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## Economics Of Turmeric Prices With Respect To Time Series

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### Abstract:

*This paper describes the implementation of the Time Series. We have to study the trend of five year prices of turmeric. The nature of data shows fluctuation in the prices. It shows its Cyclical Nature and Seasonal variation usually by observing the large data. To identify the force or components at work, the net effect of whose interaction is exhibited by the variation of a turmeric prices also study the variation of prices due to cyclical nature and seasonal variation of data. Use the Least Square method for finding the trend. So, in total it is a five year cycle. Three year's prices go up and two years prices go down. It can be utilized by farmers for sowing purpose. So, that economically they will be benefitted.*

### KEYWORDS:

Cyclical Variation, Seasonal variation, Least Square Method.

### 1. INTRODUCTION:-

India being an agricultural country, with 80% of the country comprising of villages, the major part of the National Income is from the agricultural sector. Today, India stands worldwide second ranks in farm output. Agriculture and allied sectors like forestry and logging accounted for 14.5% of the GDP in 2011, employed 52-53 % of the total workforce and despite a steady decline of its share in the GDP, is still the largest economic sector and plays a significant role in the overall socio-economic development of India. Agriculture in India is one of the most prominent sectors in its economy.

We see from last few Years, prices of turmeric are fluctuated but this is not useful anybody like farmers, consumers. We have to study the trend of five year prices of turmeric. The nature of data shows fluctuation in the prices. It shows its Cyclical Nature and Seasonal variation usually by observing the large data. To study the variation of prices due to cyclical nature and seasonal variation of data. Use the Least Square method for finding the trend. Prices increased because agricultural production is reduced, it has lots of reasons. The most famous cause is drought and irregular rainfall.

The domestic demand is nearly 48 lakes tons and export demand is near about 6 lakes tons. If the production is near about 54lakhsthe prices will be stable. Otherwise wider fluctuations will be there.

During the year 2005-06 turmeric prices where in the range Rs.4500/--5000/-. Suddenly the prices fail to Rs.2000/-. As this price was not affordable to farmers, therefore the acreage crop of turmeric was reduced and farmers turned to some other cash crops like Soybeen, cotton, gram-chana etc. therefore production of crop was reduced in the year 2006-2007 and prices remained stabled. During the year 2007-2008 the production was less and due to higher export demand prices started rising.

In the year 2008-2009 prices reached to nearly 4600 but due to drought conditions in Andhra Pradesh (A.P.-Nizamabad, Warangal) the crop was reduced to 38 Lakes tons. From the normal crop of 50 lakes tons. In the year 2009-2010 prices started rising as crop was less and demand was more also production was less by nearly 20 lakes tones. The prices reached nearly to in the range Rs. 16000/--18000/-.

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## 2. SOURCE OF DATA:-

The data required for this project are collected from 'Sangli Krushee Utpanna Bajar Samitee, Sangli'. This centre is older established centre. There are many centers of such kind in Maharashtra State. In these centre different types of agricultural products collected, but mostly Turmeric, Soyabeen, Gram-chana etc are collected. We have collected secondary data from this centre on agricultural products. The information about these products is recorded from register of the centre. We have classified and tabulated these data May-2007-May2011 month wise.

Secondary data is taken from the record of SANGLI KRUSH UTPANNA BAJAR SAMITEE, SANGLI.

**Table-1- Price rate in year May-2007 To May2011**

<u>TURMERIC</u>					
Month & year	Price (Rs.)	Month & year	Price (Rs.)	Month & year	Price (Rs.)
May-2007	2200	Jan-2009	5550.5	Sep-2010	15025
Jun-2007	2450	Feb-2009	5205.5	Oct-2010	14002
Jul-2007	2653	Mar-2009	6550	Nov-2010	13008
Aug-2007	2961	April-2009	5650	Dec-2010	11004
Sep-2007	3001	May-2009	5840	Jan-2011	11500
Oct-2007	3100	Jun-2009	5925	Feb-2011	11006
Nov-2007	3320	Jul-2009	6125	Mar-2011	11013
Dec-2007	3504	Aug-2009	7450	April-2011	10500
Jan-2008	3600	Sep-2009	8075	May-2011	10405
Feb-2008	4002	Oct-2009	9350		
Mar-2008	4203	Nov-2009	10050		
May-2008	4550	Dec-2009	50485		
Jun-2008	4575	Jan-2010	12250		
Jul-2008	4050	Feb-2010	12250.5		
Aug-2008	3502	Mar-2010	11900		
Sep-2008	3531	April-2010	13300		
Oct-2008	4010	May-2010	15100		
Nov-2008	3985	Jun-2010	15450		
Dec-2008	3960	Jul-2010	15350		
		Aug-2010	15050		

### 3. METHODOLOGY:-

If the data are arranged by time (days, months, Years etc.) the value of the variable under consideration changes from time to time. These fluctuations affected not by a single force but are due to the net effect of multiplicity of forces pulling it up and down and if these forces were in a state of equilibrium the series would remain constant. For example the retail prices of a particular commodity are influenced by a no. of factors namely, the yield of the crop, whether condition, irrigation facility, fertilizer used, transportation facilities, consumer demand etc.

The forces at work, affecting a time series, can be broadly classified into the following categories:

- 1) Long-Term Trend
- 2) Periodic Changes
  - i) Seasonal Variation
  - ii) Cyclic Variation
- 3) Random/Irregular Movement

#### 1) Long-Term Trend-

In the long term trend the tendency of data to increases or decrease during a long period of time. This is true of most of series of Business and Economic Statistics. For example, agriculture production, growth of population, Literacy rate and higher standard of living etc.

#### 2) Periodic Changes-

It would be observed that in many social and economic phenomenon apart from the growth factor in time series there are forces at work which prevent the smooth flow of the series in a particular direction and tend to repeat themselves over a period of time. These forces do not act continuously but operate in a regular spasmodic manner. The resultant effect of such forces may be classified as:

##### i) Seasonal Variation-

One rhythmic force which is inherent in most of the series is called seasonal fluctuations. Seasonal variations are periodic and regular in movements in a time series with period less than one year. e.g. Prices and consumption of a particular commodity, sales and profits in a departmental stores, Bank clearing, traffic density etc. This variation may be attributed to the following two causes:

- a) Resulting from natural forces, and
- b) Resulting from man-made convections.

##### ii) Cyclic Variation-

The oscillatory movements in a time series with period of oscillation more than one year are teamed as cyclic variation/fluctuations. One complete period is called a 'cycle'. This cycle is called a Business cycle, which may also referred as four phase cycle composed of Prosperity(period of boom), recession, Depression and Recovery. e.g. series relating to prices, production and wages etc.

#### 3) Random/Irregular Movement-

Apart from the regular variations, almost all the series contain random movement. e. g. isolated and irregular Flood, War, revolution, earthquake etc.

### 4. Measurement of Trend-

- 1) Graphic method or trend by Inspection-
- 2) Method of semi-average
- 3) Method of least Square/ Curve fitting by principle of least square
- 4) Method of moving average

In all the above of methods, the method of least square is most Popular and widely used method of

fitting mathematical functions of a given set of data. this method yields very correct result if sufficiently good appraisal of the form of the function to be fitted is obtained either by a scrutiny of the graphical plot of the values over time or by a theoretical understanding of the mechanism of the variable change.

if 'Ut' is the value of the variable corresponding to time 't'

$$U_t = a + bt$$

The principle of least square consists in minimizing the sum of square of the deviations between the given values of 'Ut' and their estimates.

We have to find the values of 'a' and 'b' by minimizing

$$Z = \sum (U_t - a - bt)^2$$

And the values of 'Ut' and 'tUt' are obtained from given data and Normal equations

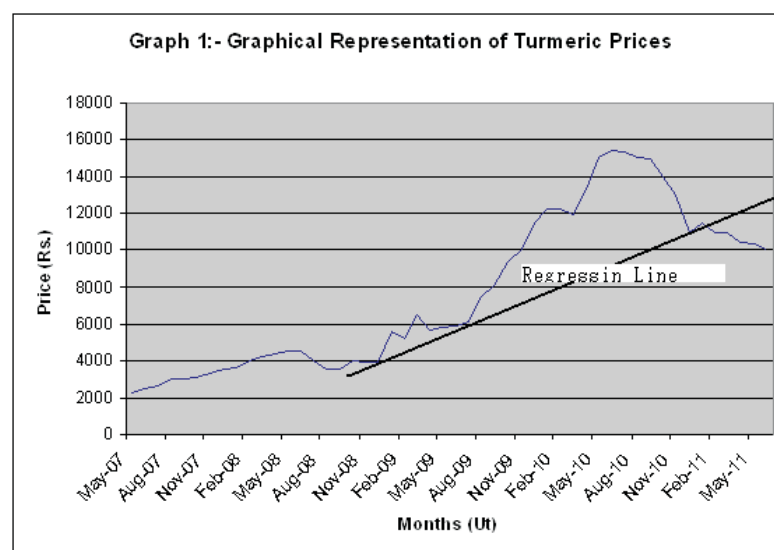
$$\sum U_t = na + b \sum t$$

$$\sum tU_t = a \sum t + b \sum t^2$$

## 5. ANALYSIS OF TURMERIC:-

We represent the original data, trend value and least square equation for price.

From the data the trend line equation is  $Y = 15.30X - 60440$



## 6. CONCLUDING REMARKS:-

From the graph we conclude that prices started increasing from Aug-2007 and increased up to Aug-2010, so that was complete three years bull cycle. The prices started decreasing from Nov-2010. Now the prices are hovering around Rs.5000/- on 14/09/11 that is the bear cycle started from Nov-2010. That is confirmed by regression line.

The short fluctuations we see are due to seasonal variations or demand supply gap.

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