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## Socio economic study and seasonal indices of turmeric in Sangli District of Maharashtra

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#### Abstract

Present study was conducted to access the socio-economic characteristics of turmeric growers and seasonal indices of turmeric in Sangli district of Maharashtra. Multistage sampling design was used. From Sangli district, six villages from Miraj and Palus tehsil were selected randomly. The information pertaining to the objective was collected from 60 samples of turmeric growers from selected villages. Data pertaining to agricultural year 2015-16. Percentage, average, standard deviation were used to access socio-economic condition of the respondents, while coefficient variation was used to test the stated hypothesis. Result revealed that, the average age of respondents was 44.83 years. In respect to education level score found was 2.6. Average family size of turmeric respondents was 5.5. Average livestock holding with respect to milch animal and bullock pair of selected farmers were 2.75 and 0.73 respectively. Average occupational level score was 1.45. Average size of holding of sweet orange growers was 2.62 ha of which net sown area was 2.41 ha. The average double cropped area was 1.07 ha. The cropping intensity was found 144.40 per cent. The average area under turmeric was 1.30 ha. The seasonal indices of monthly arrivals and prices of turmeric showed the extent of fluctuations in the arrivals and prices from month to month.

**Keywords:** Turmeric, socio-economic, arrivals and prices.

#### Introduction

Turmeric (*Curcuma longa* L.) is the dried underground rhizome belongs to the family 'Zingiberaceae'. Turmeric is native of India and china. The world turmeric is derived from the French word 'Terre-merite' meaning merit of the earth. The genus name curcuma is probably derived from the Persian word 'kurkum' a name also applied to saffron. Turmeric is called as 'Yellow gold', 'Indian saffron', and 'The golden spice of life'. It is one of the most essential spice used as an important ingredient in culinary all over the world. The plant is an herbaceous perennial, 60-90 cm high with short stem and tufted leaf. It is tropical herb and can grow on different type of soils.

For turmeric the soils such as light black, red soils, sandy loam to clay loams are preferred and requires a temperature within range of 20-30°C with an annual rainfall of 1500 mm. Turmeric gets ready for harvest within 7-9 month after planting. Harvested green rhizomes are boiled in water, which are then spread out on a clean floor and allowed to dry in the sun for about 10-15 days.

Turmeric cultivation does occurs in India, China, Indonesia, Iran, Sri Lanka, Peru and Pakistan. India is leading country in the spices scenario and enjoy monopoly in the spices production because of suitable climatic condition. India is known as "Home of Spices" and "Spice bowl of the world ". India is largest producer, consumer and exporter of turmeric in the world. Turmeric is grown only in 6% of the total area under spices and condiments in India. India is the largest producer and exporter of turmeric in the world and accounts for 80% world's total production and 60% of world export.

Turmeric production in India has shown a fluctuating trend in last five years. It was 43000 tones in 2011-12, and increased to 65000 tones in 2012-13. Again decreased to 37000 tones in 2013-14 and then increased to 70000 tones in 2014-15. The annual turmeric production was 48500 tones in 2015-16. Hence price of turmeric is not fixed and tend to fluctuate year by year.

Maharashtra state in India ranks sixth in area under turmeric cultivation. The area under crop was 11000 hectare with a production of 45000 tonnes and productivity of 4.09 tonnes/hectare during 2015-16. In Maharashtra Sangli, Satara, Hingoli, Nanded, Parbhani are the major turmeric growing districts. It is one of the major crop in Sangli district.

In Sangali the area under turmeric is 1500 hectares, where as production and productivity is 13000 tonnes and 8.6 tonnes/hectare, respectively in 2015-16.

**Methodology**

Through multistage sampling district, tehsils and villages of turmeric growers were selected in this study. In first stage, Sangli district was selected purposively because turmeric is grown on large scale in the district. In second stage, two tehsils viz. Miraj and Palus were selected randomly. In Third stage, from each tehsil three villages were selected randomly. At the last stage, from each selected villages ten turmeric growers were selected randomly.

Thus, from six villages, 60 turmeric growers were selected for the present study. Required data were collected by personal interview method with the help of specially designed schedule for the agricultural year 2015-16. Socio economic characters such as age of farmer, education, family size, occupation level and land holding of the selected sample were studied. For the arrivals and prices of turmeric was achieved by time series analysis.

After compilation of data, functional analysis such as seasonal indices, S.D, C.V. (%). To study the market behaviour of turmeric a time series data of arrivals and prices in the region were collected from the record of Sangli regulated market for the period of 15 years i.e. from 2001-2015 and the trend cycle and irregular fluctuation were calculated by the ratio to moving average method. The fluctuation in time series data may be represented as a composition of four additive components.

Then for additive model  $O = T+S+C+I$

Whereas,

O = Time series data

T = Trend Value

S = Seasonal variation

C = Critical fluctuation

I = Irregular variation

**Seasonal indices**

To examine the peak slack period monthly seasonal indices were worked out by simple average method.

$$\text{Seasonal indices} = \frac{\text{Actual data for the given month}}{\text{Moving average for that month}} \times 100$$

Moving average for that month

The irregular fluctuations were estimated by averaging the figures of data.

**Coefficient of variation**

Coefficient of variation is “percentage variation in the mean as the standard deviation being stated as the total variation in the mean. The coefficient of variations of each market arrivals and prices were worked out for comparing the variability present in market arrivals and prices.

$$CV = \frac{SD}{Mean} \times 100$$

Whereas,

CV = Coefficient of variation

SD = Standard deviation

Standard deviation is measure of dispersion was calculated by securing the deviation of each observation from the mean, adding the square dividing by number of (n-1) observation less one and extracting the square root.

$$SD = \sqrt{\frac{\sum_{i=1}^n (Xi - \bar{X})^2}{n}}$$

Whereas,

Xi = Arrivals / prices

= Mean of arrivals / prices

n = Number of years

The objectives of the study were completed by applying simple tabular analysis.

**Results and Discussion**

**Socio-economic characteristics of turmeric growers**

Socio economic characters such as age of farmer, education, family size, occupation level and land holding of the selected sample were studied and presented in Table 1. The age of turmeric grower was 44.83 years. Education level of turmeric growers was 2.6 score.

In case of family size score was 5.5 persons in turmeric farm. The occupational level of turmeric farm was 1.45 score at 3 quantum score. In case of land holding, turmeric growers with on an average 2.62 hectares of land. In case of bullock pair was 0.73 numbers. Similarly, milch animal was 2.75 in numbers in turmeric farm. In regard to investment, the commonly used assets was Rs. 314952.91 in turmeric farm.

**Table 1:** Socio-economic characteristics of turmeric grower

Sr. No.	Particular	Standards
1.	Age of farmer	44.83
2.	Education level in 5 quantum score (Illiterate/primary/high school/higher secondary/ college level)	2.6
3.	Family size (person)	5.5
4.	Occupational level in 3 quantum score (Agriculture/Business/Service)	1.45
5.	Total land holding (ha)	2.62
6.	Average land holding (ha)	1.30
7.	Bullock pair (No)	0.73
8.	Milch animal(No)	2.75
9.	Investment on commonly used assets and farm building (Rs)	314952.91

Cropping pattern of the region is the most important factor in deciding the economic status of the region. Cropping pattern

of turmeric growers were estimated and presented in Table 2.

**Table 2:** Cropping pattern of turmeric grower (ha/farm)

S. No.	Particular	Turmeric farm	
		Area	Per cent
<i>Kharif</i>			
1.	Turmeric	1.30	37.36
2.	Kharif Bajara	0.48	13.79
3.	Maize	0.21	6.03
4.	Sugarcane	0.42	12.07
	Total	2.41	69.25
<i>Rabi</i>			
5.	Gram	0.21	6.03
6.	Rabi Jowar	0.34	9.77
7.	Wheat	0.20	5.75
	Total	0.75	21.55
<i>Summer</i>			
8.	Vegetables	0.06	1.72
9.	Groundnut	0.19	5.46
10.	Fodder crop	0.07	2.01
	Total	0.32	9.20
11.	Gross cropped area	3.48	100
12.	Net sown area	2.41	69.25
13.	Double cropped area	1.07	30.75
	Cropping intensity (%)	--	144.40

The gross cropped area was 3.48 hectares in turmeric farm. It was observed that, proportionate area of turmeric crop was 37.36 per cent in turmeric farm. It shows that, turmeric crop would be considered predominant crop in the study area. Kharif bajara crop is second major crop grown in study area; the proportionate area under Kharif bajara crop was 13.79 per cent in turmeric farm. The proportionate area of sugarcane crop was 12.07 per cent. It inferred that, the farmers are giving more importance to turmeric along with sugarcane and bajara crops in cropping pattern. Similarly, the proportionate area under rabi jowar was 9.77 per cent in turmeric farm and proportionate area of gram was 6.03 per cent. The area under groundnut and fodder crops was 5.46 per cent and 2.01 per cent, respectively in turmeric farm. The area under vegetables was 1.72 per cent. The total area under *kharif and rabi* crop was 69.25 per cent and 21.55 per cent, respectively. In regards to cropping intensity, it was observed that, the cropping intensity was 144.40 per cent. Similarly double cropped area

was 30.75 per cent.

#### Arrivals and prices of turmeric in Sangli market

The seasonal indices of monthly arrivals and prices of turmeric were worked out by using the ratio to moving average method. It shows the extent of fluctuations in the arrivals and prices from month to month. It is helpful to indicate the optimum time for the sale of the produce. The seasonal indices of arrivals and prices for Sangli market during 2001-2002 to 2014-2015 are depicted and presented month wise in Table 3. The seasonal indices of arrivals and prices of turmeric indicates that for the Sangli market, the arrivals were noticed and were highest in the month of March i.e 293.01 followed by April and May and it was 205.60 and 183.93, respectively and lowest in October i.e. 22.13. In case of prices, the higher indices were noticed in the month of October i.e.121.20 and lowest in the month of March i.e. 88.59.

**Table 3:** Seasonal indices of arrivals and prices of turmeric in Sangli market

S. No.	Month	Sangli	
		Arrivals indices	Prices indices
1.	January	55.23	95.77
2.	February	149.29	89.48
3.	March	<b>293.01</b>	<b>88.59</b>
4.	April	205.60	92.49
5.	May	183.93	91.95
6.	June	95.87	92.24
7.	July	54.66	93.85
8.	August	39.31	96.02
9.	September	33.04	105.78
10.	October	<b>22.13</b>	<b>121.20</b>
11.	November	32.47	118.26
12.	December	35.48	114.38

The variability in arrivals and prices of turmeric was depicted and presented in table 4. The variability in arrivals and prices of turmeric was 1056.91 and 837.27 per cent respectively in Sangli market, at an overall level. The minimum variability was in the month of May i.e 51.59 per cent for arrivals and for

prices minimum variability was in the month of January i.e 54.28 per cent. The maximum variability in arrivals was observed in the month of March i.e 144 per cent and for prices it was observed in the month of August i.e 77.85 per cent.

**Table 4:** Arithmetic mean and coefficient of variation for arrivals and prices of turmeric in Sangli market (2001-02 to 2014-2015).

S. No.	Month	Sangli			
		Arrival		Prices	
		Mean	C. V.	Mean	C.V.
		(qt)	(%)	(qt)	(%)
1.	January	25576.13	140.44	4899.40	<b>54.28</b>
2.	February	60652.73	59.88	4866.67	64.72
3.	March	152013.93	144.00	5018.40	72.33
4.	April	80830.60	58.88	5114.87	67.89
5.	May	71329.60	51.59	5152.80	71.30
6.	June	37869.40	52.79	5143.53	72.76
7.	July	21392.87	73.65	5244.93	73.37
8.	August	15618.67	85.99	5509.33	77.85
9.	September	13054.80	89.02	5900.73	76.68
10.	October	9900.60	96.30	6122.80	61.89
11.	November	11558.60	93.08	6159.60	68.03
12.	December	14652.33	111.29	6184.20	76.17
	Total	514420.27	1056.91	65317.27	837.27

### Conclusion

From the above study it was concluded that the family size of turmeric growers in the category of 5 to 7 family members was highest i.e 65 per cent. The average age of turmeric growers was 44.83 years. Average land holding of turmeric growers was found 1.30 hectares. Gross cropped area of turmeric growers was 3.48 hectares. The fluctuations in arrivals were more than the prices of turmeric during the period of study in Sangli market. It is suggested that turmeric farmers should develop sufficient storage facilities so that turmeric will be available for marketing throughout the year.

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