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Pattern Of Crop Combination In Kolhapur District (Maharashtra)

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Introduction

India is an essentially agricultural country. In developing country like India crops generally grown in combination. The study of crop combination regions constitutes an important aspect of agricultural, geography and it provides a good basis for agricultural regionalization for a comprehensive and better understanding of the agricultural mosaic of an agro-climatic region. The study of crop combination is of greater significance even planning and development of agriculture a systematic crop combination has engaged attention of geographers and agriculture land use planners (Husain M. 2002). The present study of crop combination analysis is related to the Kolhapur district which is part of Deccan plateau. Kolhapur district is one of agricultural most developed district of Maharashtra.

Study region

Kolhapur district is located in the south most part of MaharashtraKolhapur district is situated in the southwestern part of Maharashtra. It lies between 15º43' North to 17º 10' North latitude and 73º40'East to 74º 42' East longitude. Total area of Kolhapur district is 7692 Sq.km which occupies 2.62% area of total area of Maharashtra state. Kolhapur district comprising the Valleys of Warna, Panchaganga and their tributaries has a fertile & productive land.

Physiography and Climate

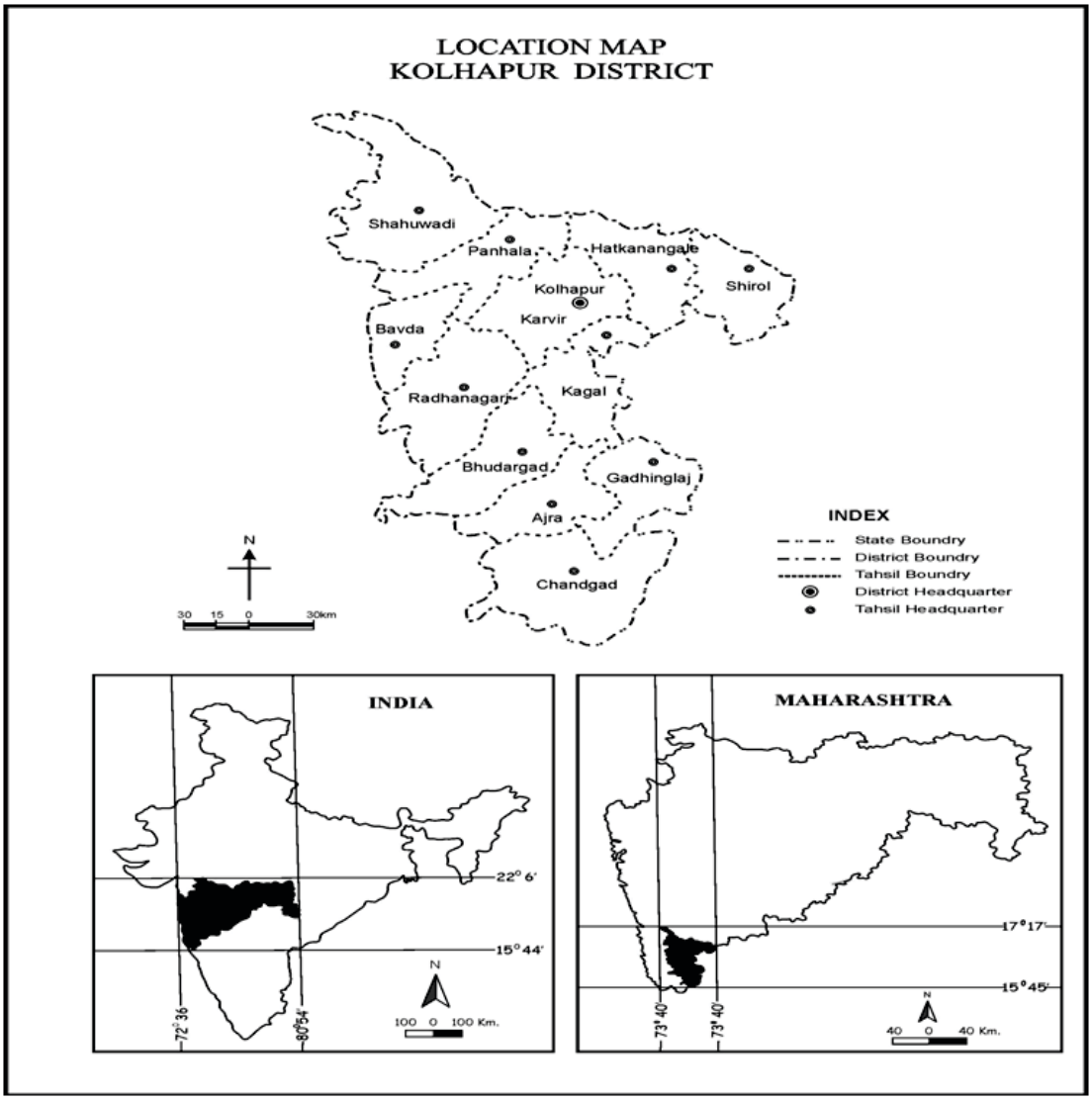
The transitional geographical location of the district between Konkan coastal low land to the west and Deccan plateau to the east presents a variety in the geographical environment. General slop of the district is towards east and south-east. The general altitude of district of 1000 mts. to the west and 600 mts. to the east. The district has two main physiographic divisions i.e. western hilly region and western hilly region consist of Panhala, Shahuwadi, Gaganbawada, Radhanagari, Bhudargad, Ajara and Chandagad tahsils. The eastern plain region includes Shirol, Hatkanangale, Karveer, Kagal tahsils. The study region has developed drainage pattern. The rivers like Panchaganga, Warana, Dudhganga, Vedaganga, Hiranyakeshi and their tributaries play an important role in the development of agricultural in the study region.

The Kolhapur district has temperate climate. It receives rainfall mainly from south-west monsoon and intensity of rainfall decrease fromwest to east. The mean temperature of the district lies between 400c to 160c in winter months. It exceeds more than 380c in summer especially in April.

Objectives of the study

1. To delineate crop combination regions of Kolhapur district.

2. To analyze the spatial pattern of crop combinations.



Data source and Methodology

Present research work is based on secondary data. Data is collected from the following sources Socio economic review of Kolhapur District (2017-18), Agricultural Department of Kolhapur District.

Here an attempt has been made to study tahsil wise crop combination by maximum positive deviation method of Raffiullah. It is analyzed with the help of map. The Technique devised by raffiullah is as follows:

$$d = \sqrt{\frac{\sum d^2 p - \sum d^2}{N^2}}$$

d = deviation between actual crop percentage and the appropriate crop percentage in the the oretical distribution.

p = positive difference
n = is negative difference
N = the number of crops in the crop combination
For the delineation of crop combination tahsil is selected as basic unit. present crop combination is limited for year of 2017-18 and for selected 13 crops.
Tahsilwise area under cultivation of different crops.
Physiography, rainfall, soil, irrigation facilities determine the productivity of different crops. The variations in above factors directly impact on crop cultivation. Table no.1 shows the tahsilwise area under cultivation of different crops and their percentage with total cultivated area of the district. Which shows tahsilwise cropping pattern of the district?

Table No.1
Tahsilwise area under cultivation of different crops(2017-18)

Tahsils	Rice	Wheat	Jawar	Bajara	Maize	Nagali	Other cereals	Pulses	peanuts	sun flower	Other oil seeds	Sugar cane	Cotton	Total
Shahuwadi	50.96	4.00	2.00	0.00	0.80	9.55	2.51	7.03	10.85	0.15	1.97	10.18	0	100
Panhala	36.26	1.20	6.34	0.00	0.77	4.98	0.68	8.12	7.56	0	2.43	31.64	0	100
Hatkanangale	1.79	1.91	11.88	0.04	1.14	0.10	0.38	9.35	14.74	0.06	34.07	24.89	0	100
Shirol	1.13	2.65	4.45	0.04	0.66	0.09	0.76	7.59	4.44	0.01	42.81	35.32	0.05	100
Karveer	24.65	1.74	3.82	0.00	0.89	1.34	1.24	6	12.83	0.16	5.9	41.42	0.01	100
Gaganbawada	23.17	0.48	0.00	0.00	4.13	7.68	1.18	1.96	3.2	0	0.66	57.53	0	100
Radhanagari	46.28	0.39	2.62	0.00	2.28	10.31	1.71	0.78	4.8	0.01	2.05	28.79	0	100
Kagal	21.67	2.48	7.65	0.00	1.54	0.74	1.25	10.85	25.26	0.28	10.41	17.86	0	100
Bhudargad	50.17	1.55	0.21	0.00	0.84	13.95	0.85	5.31	12.16	0	1.55	13.4	0	100
Ajara	32.83	4.56	2.07	0.00	2.63	13.40	1.18	9.93	17.61	0	7.16	8.56	0.07	100
Gadhinglaj	13.80	1.31	6.14	0.00	2.33	0.70	1.04	8.31	36.13	0.07	21.11	9.06	0	100
Chandgad	35.93	0.36	1.04	0.00	1.03	18.83	0.47	2.53	17.1	0	0.68	21.88	0.16	100
Kolhapur District	2.43	3.02	6.22	0.01	1.85	6.80	1.30	8.97	19.79	0.09	18.45	31.05	0.03	100

Source: computed by researcher Analysis of spatial pattern of crop Combination (2017-18)

It has noted form table no. 2 that out 12 tahsils of the district 7 tahsils come under the category of monoculture from remained tahsils 3 tahsils have 2 crop combinations and 2 tahsils have 3 crop combinations this crop combinations are also shown in map no. 2

The details of crop combinations in Kolhapur district by maximum positive deviation method of Raffiullah is analyze as under.

Table No.2
Tahsilwise crop combination in Kolhapur District (2017-18)

Sr.No.	Tahsil	Index Value of Crop Combination	Category	Crops in combination
1	Shahuwadi	129.49	Three crop	Rice -Peanuts -sugarcane
2	Panahala	523.30	Three crop	[illegible]
3	Karveer	73.61	Monoculture	Sugar
4	Hatkanangale	253.76	Monoculture	Oil seed
5	Shirol	945.68	Three crop	Oil seed-sugarcane-pulses
6	Gaganbawada	263.70	Two Crop	Sugar -Rice
7	Radhanagari	109.61	Two Crop	Rice - Sugar
8	Kagal	612.06	Monoculture	Peanuts
9	Bhudargad	127.88	Two Crop	Rice - Nagali
10	Ajara	294.80	Monoculture	Rice
11	Gadhinglaj	192.37	Monoculture	Peanuts
12	Chandagad	197.96	Monoculture	Rice

A. Monoculture

I. Rice

Rice is monoculture,observed in two tahsils of Kolhapur district. These are Chandagad and Ajara. They cover an area about 35.93% and 32.83% of total sown area of that tahsils .The variance of the rice as monoculture is 294.80 in Ajara, and 197.96 in Chandagad. Due to high intensity of rainfall these tahsil have monoculture as rice

II. Sugarcane

Sugarcane has a monoculture observed in Karveer tahsil. Sugarcane accounts 41.42% of total cropped area of Karveer tahsil. The index value of sugarcane is 73.60%. The tahsil Karveerhas moderate and regular rainfall. The tahsil have well developed irrigation facilities and black fertile soil leads to the production of sugarcane

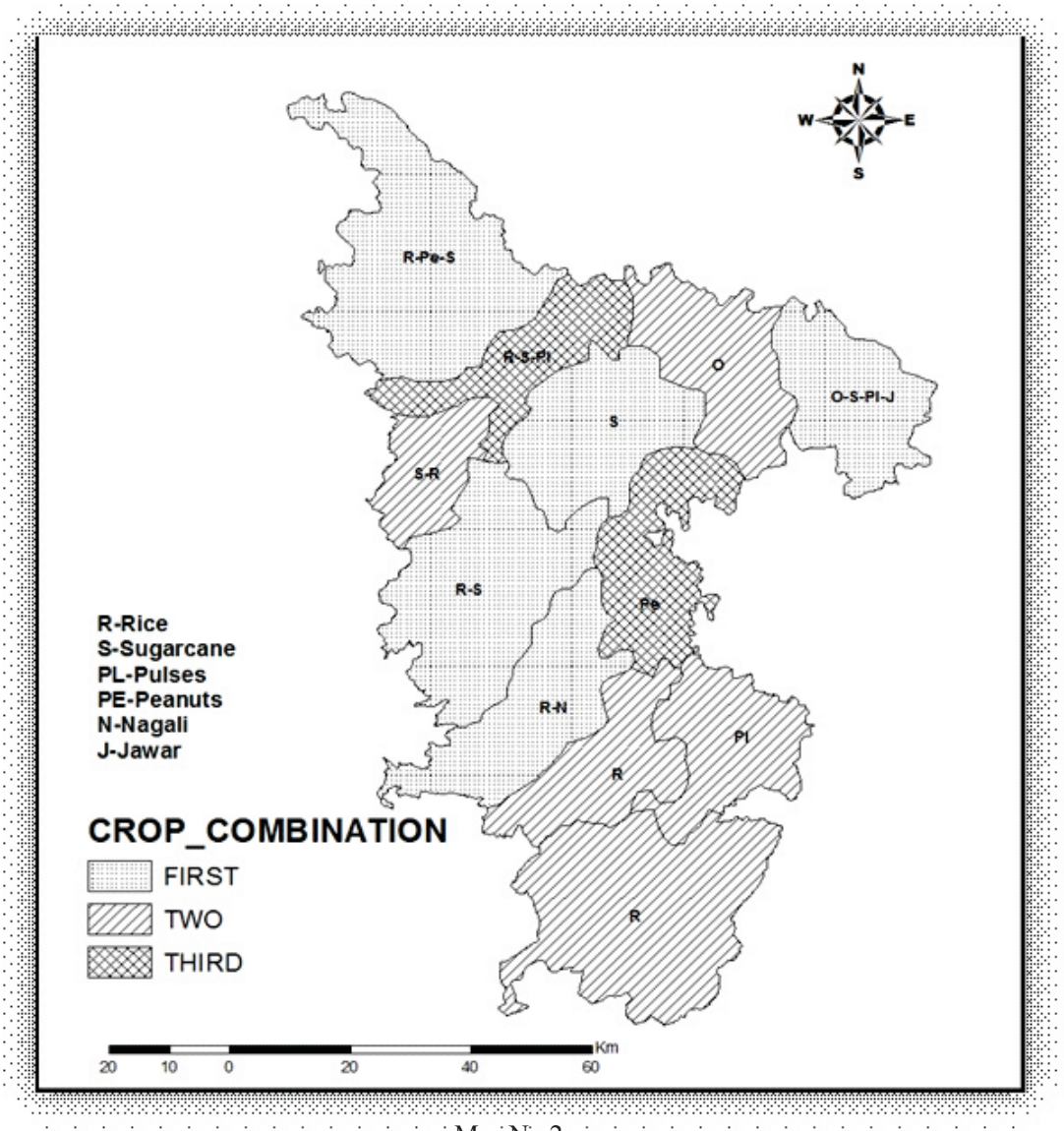
III. Oil Seed

In tahsil Hatkanangale oil seed is as a monoculture. Out of total cultivated area 34.07% of area is under the cultivation of oil seeds. The variance of oil seed is 253.76. Fertile black soil well developed irrigation facility leads to the cultivation of oil seeds.

IV. Peanuts

The tahsil of Gadhinglaj and Kagal come under monoculture of peanuts. Area under peanuts cultivation in Gadhinglaj tahsil is 36.13% and 25.26%in Kagaltahsil . The variance of peanuts in Gadhinglaj is 192.37 and in Kagal tahsil it is 612.06. Fertile brownish black soil and developed irrigation facilities favorable for the cultivation of peanuts.

Spatial Pattern Crop Combination in Kolhapur District 2017 - 2018



Map No.2

B. Two crop combination

I. Sugarcane and Rice

Radhanagari and Gaganbawada tahsils have 2 crop combinations. Sugarcane and Rice are two major crop in this tahsils. Sugarcane cover 57.53% out of total cultivated area in Gaganbawada where as 28.79% of area covered in Radhanagari on other side 23.17% cultivated area under the cultivation of Rice in Gaganbawada and 46.28% of area in Radhanagari. The variance of these two crop combination is 263.70. High amount of rainfall, fertile soil and irrigation facility leads to the cultivation of Sugarcane and Rice.

II. Rice and Nagali

Due to high intensity of rainfall, Rice and Nagali these two crops are widely cultivated in Bhudargad tahsil. Out of total cultivated area 50.17% of area under the cultivation of Rice and 13.95% area under the cultivation of Nagali. The index value of these two crop combination is 127.88.

C. Three crop combination

The three crop combination is observed in the Shahuwadi Panhala and Shirol tahsils

I. Rice, Peanuts and Sugarcane

In Shahuwadi tahsilRice, Peanuts and Sugarcane are the major crops cultivated. The tahsil Shahuwadi is well-suited for three crop combination. The crops Rice, Peanuts and Sugarcane are the first, second and third ranking crops and they covers an area about 50.96% , 10.85% and 10.18% respectively. The variance of the combination is 129.49

The tahsil has rainfall ranging between 150 cm. and 250cm. and sometimes it is more than this. The tahsil has the shallow coarse soil in the hilly region. Which is best suitable for peanuts? in the river valleys of the tahsil fertile soil is present which is most useful for the cultivation of Rice and Sugarcane. Tahsil has also well developed irrigation facilities. All these conditions are useful for the dominance of rice, peanuts and sugarcane.

II. Rice, Sugarcane and Pulses

Panhala tahsil has also three crop combination. Rice as first ranking crop 36,26.% , Sugarcane as second ranking crop 31.64% and Peanuts as a third ranking crop (7.56%). The index value of three crop combination for Panhalatahsil is 523.30

In Panhala tahsil, intensity of rainfall decrease from west to east. Therefore rice becomedominant crop in western part and sugarcane and pulsed are cultivated in eastern part of tahsil. Well developed fertile soil in the river valley region and irrigation facilities favorable for the cultivation of which favors for the cultivation of Rice and Sugarcane.

III. Oil seeds, Sugarcane and Pulses

The tahsil Shirol have three crop combinations. Oil seeds, sugarcane and pulses are dominant crops.Out of total cultivated area 42.81% of area is under cultivation of oil seeds 35.32% of area is under cultivation of sugarcane and 7.59% areaunder cultivation of pulses.

The reason for the cultivation of oil seeds, sugarcane and pulses is that inwestern part of the tahsil medium deep soil is present .In the eastern part of the tahsil course shallow soil of laterite origin is the dominant soil. The fertility of the soil is increased by floods from the rivers like Krishna and Panchaganga.

Conclusion

The crop combination in study region is the direct impact of the rainfall soils and irrigation facilities prevail there, In Panhala, Gaganbawada, Kagal and Ajara tahsils rice as a monoculture crop is present. This is due to the high amount of rainfall. Peanut as a monoculture crop of the tahsil Gadhinglaj and this is the impact of Halki Kali Mati present there. The tahsil Hatkanangale has soyabean as a monoculture crop. It is caused by the decreases in the amount and intensity of rainfall. Due to the presence of fertile soil, well developed irrigation facilities and moderate rainfall, Karveer tahsil has sugarcane as a dominant and monoculture crop.

Shahuwadi, Bhudargad and Shirol tahsils have the two crop combination. Tahsil Shirol has the soyabean-sugarcane combination. This is caused due to the low amount and intensity of rainfall and presence fo fertile soil and irrigation facilities. Shahuwadi and Bhudargad tahsils have Rice Nagali combination and Rice-Peanut combination respectively, which is also an impact of highest amount of rainfall and shallow coarse and laterite type of soil present there.

In the tahsil Radhanagari, Rice-Sugarcane-Nagali combination is present whereas, Rice-Nagali-Sugarcane combination has been observed in the Chandagad tahsil. This is also an impact of

high amount of rainfall and good quality soil.

It has been concluded that more than 50% tahsils, i.e. in the seven have rice as a first ranking crop. Other important crops include sugarcane, Nagali and Peanut, Soyabean is the first ranking crop in the eastern part of the study region (viz. in Hatkanangale and Shirol tahsils) where amount and intensity of the rainfall is low.

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