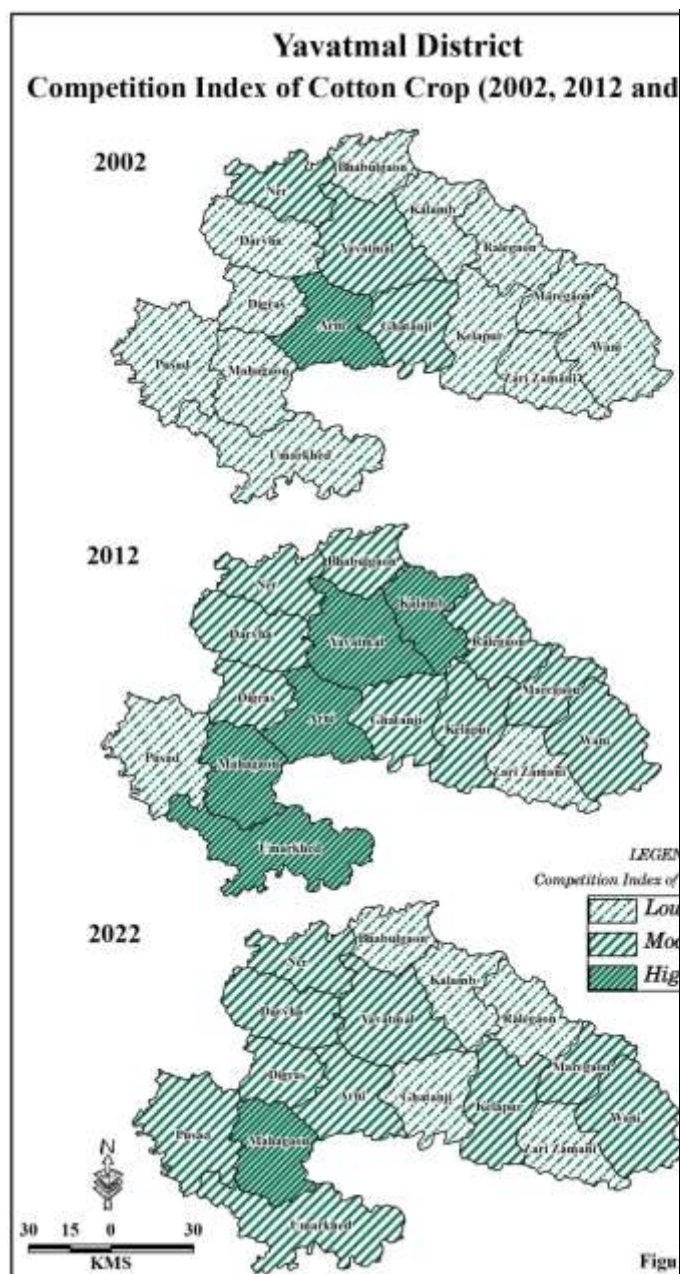
Yavatmal District – Competition of Cotton Crop (2002, 2012 and 2022)

Tehsils	2002	2012	2022
Ner	2.09	1.29	1.26
Babhulgaon	1.25	2.55	1.62
Kalamb	1.47	3.12	1.34
Yavatmal	1.59	3.02	1.71
Darwha	1.12	2.29	2.78
Digras	0.44	2.21	2.51
Pusad	0.09	0.65	1.87
Umarkhed	0.81	3.01	1.62
Mahagon	0.44	3.09	4.22
Arni	3.22	3.06	2.48
Ghatanji	1.58	2.49	1.19
Kelapur	0.21	2.72	2.32
Ralegaon	0.54	2.04	1.47
Maregaon	0.12	2.66	2.31
Zarijamni	0.06	1.28	1.16
Wani	0.09	1.77	2.29
Total	0.64	0.68	1.12

Source – Calculated by Author

If we look at the index of cotton crop in the entire district of Yavatmal district, this index has increased from 2002 to 2022. That is, on an average in the district, other crops have to compete with cotton as cotton is the major producing crop.

Arni (3.22) had the highest over 3 in the year 2002. Whereas Ner (2.09) was more than 2 in tehsil. The index was more than 1 in Yavatmal (1.59), Ghatji (1.58), Kalamb (1.47), Babhulgaon (1.25) and Darva (1.12) tehsils. Other tehsils had an index of less than 1. The index was lowest in Maregaon (0.12), Wani (0.09), Pusad (0.09) and Zarijamni (0.06) tehsils. That is, the productivity of other crops in this tehsil was more than cotton crop, so there was less competition with cotton.



In the year 2012, this index was more than 3 in Kalamb (3.12), Mahagaon (3.09), Arni (3.06), Yavatmal (3.02) and Umarkhed (3.01) tehsils. In Umarkhed and Arni tehsils, the area under cotton cultivation increased during this period, which reduced the competition of cotton from other crops. Pusad (0.65) tehsil had the lowest index in the district during this period and it was less than 1 while other tehsils ranged between 1 and 3.

The year 2022 had the highest index of inflation (4.22). In inflation, the area under cotton crop increased in 2022 but the rate of cotton production growth decreased. However, the index

was higher in inflation during this period. The main reason for this is that cotton is still higher in inflation compared to other crops in the district and thus cotton is the main competition crop for other crops. The index in Darwa (2.78), Digras (2.51), Arni (2.48), Maregaon (2.31), Wani (2.29) and Kelapur (2.32) tehsils was between 2 and 3. While in other tehsils it was between 1 and 2. During this period the index was lowest in Zarijamni (1.16) tehsil.

Change in Competition Index of Cotton Crop

Table No. 2 shows the tehsil wise change in competition index of cotton crop in Yavatmal district.

Considering the entire district, the competition index has increased between 2002 to 2012 and 2012 to 2022, i.e. there have been positive changes. Between 2002 and 2012 this index increased by 0.04 and between 2012 and 2022 this index increased by 0.44.

Positive Changes

In the district between the year 2002 and 2012, except Ner and Arni two tehsils, positive change is observed in all other tehsils. In Umarkhed (2.2), Kelpaur (2.51), maregaon (2.54) and Mahagaon (2.65) tehsils, this index was increased between 2 and 3. Whereas in Pusad (0.56) and Ghatanji (0.91) tehsils, this index was increased between 0.50 and 1. In other tehsils, this index was increased between 1 and 2.

During the period from 2012 to 2022, this index increased only in five tehsils namely Digras (0.30), Darwha (0.49), Wani (0.52), Mahagaon (1.13), Pusad (1.22). The index is higher in Pusad and Mahagaon tehsil.

Table No. 2

Yavatmal District – Change in Competition of Cotton Crop

Tehsils	2002 - 2012	2012 - 2022
Ner	-0.8	-0.03
Babhulgaon	1.3	-0.93
Kalamb	1.65	-1.78
Yavatmal	1.43	-1.31

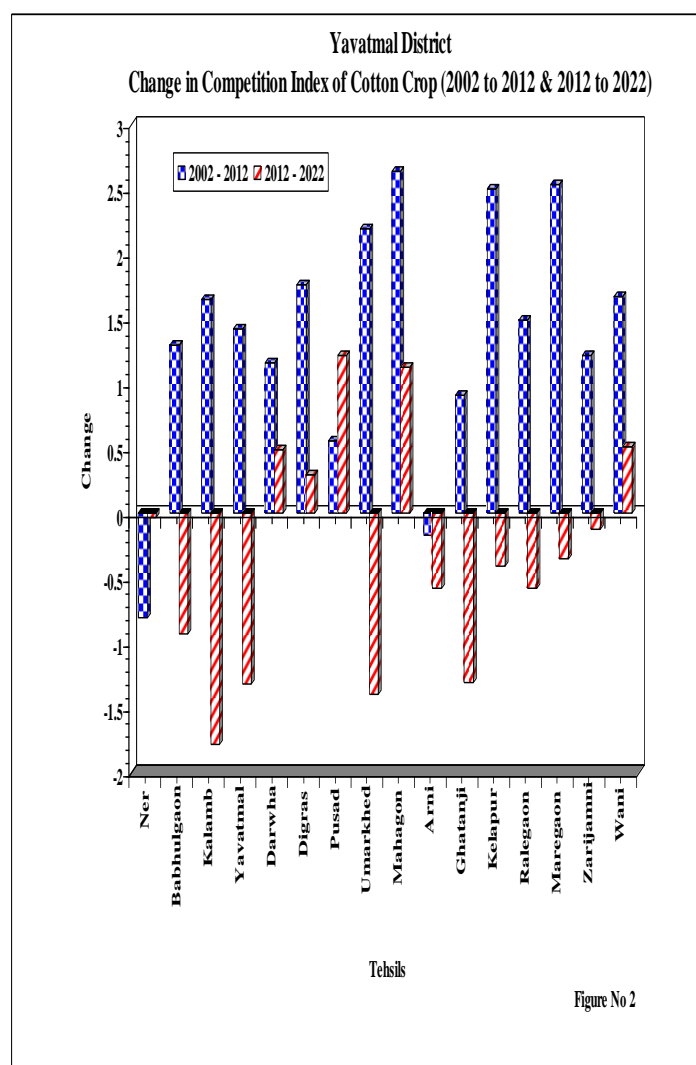
Darwha	1.17	0.49
Digras	1.77	0.3
Pusad	0.56	1.22
Umarkhed	2.2	-1.39
Mahagon	2.65	1.13
Arni	-0.16	-0.58
Ghatanji	0.91	-1.3
Kelapur	2.51	-0.4
Ralegaon	1.5	-0.57
Maregaon	2.54	-0.35
Zarijamni	1.22	-0.12
Wani	1.68	0.52
Total	0.04	0.44

Source – Calculated by Author

Negative Changes

In the district between the year 2002 and 2012, this index decreased only in two tehsils namely Ner (-0.8) and Arni (-0.16). The main reason for this is that during this period the cotton crop area was reduced and preference was given to soybean and pulse crops.

Between the years 2012 and 2022, although the cotton crop area has increased, the competition index has decreased in some tehsils. Soybean crop was also cultivated more extensively during this period, so the competition of cotton crop increased with this crop. In Ghatanji (-1.30), Yavatmal (-1.31), Umarkhed (-1.39) and Kalamb (-1.78) tehsils this index decreased by more than 1 while in other tehsils it was less than 1.



Conclusions and Suggestions

In Yavatmal district, between 2002 and 2022 cotton dominated, but there were variations. In Kalamba, the competition index was highest in 2012 and decreased in 2022. That is, in Kalamba tehsil, the amount of cotton decreased compared to the extent to which the area and production of other crops increased.

Yavatmal district is the leader in cotton production in the state of Maharashtra. Cotton is still widely grown in this district. Irrigation facilities are less available in the district and cotton crop is irrigated in very few areas. More than 95% of the area is uncultivated. So, due to not getting the expected yield, the farmers are trying to take the production of other crops now. Soybean crop area has increased mainly in the district in the last twenty

years. Cotton is still the main crop in 60% of the area, followed by soybeans. So, soybean is the main competition of cotton crop in the district. Soybeans are also grown along with cotton because cottonseed oil is used to extract soybean oil. Although cotton is the main crop of the district, modern technology for cotton cultivation has not been developed in the district.

A cotton plant requires water at various stages from flowering and boll formation and boll development. Irrigation is essential during these critical stages to avoid any adverse effect on yield due to moisture stress. Also, to increase the production of cotton crop, it is necessary to keep some agricultural land fallow gradually. It improves soil texture and will help increase fertility.

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