



# A Geographical Study of Crop Combination in Junnar Tahsil

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**Abstract:** Cropping pattern indicates the area under various crops at a point of time. The topography, soil, availability of irrigation, use fertilizers and pesticides and weather plays an important role in determining the cropping pattern in the study area. The crop combination regions are indicating the direct impact of rainfall, soil, irrigation facilities and economic condition of farmers. An attempt is made here to study the crop combination of Junnar Tahsil. The study reveals that Tahsil reflects four crop combinations to nine crop combination. Monoculture is not observed in the tahsil, the increase up to nine crop combinations reflect a clear trend towards the complexity of crop combination. Rice, Sugarcane, Wheat, Vegetables, Maize, Fodder Crops, Bajra, Onion, Groundnut are the major crop in the tahsil. The cropping pattern is changing today, because of cultivation of horticultural crops due to the better returns, lower risk and tolerance of these crops for part time farming.

**Keywords:** Crop Combination, Cropping Pattern

## I. INTRODUCTION

A crop combination constitutes an important aspect of agriculture. The crop combination gives an idea about the agricultural topology and agriculture income of a region. Such region provides a real significance and strength of individual crops, to advocate a suitable device for planning improvements in the underdeveloped regions. Crop combination analysis reflects the agricultural geographic investigation. Agriculture is the basic economic activity in the study area. The spatial and temporal distribution of various crops and their growth depends upon physio-socio-economic conditions prevalent in the region. The cultivation of crops and their growth are closely associated with the decision making process on one hand and adaptation of innovation in agriculture. The hectare area under individual crop, gives relative strength and realistic picture of crop. Crop combination also shows the analysis of crop ranking of the region. The ranks of crops and their combination provide information about spatial variation in the distribution patterns of crop. In this respect, the study of crop combination manifests the present agricultural scenario.

### A) Objectives

Following objectives have been undertaken for the study:-

1. To identify changing cropping pattern of the study area.

### B) Hypothesis

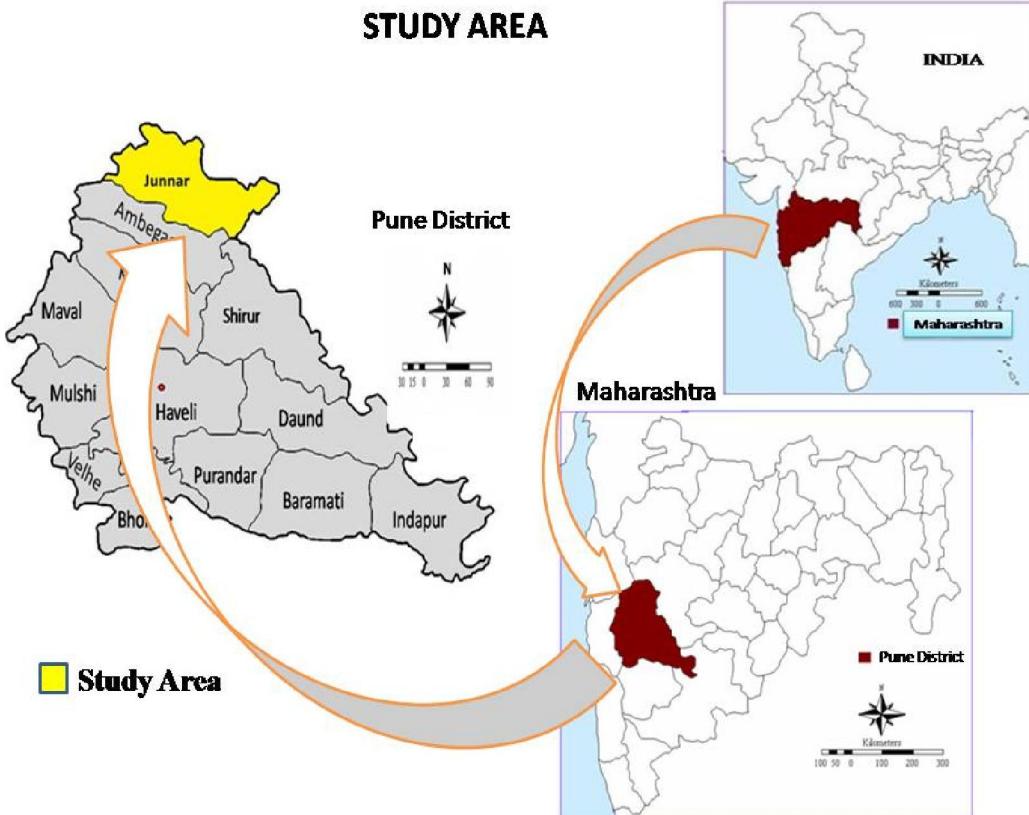
Modern practices in the agriculture lead to change in cropping pattern.

### C) Study Area

Junnar Tahsil is situated in the northern zone of the Pune district. It lies in the section of steep slope having rainfall around 50 to 250 cm. The extent of the Tahsil is 19° 00' N to 19° 24' N and 73° 40' E to 74° 18' E. The area of the Tahsil is 1474.77 Sq.km. Junnar is mainly rural in character as are there 183 villages. Junnar Tahsil has the human population as about 3, 99,302. The rural population is 93.66 %, while the urban population is 6.34 %. Junnar, Nimgaonsava, Otur, Belhe, Aptale, Narayangaon, Vadgaon Anand, Dingore and Rajur are nine circles in the Junnar Tahsil. The total area under the crops covers 56287.15 ha. The Tahsil has 67 villages categorized as tribal villages in

which the development is on lower side. Further, spatial variations in regional development have been significant in the Junnar Tahsil. The Tahsil has mainly agriculture as the major source of income. Therefore it is interesting to study the facts and factors related to crop combination pattern of different crops in the Tahsil.

## STUDY AREA



## II. DATABASE AND METHODOLOGY

The present study is based on the secondary data, collected from Junnar Tahsil office. The Weaver's theoretical curve method has been used for the calculation of crop concentration. Crop combination index is calculated for different crops in nine circles of Junnar Tahsil and results are presented in tabular form. Crop combination Index calculated by using deviation of the real percentage of crops, which occupies one percent of the total cropped area. For all the possible combinations in the areal units against a theoretical standard deviation method was used.

Where  $d$  is the difference between- the actual crop percentages in a given country (areal unit) and the appropriate percentage in the theoretical curve and  $n$  is the number of crops in a given combination. The relative value, not absolute value being significant, square roots was not extracted, so the actual formula used as follows:

$$d = \frac{\sum d^2}{n}$$

Monoculture = 100 % of the total harvested crop Land in one crop.

Two crop combinations = 50 % in each of two crops.

Three crop combinations = 33.3% in each of three crops.

Four crop combinations = 25 % in each of four crops.

Five crop combinations = 20 % in each of five crops.

Ten crop combinations = 10 % in each of ten crops.

**III. RESULT AND DISCUSSION****Table No. 1:** Crop Combination Index of Junnar Tahsil (2005-06 and 2015-16)

Sr. No.	Crop Combination	2005-06		2015-16	
		Index Value	Crops	Index Value	Crops
1	Monoculture	4526.6	S	7211.45	R
2	Two Crop	387.36	SG	1256.98	RS
3	Three Crop	100.37	SGO	386.22	RSW
4	Four Crop	52.08	SGOF	163.12	RSWV
5	Five Crop	----	----	77.3	RSVVM
6	Six Crop	----	----	40.58	RSVVMF
7	Seven Crop	----	----	27.6	RSVVMFB
8	Eight Crop	----	----	20.9	RSVVMFBO
9	Nine Crop	----	----	14.33	RSVVMFBOG

Source: Computed by researcher on the basis Annual Report of Agriculture of Junnar Tahsil

Table no. 1 depicts that the crop combination of Junnar Tahsil and change observed for the period 2005-06 to 2015-16. The crop combination has changed from four crop combinations to nine crop combinations. The details are as follows:

- One Crop Combination: Sugarcane was the mono crop in 2005-06 but in the year 2015-16 and Rice was mono crop in the Junnar Tahsil. The Rice has taken place on sugarcane.
- Two Crop Combinations: Sugarcane and Groundnut crop are grown in two crop combination in the Junnar Tahsil in 2005-06. In the year 2015-16 it was Rice and Sugarcane. The Sugarcane was leading crop in 2005-06 but in 2015-16 it is second crop after rice.
- Three Crop Combinations: Sugarcane, Groundnut, Onion are the crop grown in three crop combination in Junnar Tahsil in 2005-06 and Rice, Sugarcane and Wheat in 2015-16. In 2005-06 the first three crop was cash crop but in 2015-16 out of three two crops are cereal crops.
- Four Crop Combinations: Sugarcane, Groundnut, Onion, Fodder Crops are the four crop combination in 2005-06 but in 2015-16 it was Rice, Sugarcane, Wheat and Vegetable. In 2005-06 the first four crops was cash crop but in 2015-16 out of four crop two crops are cereal crops and two cash crops.
- Five Crop Combinations: Rice, Sugarcane, Wheat, Vegetables and Maize are the five crop combination in the Junnar Tahsil in 2015-16. Out of five crop combination two crops are cereal crops and three cash crops.
- Six Crop Combinations: Rice, Sugarcane, Wheat, Vegetables, Maize and Fodder Crops are the six crop combination in the Junnar Tahsil in 2015-16. Out of six crop combination two crops are cereal crops and four cash crops.
- Seven Crop Combinations: Rice, Sugarcane, Wheat, Vegetables, Maize, Fodder Crops and Bajra are the seven crop combination in the Junnar Tahsil in 2015-16. Out of Seven crop combination three crops are cereal crops and four cash crops.
- Eight Crop Combinations: Rice, Sugarcane, Wheat, Vegetables, Maize, Fodder Crops, Bajra, Onion, Groundnut are the eight crop combination in the Junnar Tahsil in 2015-16. Out of eight crop combination three crops are cereal crops and five cash crops.
- Nine Crop Combinations: Rice, Sugarcane, Wheat, Vegetables, Maize, Fodder Crops, Bajra, Onion, Groundnut are the nine crop combination in the Junnar Tahsil in 2015-16. Out of nine crop combination three crops are cereal crops and six cash crops. The groundnut was second crop in 2005-06 but it goes on ninth place.

Crop combination of Junnar Tahsil has changed from four crop combinations to nine crop combinations. There are four combinations in 2005-06 and nine crop combinations 2015-16. Which are the Sugarcane, Groundnut, Onion, Fodder Crops and Rice, Sugarcane, Wheat, Vegetables, Maize, Fodder Crops, Bajra, Onion, Groundnut respectively in the year 2005-06 and 2015-16. The major crops and their sequence have been changed in the 2015-16. The crop combination of Junnar Tahsil shows that crop combinations are increased from four crops to nine in the last ten years. In 2005-06 the crop combinations shows a majority of cash crops and 2015-16 the crop combination shows that food crops and cash crops are grown together in the study area.

#### IV. CONCLUSION

The method of crop combination displays spatial variation of crop as well as cropping pattern and operation of a given area. The present study shows that crop combinations are increased from four crops to nine in the period of 2005-06 to 2015-16. It means that there is no individual dominated crop in the tahsil. The crops are cultivated in the combination of four or more than up to nine crops in the decade. Rice, Sugarcane, Wheat, Vegetables, Maize, Fodder Crops, Bajra, Onion, Groundnut are the major dominated crop in the tahsil. The proportion of food crops are less as compare to cash crop like sugarcane, onion, fodder crops and groundnut in 2005-06. But tahsil has considerable food crop combination with cash crop in the 2015-16. The fertile soil, well irrigation facility, Sugar industry and Milk Dairy as well as nearness of Markets like Mumbai and Pune are promoting the farmers to take production of both cereal crops and cash crops.

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