



**ANALYSIS OF SPATIO-TEMPORAL CHANGE IN CROP  
COMBINATION PATTERN OF JUNNAR TAHSIL, PUNE  
(MAHARASHTRA)**

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**Abstract**

*The Agricultural Regionalization is a very important fact to the farmers help in taking decision for crop cultivation and this may be done with the help of different methods like Crop Combination, Crop Concentration, Patterns of Crop Rotation etc. The Study identifies the basic crop combination of the year 2005-06 and 2010-11 in Junnar tahsil (circle wise), which basically is an agriculture dominated area. Normally crops are grown in a Combination rather than single. The present study is based upon the secondary data collected from Agriculture Department of Junnar tahsil and the Method has been adopted to calculate the value belongs to Wever's Method. The present paper shows comparison of six circles (Rajur, Dingore, Junnar, Otur, Narayangaon and Belhe) in Junnar tahsil for the year 2005-06 and 2010-11. Result shows that Dingore, Junnar and Narayangaon circle have same crop combination pattern in both years, it means there is no change in taking crops in five years in these circles. But Rajur, Otur and Belhe circle have change their crop combination from two to four, three to four and four to one crop combination respectively.*

**Key words:** Agriculture, Crop Combination, spatio-temporal etc.

## **1. Introduction-**

'Agriculture' in agriculture geography implies in subject matter and the geography gives the way of viewing subject matter. The agriculture etymologically the expressions agriculture geography has Greek and Latin roots the Latin term 'Agricultura' which has its origin in the words 'Ager' meaning the field and 'cultura' meaning the Cultivate or culture.

'The Indian economy hinge on agriculture' because of about 70 per cent of Indian population is directly depending on agriculture. Agriculture and allied sectors contribute nearly 17.8 and 17.1 Per cent of Gross Domestic Product (GDP) of India as on 2010.the agricultural output however depend on monsoon as nearly 56 per cent of area sown dependent in rainfall. It not only provides food to its teeming (crowded) million, but also provides raw material for those agro based industries

The study of crop combination constitute as an important aspect of the agricultural in fact its provides a good basis for agricultural regionalization and helps to formulation of strategy (policy) for agricultural development the crop combination for delimiting agricultural regions on the basis of varieties of crops. The method was starts from the observation that single crop situation is are rare and that is most areas farmers habitually grow a Variety of crops, therefore 'crop concentration' study is vitals

## **2. Study Area**

Junnar tahsil is located at the northern part of Pune district. The region extends between 19° 00'40'' N and 19°23'19'' N latitudes and between 73°38'33'' E and 74°18'34'' longitude, Geographical area of the tahsil is 1386.98 sq.km. The physiography of this region has given rise to 3 major characteristics land forms viz. hills and ghat section, the foot hill zone and plain, extend of such features are over around 44, 40 and 16 percent area respectively. The main geological formation in the tract is Deccan trap. The area is drained by main two rivers viz. Kukadi and Meena. Pushpavati is the principle tributary of Kukadi river. Based upon physical characteristics of soil, they can be divided into four major groups viz. (1) Reddish brown light soil (70 %), (2) Coarse shallow soil (7%), (3) Medium black soil (22%) and (4) Deep black soil (1%). The area covered by different divisions shows a wide variation of rainfall patterns, primarily due to the peculiar physiographic configurations. The main average rainfall varies from about 3000mm at Talegher in west to about 1000mm at Junnar in the central region, to less than 500 mm at Ane in the east. About 60 percent of total geographical area comes under the drought prone.

### 3. Objectives

1. To find out Crop Combination of Junnar tahsil by using Weaver's method during the years 2005-06 and 2010-11.
2. To analyse circle wise spatio-temporal change in crop combination pattern of Junnar tahsil.
3. To find out causes of crop combination variation in the study region.

**4. Database and Methodology-** The entire work is mainly based on secondary data i.e., collected from Agriculture Department of Junnar tahsil. For the calculating crop combination of given region 'crop combination method of **Weaver**' has been applied. This method applied for the data of the year 2005-06 and 2010-11.

#### Crop Combination method of 'Weaver'

In the field of agriculture geography weaver was the first who use statistical techniques to establish crop combination for Middle West in United States in 1954. In this attempt for the delimitation of agriculture regions of the Midwest in USA weaver the percentage of total harvested cropland occupied by each crop that held as much as 1 percent of the total cultivated land in each of the 1081 countries covered in his work. He used following formula for calculation of crop combination,

$$d = \Sigma d^2/n$$

Where,

d = difference between the actual crop percentage in given areal unit

n = number of crops in given combination

### 5. Result & Discussion

#### 5.1 Crop Combination result for the year 2005-06

| Sr. No. | Crop Combination       | Circles                        | Crop Combination  |
|---------|------------------------|--------------------------------|-------------------|
| 1       | Two Crop Combination   | RAJUR                          | RW                |
| 2       | Three Crop Combination | OTUR<br>DINGORE<br>NARAYANGAON | WOS<br>ORW<br>SJW |
| 3       | Four Crop Combination  | BELHE                          | SBJW              |
| 4       | Five Crop Combination  | JUNNAR                         | SOJBW             |

(Source- Calculated by Researcher)

## 5.2 Crop Combination Region-

### 1) Two Crop Combination

Two crops, namely Rice and Wheat in Rajur Circle have been found in this combination. Soil, climate and farmers tendency are main factors to determine two crop combination in this circle.

### 2) Three Crop Combination

Wheat, Onion & Sugarcane these three crops in Otur circle, Onion, Rice & Wheat in Dingore and Sugarcane, Jawar & Wheat have registered as three crop combination in Narayangaon.

### 3) Four Crop Combination

Sugarcane, Jowar, Bajara & Wheat have appeared as four crop combination in Belhe circle.

### 4) Five Crop Combination

Jawar, Sugarcane, Bajra, Onion & Wheat crops are found in Junnar circle as five crop combination.

## 5.3 Crop Combination result for the year 2010-11

| Sr. No. | Crop Combination       | Circles                | Crop Combination |
|---------|------------------------|------------------------|------------------|
| 1       | One Crop Combination   | BELHE                  | W                |
| 2       | Three Crop Combination | NARAYANGAON<br>DINGORE | SJW<br>ORW       |
| 3       | Four Crop Combination  | OTUR<br>RAJUR          | BOWJ<br>SWRO     |
| 4       | Five Crop Combination  | JUNNAR                 | SOJBW            |

(Source- Calculated by Researcher)

## 5.4 Crop Combination Region-

### 1) One Crop Combination

Monoculture is found in Belhe circle. It indicates that farmer's tendency and water availability in Belhe circle tend to give priority to wheat.

### 2) Three Crop Combination

Three crop combinations is found in Narayangaon and Dingore circle. In these circles, sugarcane, jawar & wheat and onion, rice & wheat have been taken respectively.

### 3) Four Crop Combination

Otur and Rajur circle have four crop combinations. In which, bajra, onion, wheat & jawar and sugarcane, wheat, rice & onion crops are found respectively.

#### **4) Five Crop Combination**

Five crop combinations are found in Junnar tahsil, where sugarcane, onion, jawar, bajra & wheat crops have been taken by farmers.

#### **6. Conclusion**

The present study identifies the basic crop combination of the year 2005-06 and 2010-11 in Junnar tahsil (circle wise). It shows comparison of six circles (Rajur, Dingore, Junnar, Otur, Narayangaon and Belhe) in Junnar tahsil for the year 2005-06 and 2010-11. Result shows that Dingore, Junnar and Narayangaon circle have same crop combination pattern in both years (after five years), it means there is no change in taking crops in five years in these circles. But Rajur, Otur and Belhe circle have change their crop combination from two to four, three to four and four to one crop combination respectively. Which is a result of climate change, water availability, farmers tendency, market oriented crops etc.

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