

# Short Term Forecast of Coconut Oil Price in Kerala Markets

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Price fluctuation of coconut, copra and coconut oil is a matter of concern for the farmers as well as traders. The price of coconut oil is the main factor in deciding the prices of other coconut products. The data on daily price of coconut oil is available to the farmers through news papers. The market price of the commodity during the previous day is reported in the news paper. Presently in Kerala, fresh coconuts are sold by farmers according to weight instead of their earlier practice of selling by number of nuts. So the farmers as well as local traders of coconut are much concerned about the market rates for coconut and its products. The price of copra and coconut oil prevailing in the near by coconut markets are taken as basis for fixing the price per kg of coconut.

To make an objective assessment on the price movement in the coming days, the pattern of changes in prices during the preceding days is essentially required. The price data in the immediate past are not readily available in any of the print medium. The compilation of data in most of the periodicals generally takes place at a lag of one month or more; hence, does not serve the purpose. A solution to the aforesaid problem is to publish the data in the internet as it is becoming popular and accessible even from rural areas. An attempt in this direction was initiated at Central Plantation Crops Research Institute, Kasaragod as a part of the National Agricultural Technology Project on "Integrated National Agricultural

Resources Information System" (INARIS).

A central data warehouse comprising of 13 data marts related to different crops were developed under this project

on various items to be included, their features, sources of information, frequency of updating etc. This database provide whole sale prices of plantation crops in important markets either as daily prices or aggregated for weeks, months or years. The daily prices of selected commodities as reported in the national dailies only included in the database for convenience of updating.

Wholesale price of coconut oil and copra in three important markets of Kerala are included in the database.

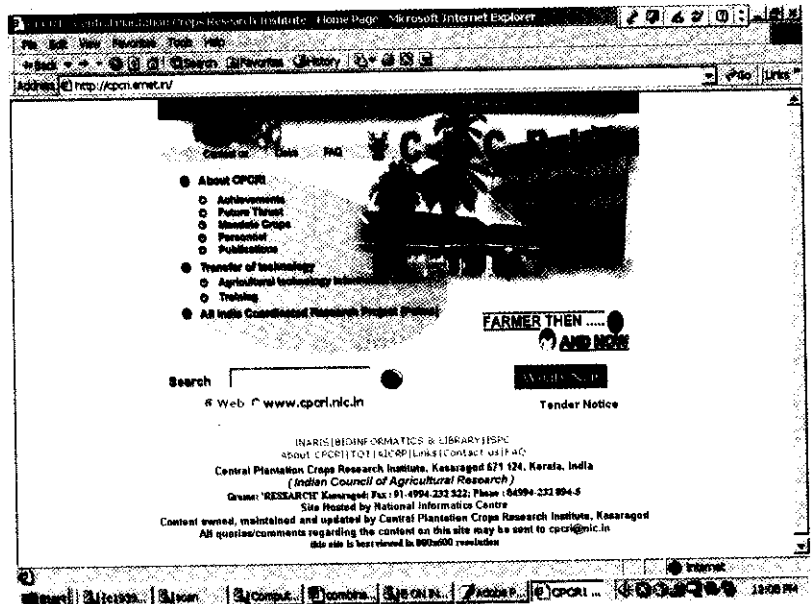


Fig. 1 Home page of CPCRI Web site (www.cpcri.ernet.in)

which can be accessed at <http://www.inaris.gen.in>. The data mart of plantation crops maintained at CPCRI has the oracle server at back end. The database was developed following elaborate discussion

The user can access the price data through a web browser by entering the address <http://www.inaris.gen.in>, and clicking the item 'plantation crop'. At every selection, a fresh report is generated from

the database and displayed to the user. Only simple summary statistics like average price were provided in these reports so far. The utility of the database is further enhanced by attempting short-term forecasts and posting the results in the CPCRI web site.

The data for the forecast of the wholesale price of coconut oil at Kochi, Alappuzha and Kozhikode market data are collected from the daily news papers and populated in the data base. The Autoregressive Integrated Moving Average (ARIMA) model is used for forecasting the prices. These models are fitted to time series data (the daily oil price in the present context) either in order to better understand the data or to predict future points in the series. The model is generally referred to as an ARIMA( $p, d, q$ ) model where the  $p$ ,  $d$  and  $q$  are integers greater than or equal to zero and refer to the order of the autoregressive, integrated and moving average parts of the model respectively. The Trends module of SPSS v.12.0 was used for estimating the parameters. The ARIMA models for the time series data were identified and used for forecasting. The price data from 1998 to 2003 was used for fitting the predictions and the data for 2004-05 was used for testing its accuracy. Since ARIMA models were found to be best suited for making short-term price forecasts, coefficients were estimated at weekly intervals. Whenever the percentage error in prediction exceeded 5%, a new ARIMA model was being identified and used for further forecasting. The difference

between forecast and actual price was observed periodically and if necessary, a new model was identified and validated. It was found that in the short span of one week the difference between predicted price and actually prevailing price was as low as 2-3 per cent. At present we are using ARIMA (1,1,0) for analysis of Alappuzha and Kochi markets and ARIMA(2,1,0) for Kozhikode market.

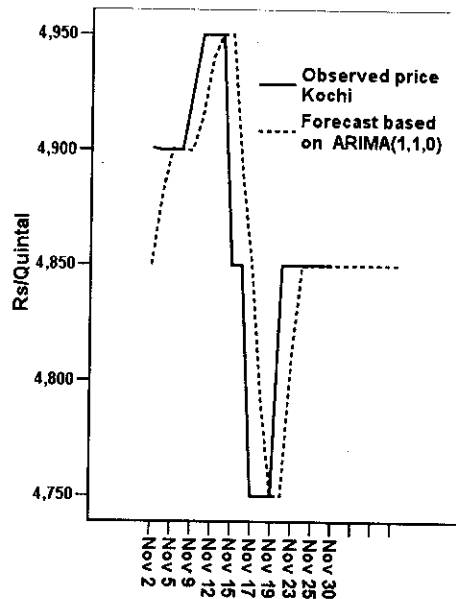


Fig. 2 Graph showing the price of coconut oil along with forecasted values

Every Saturday, the price forecasts for the forthcoming week are made. The daily price reported in the past 3 to 4 weeks and forecast for the next week are depicted in the form of a graph and posted in the CPCRI website [www.cpcri.ernet.in](http://www.cpcri.ernet.in). The user may enter the website address at the address bar of internet browser to visit this site. In the homepage (Fig. 1) the item 'what is knew' will lead to the link 'price trend and forecast'. On clicking this

link, a new page will be opened and the names of three coconut markets of Kerala will be seen. When we click on the market name, respective graph will be displayed. The vertical axis of the graph referred to price of coconut oil in Rupees per Quintal and the horizontal axis referred to the dates. There will be two lines in the graph: The shorter one depicting the actual price of coconut oil for past weeks and the longer one the forecasted price based on the ARIMA model for the corresponding period as well as for an extended period of one week. It can be seen from the graph that the variation between forecast price and the actual price are very less. The forecasts made for the week starting from December 1, 2005 is shown in Fig. 2 for illustration. It is clear from the figure that the two lines always move side by side in the same direction suggesting that the variation between forecast price and actual price for the past is almost negligible. The longer line gives us an idea about the expected behaviour of the coconut oil prices during next one week.

From this forecast the farmers can get a picture of the market behaviour and plan the sale of their product according to the trend in the immediate future. Even though this is a new attempt the accuracy has already been checked with the help of actual prices that prevailed in the market for the corresponding period. Since the farmer can be informed of the price trend and forecaste, he can very well escape from the exploitation of village traders or middle men.