



## Red Chilli – Will It Be Less Spicy This Year?

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### Abstract

*Red Chilli is one of the important spices being used in the culinary preparations, especially in the Asian and Latin American countries. The characteristics hot and pungent taste of the food in the region is owed to Chilli. Chilli is rich in Vitamins and minerals. Apart, from the taste, Chilli is also used for medicinal purposes in treatment of various diseases. India is the largest producer, consumer and exporter of Chilli, with Andhra Pradesh being the major producing and exporting state. The research tries to investigate the price movements of Chilli using technical analysis and to forecast the future prices movements of Chilli based on these. The results of the study show that with the launch of new contracts “Chilli Teja” with the changed specifications, the traders and investors have lost interest in the trading of these contracts and the volumes have dwindled. With the onset of sowing season in couple of months and the low volumes of trading, the outlook for the Chilli prices seem to be strongly bearish and the Chilli prices may move towards Rs. 4800 to Rs. 5500 levels, once they move below the crucial support levels at Rs. 7800.*

**Keywords—** *Chilli Prices, Forecasting, Technical Analysis*

### I. Introduction

Red Chilli, also known as Chili Pepper, is the fruit of the plant *Capsicum Annuum* of Solanaceae family. Chilli originated in the Americas and has a spicy hot taste. The substances that provide Chilli its intensity when ingested or topically applied is Capsaicin and several related chemicals, collectively called Capsaicinoids. The World’s hottest chilli “Naga Jolokia” is cultivated in hilly terrain of Assam in a small town Tezpur.

Chilli has been used in human diet in the Americas since 7500 BC and was cultivated in South Western Ecuador more than 6000 years ago. It was the first self-pollinated crop to be cultivated in Mexico and Northern & Central parts of South America. Its use in both food and medicine led



to its popularity around the world. In 15<sup>th</sup> Century, when Chilli was introduced in Europe, it was grown as a botanical curiosity in monastery gardens, but was found to be a potential substitute to the expensive Black Pepper, owing to its hot and pungent taste. Chilli was brought to Asia by the Portugese in the 16<sup>th</sup> Century. It travelled from India through Central Asia and Turkey to Hungary, where it became the national spice in the form of Paparika.

Chilli is most commonly broken down into three groupings: bell chillis, hot chillis and sweet chillis. Most popular chilli varieties are categorised in one of them or as a cross between them.

The five domesticated species of Chili are:

- *Capsicum annuum*, which includes many common varieties such as Bell Peppers, Cayenne, Chiltepin, Jalapeños and Wax.
- *Capsicum frutescens*, which includes Malagueta, Malawian Kambuzi, Piri Piri, Tabasco and Thai Peppers.
- *Capsicum chinense*, which includes the hottest peppers such as the Datil, Habanero, Naga and Scotch Bonnet
- *Capsicum pubescens*, which includes the South American Rocoto Peppers
- *Capsicum baccatum*, which includes the South American Aji Peppers

The “heat” of Chilli is measured in Scoville heat units (SHU), which is a measure of the dilution of an amount of chilli extract added to sugar syrup before its heat becomes detectable to a panel of tasters; the more it has to be diluted to be undetectable, the more powerful the variety and therefore the higher the rating. The modern method for quantitative analysis of SHU rating uses high-performance liquid chromatography to directly measure the capsaicinoid content of Chilli. Pure capsaicin is a hydrophobic, colourless, odourless and crystalline-to-waxy solid at room temperature, and measures 16,000,000 SHU.

## II. Chilli Cultivation

Chilli plants are herbaceous or semi-woody annuals or perennials, best grown in deep, well-aerated and well-drained sandy to clay loam type of soil. The leaves are ovate, tapering to a sharp point, measuring up to 15 cm, dark green on the upper surface and pale green on the lower surface. The plant is to be transplanted after it achieves a height of about 12 – 15 cms.

Chilli can be grown in areas with no frost and needs a moderately warmer weather with temperatures of about 21 – 26 °C for best yield. Very high temperatures of about 40 °C can spoil the crop with fruit and flower abortion. Extreme low temperatures below 10 °C inhibit the growth of the plant. The optimal moisture level in the field is 60% but does not grow well in waterlogged areas as it has shallow roots.



The flowers are small, white and borne singly or in clusters of 2 or 3 in the axils of the leaves. The fruits vary in shape, size, colour and degree of pungency. Chillies get ripe 14 - 16 weeks after transplantation depending on temperatures. The fruit is to be hand-picked as it does not drop when ripe. Chillies are picked when they have turned 95% red. They are to be picked in open woven poly bags or wicker baskets. Plastic bags should not be used as the fruit rots quickly. After picking, they are to be dried in sheds on plastic sheets, barn floor or hessian cloth. They need to be regularly turned to avoid moisture build-up.

The plant can survive for three years and it should be slashed down after the harvest for better vegetative growth and yield. The chilli yield from a plant increases every year as it gets older.

### **III. Chilli Production**

India is the largest producer of Chilli in the world. The World annual production of Chilli is about 2.8 – 3.0 million tonnes. India contributes about 1.4 -1.5 million tonnes, about 50% of global production. Other major producers include China, Bangladesh, Peru, Pakistan, Ethiopia, etc.

In Indian subcontinent, Chillies are produced throughout the year. Two crops are produced in kharif and rabi seasons in the country. Andhra Pradesh is the largest Chilli producing State. Guntur district of Andhra Pradesh alone produces 30% of Indian production. Other states include Karnataka, Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu. India has Chilli acreage of about 8 lakh hectares with a yield of about 1.7 to 1.8 tonnes per hectare.

### **IV. Chilli Markets and Consumption**

India is the largest consumer and exporter of Chilli. Andhra Pradesh contributes about 75% of Chilli exports from India. India exports Chilli in form of chilli powder, dried chilli, pickled chillies and chilli oleoresins. The major Chilli importing countries include Malaysia, Bangladesh, Sri Lanka, USA and UAE. India exports about 2000 tonnes of Chilli every year.

### **V. Uses of Chilli**

Chillies are rich in vitamins, especially in vitamin A, B and C and beta carotene. They are also rich in potassium, magnesium and iron.

Chillies are used fresh or dried. They are dried to preserve them for long periods of time. Dried Chillies are often ground into powders. Chillies are also used in whole or in large slices. Fresh hot green Chillies are also used to flavour dishes in India. The leaves of Chilli plant are also edible, and are coked as Greens in many countries. They are mildly bitter but not hot as fruit.



Chillies are used as effective topical analgesic in pain relief as they are known to inhibit pain messengers. Chilli extracts are used for alleviating arthritis pain, headaches, Herpes zoster pain, diabetic neuropathy, mastectomy pain, burns and neuralgia. It also boosts the immune system, heals cellular damage and lowers cholesterol. It is also helpful in getting rid of parasites of gut. Chilli has a tonic and carminative effect and is especially useful in tonic dyspepsia. It is useful in sore throat, delirium tremens, tonsillitis, laryngitis, cholera, chronic lumbago, insomnia, male impotency. It also corrects bowel disorders and prevents formation of puss in the wound. Its extracts have been used as antibacterial agents. Applying a decoction of powered red chilli in the part affected by a dog bite or snakebite minimizes the effect of poison.

Chilli juice brings a warming flush to the skin and eases soreness. Pungent Chillies are used by the pharmaceutical industry in the preparation of stimulant and counter irritant balms and in stomach ache, carminative and stimulant formulation. Chilli is administered in the form of powder, tincture, lineament, plaster, ointment, medicated roll, etc. Capsaicins are also being used in clearing the lungs and sinuses, enhance the flow of digestive juices, which trigger the brain to release endorphins, help to neutralize cavity causing acids, protect the body against cancer through anti oxidant activity.

Oleoresin, a viscous liquid possessing aroma and flavour, is also extracted from finely ground Chilli powder. Oleoresin is used in medicine internally as a powerful stimulant & carminative and externally as a counter irritant in the treatment of diseases such as rheumatism.

Capsaicin extracted from Chilli is also used in Pepper spray, used as less lethal weapon, as irritant.

## **VI. Research Methodology**

The objectives of the present research are:

- To suitably help predict the Chilli prices over a 4 – 6 month horizon using Technical Analysis
- To draw qualitative inferences considering extraneous factors.

The study will use secondary data collected from the website of NCDEX and websites related to Ministry of Agriculture, Government of India. The study will use future contracts data since 1<sup>st</sup> January 2011. The data for open, high, low & close price and the volumes for the future contracts will form the basis of the study. The data will be tabulated and moving averages will be calculated. Technical Analysis will then be used to analyse the data for forecasting the Chilli prices. Technical analysis is based on price action. It is assumed in technical analysis that the price of any tradable instrument or commodity discounts everything. All fundamental and other



factors influencing the supply and demand condition of a commodity or a security always get discounted in its price. Price also moves in trends and once a trend sets in motion it is likely to continue unless there is a change of trend. Thus, the future price trend can be found by studying past price action of the security or the commodity or the future contract. Therefore, the single most important aspect in trading is to identify the trend of the price of any tradable security or commodity and then to take position in the direction of the trend at a price point where the probability of getting a favourable price movement is high. This entry point and subsequent exit point can be found out by using different technical analysis methods and indicators.

Chelawat & Trivedi (2009) in their research on forecasting of Jeera prices using technical analysis forecasted a rise in Jeera prices from Rs. 11200 levels in mid-July 2009 to peak at about Rs. 14500 – 15000 levels in October – November 2009 after facing a moderate resistance at around Rs. 12500 levels where the prices were expected to consolidate. The market prices in the coming months validated the results completely.

Chelawat & Trivedi (2011) in their research on forecasting of Guarseed prices using technical analysis clearly forecasted an upsurge in prices from about Rs. 3500 levels in June 2011 to about Rs. 4000-Rs. 4500 levels by October end. The market prices in the coming months validated the results completely.

For the study, the daily price and moving average charts will be prepared to identify the cyclical trend and the forecasts will be made on the basis of these price trends.

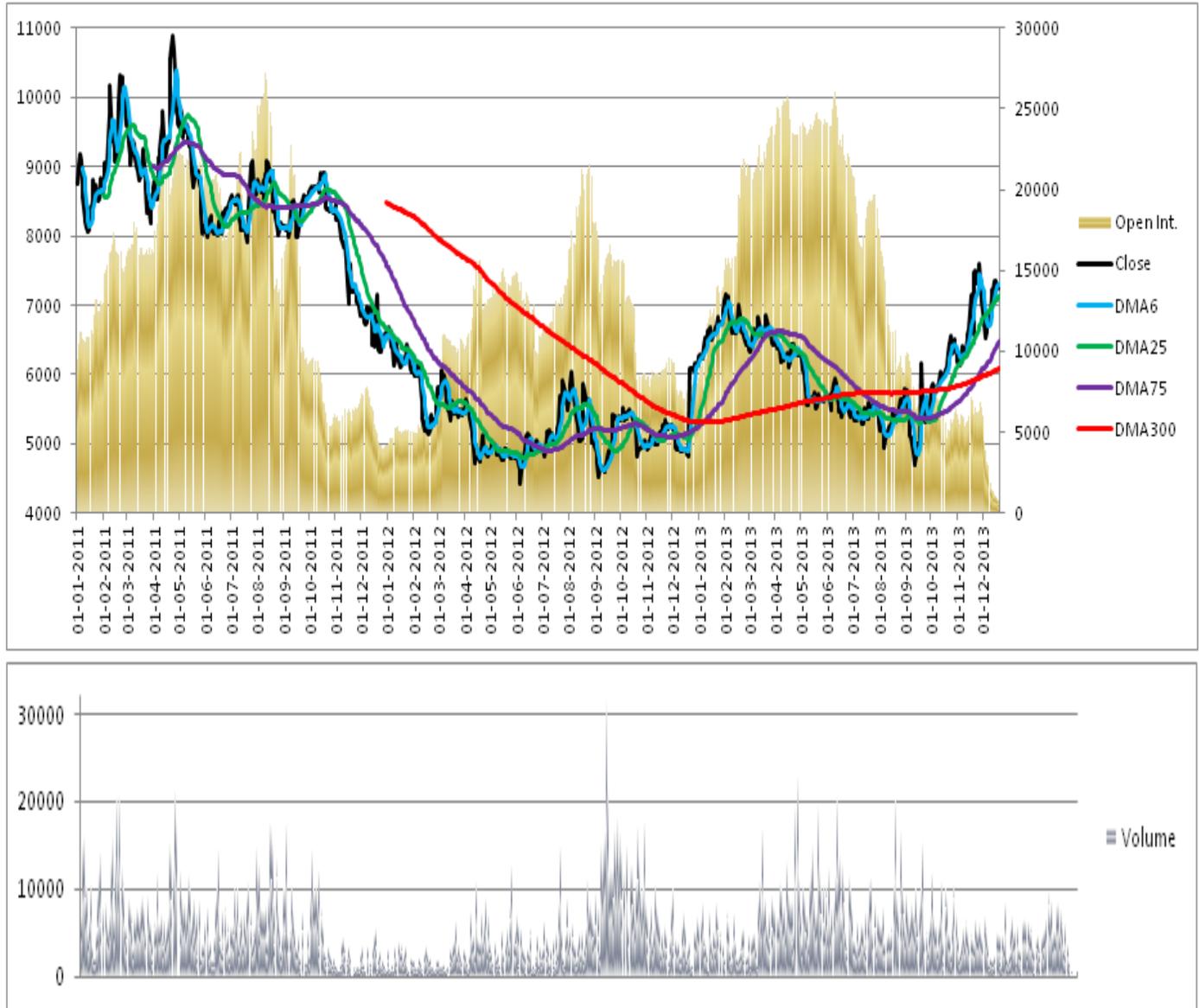


Fig. 1: Daily and Moving Average Chart for Chilli with Volume & Open Interest

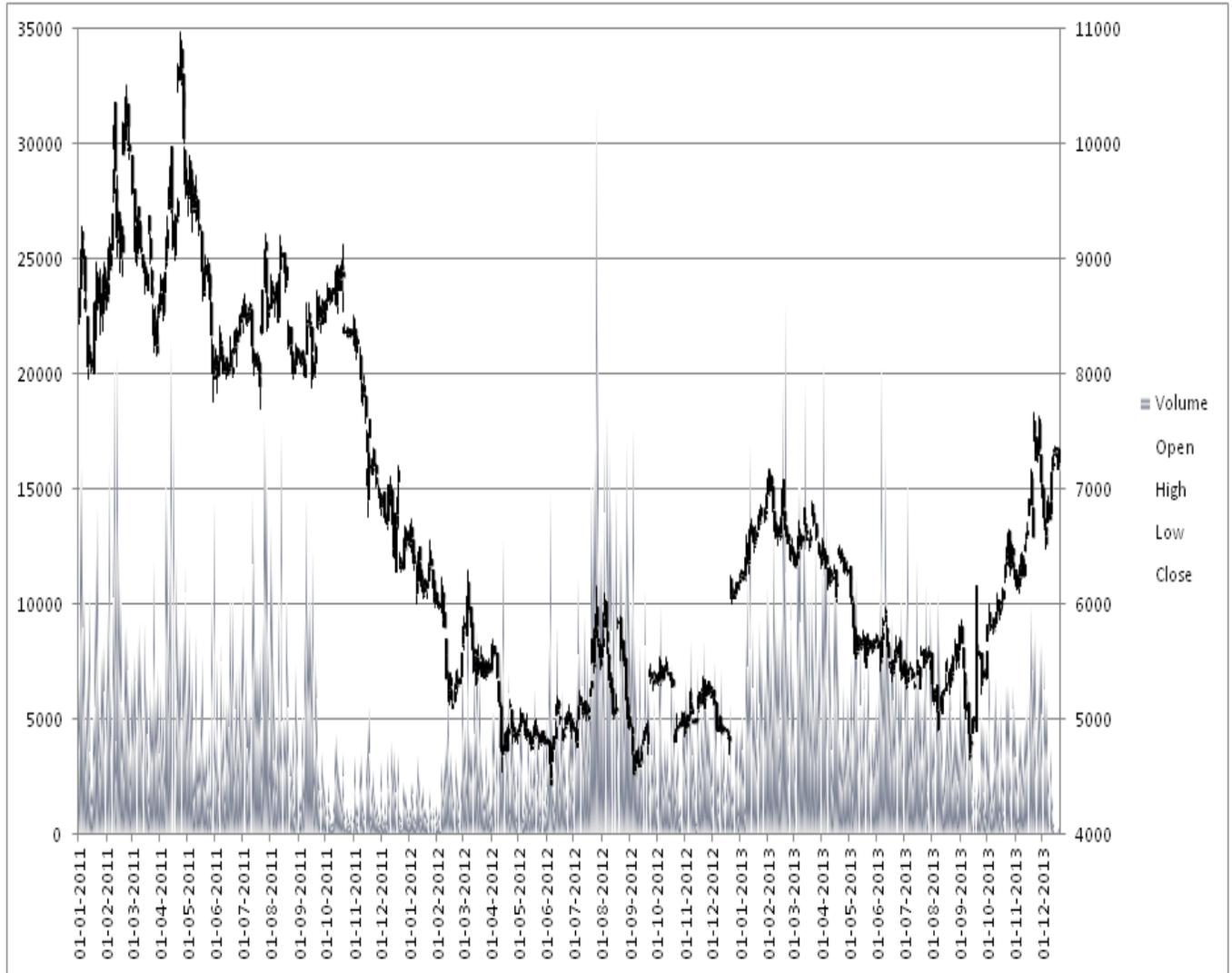


Fig 2: Candlestick Chart for Chili

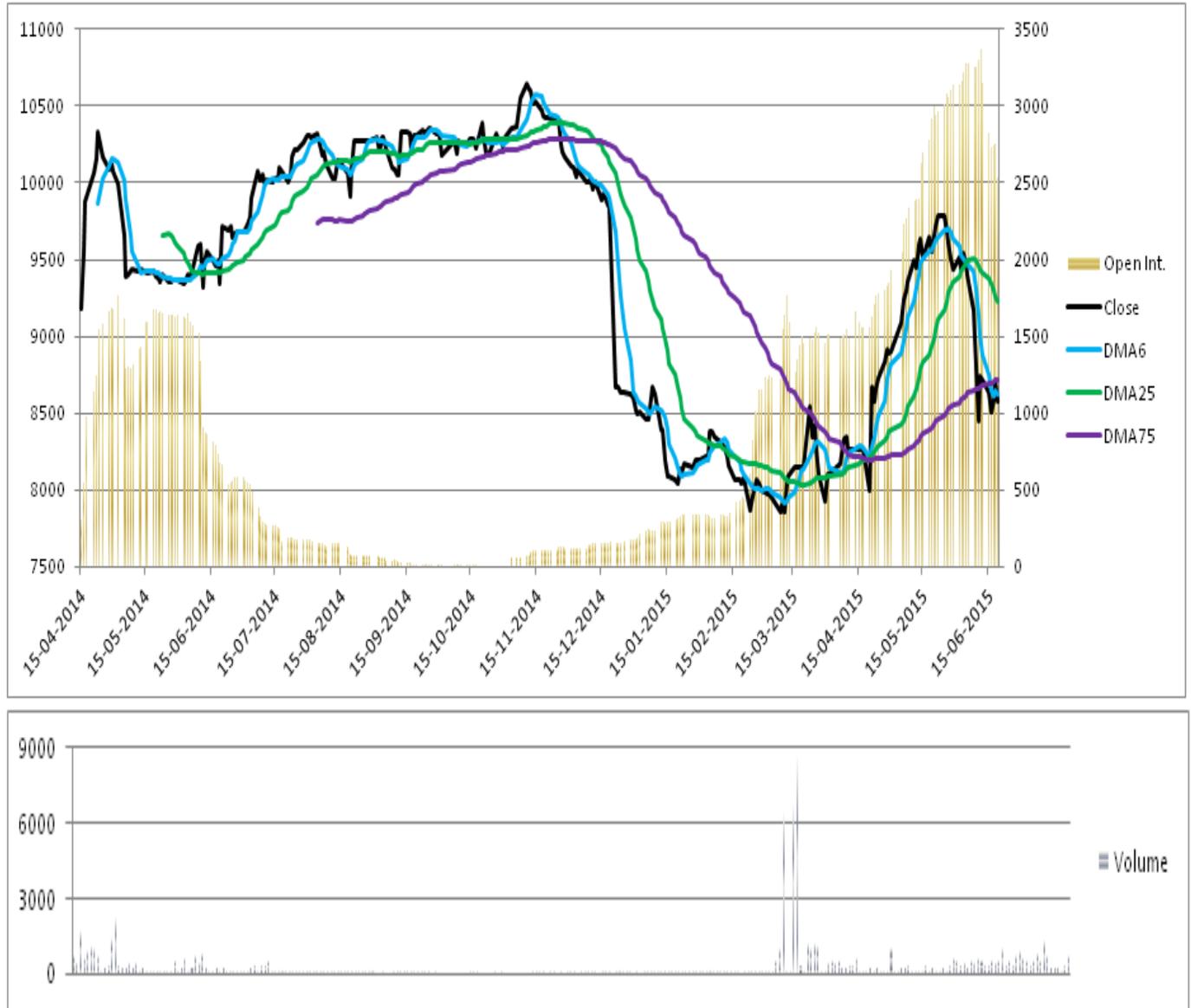


Fig 3: Daily and Moving Average Chart for Chilli with Volume and Open Interest



## VII. Data Analysis And Interpretation

Figure 1 shows the daily and moving average price chart for Chilli for a period from Jan.1, 2011 to Dec. 31, 2013. Figure 2 shows the candlestick chart for Chilli for the same period. Figure 3 shows the daily and moving average chart for a period of April 15, 2014 to June 19, 2015. As is evident from the charts, Chilli futures were trading around Rs. 10000 - 11000 levels forming lower tops each time but taking strong support at around Rs. 8000 levels from January 2011 to October 2011. The weak sentiment in Chilli finally prevailed and it broke the support level of Rs. 8000 and dropped below the 75DMA and 300 DMA, in October 2011. Breaking through the support, Chilli prices fell sharply, to about Rs. 5500 by February 2012 and further down to Rs. 4500 levels by May 2012.

After the sharp fall, Chilli prices saw a moderate correction and horizontal movement in prices in the range of Rs. 5000 – 7800 levels for the period of June 2012 to September 2013, again finding bottom at about 4800 levels in September 2013. Though, rumours about poor production coupled with huge export demand, led to a sudden surge in Chilli prices in December 2012, shooting above 75DMA and 300 DMA, showing some strength but with lack of volume. The Chilli prices rose to peak at above Rs. 7000 levels by early February 2013. The volumes coupled with the upsurge remained low and thus, the rally lost its steam and the Chilli prices retraced their entire rise, once again bottoming at around Rs. 4800 levels in September 2013.

Chilli saw a renewed interest among traders and investors, on the back of high export demand for Chilli and the prices started an upswing, forming higher tops and bottoms and moving above the 75DMA and 300 DMA with good volumes. Chilli prices rose to about Rs. 7300 by December 2013, where after, trading in Chilli futures contracts was stopped, owing to the fact that the regulatory body, Forward Markets Commission did not give permission to launch new contracts in Red Chilli.

New contracts in Chilli were launched for June, July, August and September 2014 on April 15, 2014. However, the specifications of the contract were revised. The new contracts did not attract interest of traders and investors, and the volumes were negligible. The prices of Chilli, owing to spot market conditions have been hovering in the range of Rs. 7800 to Rs. 10500 in the period of April 2014 to June 2015. Recently, in May 2015, the prices of Chilli spurted from Rs. 8000 levels to about Rs. 9800 on very low volumes but retraced back to Rs. 8500 levels in June 2015. Presently, the price of Chilli is hovering around Rs. 8600 levels with 75 DMA and 250 DMA at Rs. 8721 and Rs. 9369 levels.



### **VIII. Conclusion**

The present short term outlook for Chilli Prices seem to be bearish as the prices have once again fallen below 75 DMA and 250 DMA, presently at Rs. 8721 and Rs. 9360 levels, and the volumes are low. The Chilli prices are likely to be in bearish trend from the present Rs. 8980 levels for the July contract.

- Chilli Prices are likely to be bearish in coming months.
- Prices are likely to fall to Rs. 7800 in near future.
- A fall below these levels can push prices down to Rs. 4800 – Rs. 5500
- Chilli is not likely to be bullish until it crosses Rs. 10500 – Rs. 11000 on large volumes
- The contract specifications need to be revised by NCDEX to once again make Chilli contracts attractive to traders.

### **IX. Limitations**

- The prices of commodity are dependent on many factors and it is not possible to quantitatively measure and incorporate all the factors in the study.
- Monsoon, Acreage, Yield and Production are very important factors in determination of prices, and they cannot be accurately forecasted. So, these factors are only qualitatively included in the research.
- Export demand is uncertain and any considerable change can have significant impact on the prices.
- Prices are also dependent on Government policy and any change in export or import policy can lead to significant change in prices.
- Speculation is a major factor which can never be forecasted.
- The conclusions for the study are drawn using technical analysis. The interpretation of these charts is dependent on the expertise of the researcher as there are no standardised practices to identify trends, though there are some identified patterns, but it is the knowledge and ability of the researcher to identify and interpret those patterns. Thus, different researchers may arrive at different interpretations and conclusions.



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