

Trend and Seasonality in Prices of Groundnut in Kurnool District of Andhra Pradesh

P Sumathi and B Ravindra Reddy

Department of Applied Sciences, College of Agricultural Engineering, Madakasira.

ABSTRACT

Groundnut is third largest oilseed produced in the world and second largest in India. The present study is intended to analyse the trends and seasonality in the market prices of groundnut in two regulated markets i.e. Kurnool and Adoni of Kurnool district of Andhra Pradesh. The secondary data on monthly prices of groundnut was collected from January-2000 to September-2016 (17 years) from Agricultural market committees was analysed for the trend and seasonality in prices. In both the markets there was an increasing trend in prices. As per the seasonal Indices, highest prices were observed in the month of September followed by May in Kurnool market and in the month of November followed by May in Adoni market. Lowest prices were observed in the month of January in both the markets. The cyclical trend in both the markets showed that there were no constant periods between cycles in prices.

Key words: Cyclical variations, Irregular variations, Seasonal Indices and Trend

Groundnut is the third largest oil seed produced in the world and second largest in India. Groundnut seeds are rich source of edible oil (43-55%) as well as protein (25-28%). About 2/3rd of world production is crushed for oil & the remaining 1/3rd is consumed as nuts.

Groundnut production within the country is mainly concentrated in 5 states including Gujarat, Andhra Pradesh, Tamilnadu, Karnataka and Maharashtra accounting for nearly 90% of the total production of groundnut in the country. Andhra Pradesh ranks second in the production of groundnut in India. It produced 2.95 lakh tonnes of groundnut from an area 11.97 lakh hectares (www.indiastat.com).

The instability in prices of agricultural commodities has been one of the major factors affecting the income levels of Indian farmers. The supply and demand elasticity for most agricultural commodities being very low and demand for them rising steadily, their price fluctuations are largely attributable to the changes in their output and the consequent changes in the market arrivals. The price instability is often more pronounced in respect of commercial crops in general and oil seeds in particular (Mundinamani et al., 1999). The analysis of prices has greater importance to the groundnut growers, consumers and policy makers. Hence, the present study was carried out with the following specific objectives (i) to estimate the trends in market prices of groundnut in the selected markets and (ii) to analyse the seasonality in prices of groundnut.

The trends and seasonality in market arrivals and prices of groundnut in Karnataka were studied by Mundinamani et al, (1999) and suggested the need for proper warehousing linked with credit facilities so that the seasonal impact can be reduced.

Sirish Sharma & I.P . Singh (2013) studied the price behaviour of Soyabean in Kota region of Rajasthan. Their study revealed that there was greater consistency in the monthly prices of soyabean in the selected markets and found negative correlation between arrivals & prices of soyabean in the selected markets.

Sharma et al. (2005) in their study showed that over time sesame prices had increased many fold. The seasonal variations did not differ significantly among different states. No specific trend was observed for largest and the lowest seasonal variations in prices over time. The irregular variations were minimized when the trend, cyclical and seasonal variations were removed from the observed values.

Vasisht et al. (2009) studied the price behaviour in fruits and vegetable markets using co integration and error correction analysis techniques. The empirical results on the price behaviour provided evidence of high volatility in the prices of fruits and vegetables in major markets. There was a presence of long-run relationship across some of the state level markets.

MATERIAL AND METHODS

Kurnool is one of the major groundnut growing districts of Andhra Pradesh. Selection of markets for the study was done on the basis of maximum quantity

Table 1. Trends in prices of groundnut in the selected markets(2000-2016).

Market	Equation	R ²	t value
Kurnool	$Y = 769.405 + 18.123*t$	0.81	29.23**
Adoni	$Y = 909.78 + 19.89*t$	0.82	30.41**

** Significant at 1 percent level of significance.

Table 2. Seasonal indices of prices of Groundnut in the selected markets (2000 -2016).

Month	Kurnool	Adoni
January	90.95	96.14
February	96.35	96.44
March	96.36	102.73
April	103.33	101.69
May	106.27	103.58
June	103.84	99.96
July	105.9	99.11
August	104.07	97.02
September	107.19	97.62
October	96.46	101.02
November	95.8	104.11
December	93.44	98.55

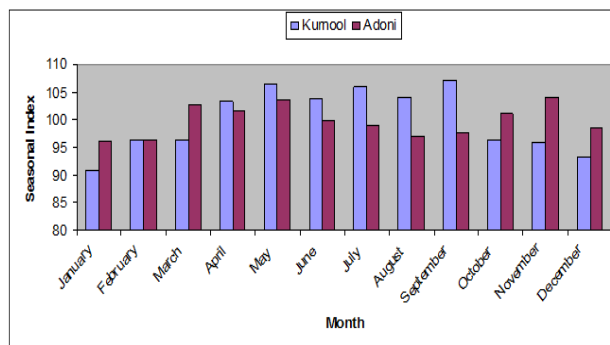


Fig 3. Seasonal indices of prices of groundnut in selected markets

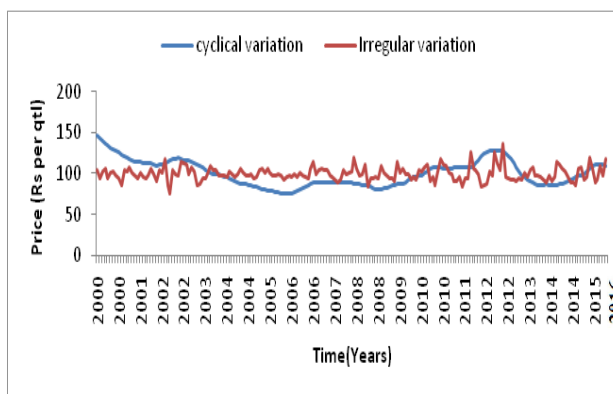


Fig 4. Cyclical & Irregular variations in prices of groundnut in Kurnool marke

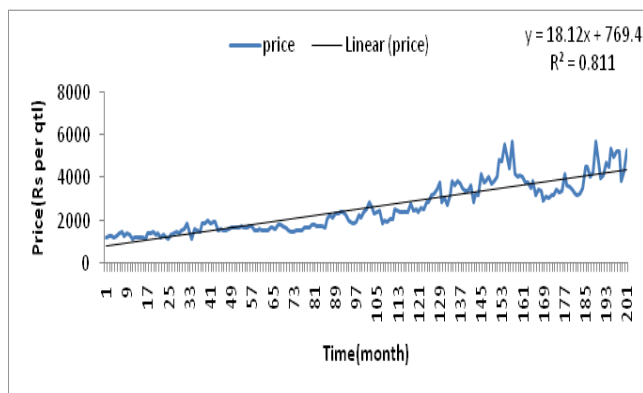


Fig 1. Secular trend in monthly prices of groundnut in Kurnool market

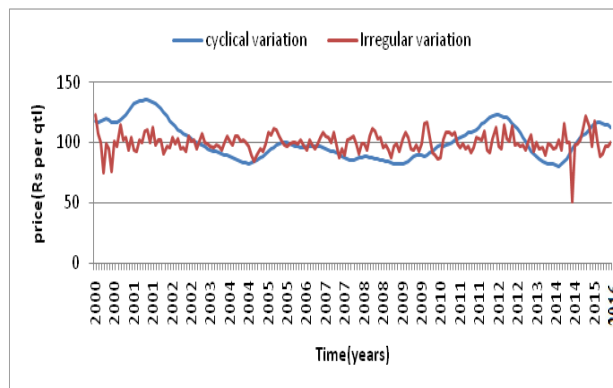


Fig 5. Cyclical & Irregular variations in prices of groundnut in Adoni market

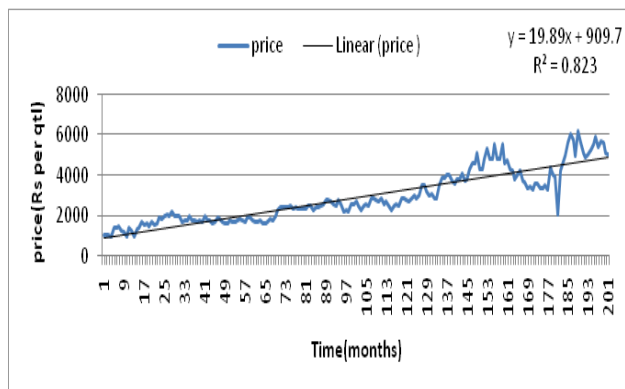


Fig 2. Secular trend in monthly prices of groundnut in Adoni market

of arrivals for the markets. The secondary data required for the study on monthly prices (Rs/Qtl) was collected from the respective Agricultural Market committees (AMC) for the period from 2000 to 2016 (17 years).

The decomposition of time series data was done by assuming multiplicative model of the following form:

$$P = T_t * S_t * C_t * I_t$$

Where, P = Monthly prices;

T_t = Trend component at period t;

S_t = Seasonal component at period t

C_t = Cyclical component at period t;

I_t = Irregular component at period t

t = 1, 2,201

Secular Trend

For estimating the long run trend of prices, the method of least square estimates was employed. This method of ascertaining the trend in a series of annual prices involves estimating the intercept and slope coefficient in the linear functional form. The equation adopted for this purpose was specified as follows:

$$Y_t = a + b*t$$

where Y_t = monthly prices

Annual trends of prices for the selected markets were computed and compared. The goodness of fit of trend line to the data was tested by computing the coefficient of determination R^2 .

Seasonal variations

Seasonal variations are those periodic movements which operate in a periodic and regular manner during a period of 12 months. Thus, these variations are worked out for data which are recorded monthly. Seasonal variations were computed by using ratio to moving average method. In the present analysis, the season has been considered to be of 12 months.

Cyclical variations:

Apart from seasonal effects, some time series data exhibit variations at a fixed period due to some other physical cause. The term 'cycle' refers to the recurrent variations in time series that usually last longer than a year. Amongst all the methods of arriving at estimates of the cyclic movements of time series, the residual method is most commonly used. This method consists of eliminating seasonal variation and trend, thus obtaining cyclical and irregular movements.

Symbolically, $\frac{S * C * I}{S} = C * I$. Next, the data were smoothed in order to obtain the cyclical movements, which are sometimes termed the cyclical relatives.

RESULTS AND DISCUSSION

The trend was computed in order to ascertain the long run movement of market prices of groundnut in the selected markets and the results are presented in Table 1 and depicted in Fig.1 and 2. The values in Table 1 and fig. 1 and 2 reveal that there is an increasing trend in the prices of groundnut in both the selected markets and are found to be highly significant.

But the extent of increase in prices varied from market to market.

The monthly increase in prices of groundnut was found to be higher (Rs. 19.89 per quintal) in Adoni market than in Kurnool market (Rs.18.12 per qtl) and were found to be statistically significant at 1 percent level of significance. The contribution of time to change in prices was 81 percent in kurnool market and 82 percent in Adoni market as indicated by R^2 .

Seasonal variations of market prices of Groundnut in the selected markets.

In order to ascertain the seasonal variations in the prices of groundnut in the selected markets, seasonal indices for prices were computed by using 12 months moving averages. The seasonal indices of monthly prices of groundnut in the selected markets are presented in Table 2 and depicted in Fig. 3

The Table 2 reveals that the markets exhibited a seasonal variation in the prices of groundnut. In Kurnool market, the seasonal indices varied from 90.95 to 107.19. The highest prices were observed in the month of September (107.19) followed by May (106.27). The lowest prices were observed in the month of January(90.95) and in December(93.44). In Adoni market, the seasonal indices varied from 96.14 to 104.11. The highest prices were observed in the month of November(104.11) followed by May (103.58). Lowest prices were observed in the months of January (96.14) and February (96.44).

Cyclical and irregular variations

The cyclical and irregular variations in prices of groundnut were illustrated in Fig. 4 and 5. It can be seen from the figures that the cyclical variations showed a smooth trend whereas there existed fluctuations because of irregular variations. From the figures, it could be observed that there was no definite cycle existed in the selected markets in prices.

CONCLUSION

The analysis indicated the wideness of seasonal price variations. The seasonal indices indicated the decisions that the farmers can take regarding selling. Creation of adequate storage facilities at an accessible distance to the farmers can reduce the seasonal variations in groundnut prices to some extent. The producers may be advised to plan their production as well as the sale of the crop looking into seasonal price variations. The variability due to trend can be minimized through technological advancement in groundnut production and stabilizing the long term price policy.

LITERATURE CITED

- Gote M R, Khodiar Serene Sekhar M B and Sadhu B R 2010** Market arrivals and prices of Groundnut International Research journal August, 2010 Volume 1, Issue 11, 77-79.
- Mundinamani S M, Ranganatha Sastry K N and Basavaraja H 1999** Trends and seasonality in Market arrivals and prices of Groundnut in Karnataka Indian journal of Agril. Marketing. 13(1), 53-59.
- Sharma R K, Sonika Gupta and Rajiv Sharma 2005** Price behaviour of Sesame – A Statewise Analysis. Agricultural Situation in India 1: 831-839.
- Sirish Sharma and Singh I P 2013** Price behaviour of Soybean in Kota region of Rajasthan. Indian journal of Agricultural Marketing. 27(1), 2013: 7-22.
- Vasisht A K, Bathla Seema, Singh D R, Bharadwaj S P and Prawin Arya 2009** Price behaviour in fruits and vegetable markets. Co-integration and error correction analysis. Indian Journal of Agricultural Economics 63 (3): 357-358.
www.indiastat.com

Received on 12.01.2018 and revised on 15.03.2018