# Guarseed Prices – Riding the Bull Again

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## ABSTRACT

Guar also known as cluster bean is a deep-rooted, drought-tolerant, summer-growing, warm-weather, annual legume, that is a natural source of hydrocolloid. The crop originated in Africa or deserts of Middle East but has been grown throughout Southern Asia since ancient times. It is used as vegetable and fodder crop. The plant is extremely drought-resistant and is capable of efficiently absorbing all ground water. Therefore, it grows easily in semi-arid regions. Guar beans have a large endosperm that contains galactomannon gum, commonly known as Guar Gum, a substance which forms a gel in water.

It is a kharif crop cultivated mostly in the Northern and North Western India. It is grown in arid zones of Rajasthan, some parts of Gujarat, Haryana, M.P, Punjab and U.P. India is the largest producer of Guar in the World, constitute about 80% of the total production with Rajasthan contributing about 70% of the country's production.

The global demand for guar gum is approximately 0.6 - 0.7 million tons per annum. India and Pakistan contribute about 80% of the world demand, with Jodhpur being the most important processing centre of guar gum contributing about 40% of World's guar gum supply. India exports Guar gum to about 124 countries with regular exports to about 70 countries.

Highly refined guar gum or guar powder is used as a stiffener in soft ice cream, a stabilizer for cheeses, instant puddings and whipped cream substitutes. Low grade of guar gum is used in cloth and paper manufacture, oil well drilling muds, explosives and number of other industrial applications. Apart from this, guar beans are normally used as a vegetable for human consumption and the crop is also grown for cattle feed and as a green manure crop.

In the past view years, guarseed prices have been very volatile and have ranged from Rs. 1800 per quintal to Rs. 30000 per quintal, due to large speculative activity. This led to very heavy losses to many traders and investors and even closure of many industrial units in the Jodhpur region. Government even had to ban trading in all contracts of Guarseed and Guargum to control this speculation. The study aims to forecast guarseed prices to a certain degree of reliability, based on technical analysis, to help those involved in the trading of this commodity. Technical Analysis is one of the most relied upon tool across the World for forecasting prices of stocks, commodities and currencies.

The present study shows that the guarseed prices are once again moving upwards and have crossed the crucial 75 DMA. The bull phase will be further confirmed as prices move above the 300 DMA levels, i.e. Rs. 4885. In the coming months, Guarseed prices are likely to move upwards to the crucial levels of Rs. 6500 by September and further to about Rs. 9500 – Rs. 10500 levels by year end.

**Keywords: Forecasting, Guargum, Guarseed Prices, Speculation, Technical Analysis.**

## GUARSEED - AN INTRODUCTION

Guar also known as cluster bean is an annual leguminous crop that is a natural source of hydrocolloid (substance that forms thick solution at low concentration with water). The crop is believed to have originated in Africa or the deserts of Middle East but has been grown throughout Southern Asia since ancient times as a vegetable and fodder crop. The Arab people were the first to cultivate guar to feed their horses with it. During the silk route trading days, when the trade started flourishing in the Middle East, the traders brought pods of guar with them wherever they went and as a result the seeds of this crop got scattered in those countries. The crop got introduced into India in the same manner and India, being a hot weathered country, was suited well for the crop to dwell properly (Commodity, n.d.).

Guar has been domesticated in India and Pakistan for ages. Its tender pods are used as fresh vegetables and other parts of the plants are used as cattle feed. The plant is extremely drought-resistant, and is capable of efficiently absorbing all ground water. Therefore, it grows easily in the semi-arid regions where less hardy crops perish. It is bushy plant, rough to touch, and is capable to dwell even in the drought conditions. The scientific name of Guar is Cyamopsis tetragonoloba. Its flowers are purple to pink in colour, approximately 8 mm long, and form in auxiliary racemes. Guar beans have a large endosperm that contains galactomannon gum, a substance which forms a gel in water. This is commonly known as Guar Gum. India, Pakistan and United States are the major supplier of guarseed the in World.

## GUAR CULTIVATION

Guar crop is deep-rooted, drought-tolerant, summer-growing, warm-weather, annual legume. It grows well in the arid and semi-arid areas of the tropics and subtropics where the soils fertility is low and rainfall is summer-dominant. It is a kharif crop cultivated mostly in the Northern and North Western India and Eastern and South Eastern Pakistan. It is grown in arid zones of Rajasthan, some parts of Gujarat, Haryana, M.P, Punjab and U.P.

In India, guar seed is sown in second half of July to early August and is harvested during October and November. It is usually 90 days crop. It is a rain fed monsoon crop, requiring 8-15 inches of rain in 3-4 spells. The crop grows well in sandy soils. High rainfall causes the plant to become leafy and reduces the number of pods per plant and seeds in pod affecting the size and yield. For effective guar cultivation, the crop needs two rainfalls before sowing, one rainfall when the crop buds out and another when the crop comes up well and blossoming starts. Thereafter, it needs plenty of sunshine and dry weather to develop well. In harvesting period, it again requires good sunshine to dry up and become usable for industries.

Guar seed is a monsoon dependent crop cultivated in rainy season. It is also cultivated under irrigation sources in some parts of the country like Ganganagar in Rajasthan and in Haryana. In India, sowing of Guar seed starts in July and rainfall of 6-9 inches during this period is very vital for the crop. In Pakistan, about 80% of the guar is grown under irrigation and therefore, yield per hectare is higher. The major markets for Guar seed are Alwar, Bikaner, Ganganagar, Jaipur, Jodhpur, etc.

On a rough estimate, about five kilogram of guar seeds is enough to cultivate the crop on one acre. The per acre yield in 90 days is about 350 to 400 kg of seeds, with about 400 kg of dried opened pods and plants left behind. These dried pods and plants can be used as feed for sheep and goats. The farmers claim that these pods and plants help in increasing the weight of the animals. Guar seed has a shelf life of more than 3 years without losing any of its properties or qualities. It needs the barest minimum maintenance and handling.

**GUAR CYCLE**

| Arrivals | Sowing | Growth | Peak Arrivals | Lean Arrivals |
|---|---|---|---|---|
| **Month** | July-Aug | Aug-Sep | Oct-Dec | Jan-Jun |

**GUAR SEED – PRODUCTION**

India is the largest producer of Guarseed in the World, constitute about 80% of the total production. Pakistan, USA, South Africa, Malawi, Zaire and Sudan are other major producing countries. Pakistan has about 10% share in the World market and is the major competitor to India owing to better exchange rate of Dollar vs. Pakistani Rupee making its product more competitive in the International markets.

In India, guar is grown in the north-western parts of country, in the states of Rajasthan (Barmer, Bikaner, Dausa, Ganganagar, Hanumangarh, Jaisalmer, Jhunjhunu, Jodhpur, Nagaur, Pali & Sirohi districts), Gujarat (Ahmedabad, Banaskantha, Kutch, parts of Mehsana, Sabarkantha & Vadodara districts), Haryana (Bhiwani, Gurgaon, Mahendragarh & Rewari districts) and Punjab (Bhatinda, Ferozepur, Mansa & Muktsar districts). Rajasthan is the largest producer of Guar seed in the country accounting for about 70% of total production with remaining frown in Gujarat, Haryana, M.P., Punjab & U.P. (Fig. 1).

Table 1 shows the annual acreage, production and per acre yield of Guarseed in India. The average production of Guar seed in the country for the past 13 years has been 13.00 lakh MT and fluctuates largely from year-to-year based on rainfall pattern. The production has fluctuated from just 2.03 lakh tons in 2002-03 to 22.18 lakh tons in 2011-12. The Guar Seed production for the year 2013-14 is expected to increase by about 15% to about 20.5 lakh tons from 18 lakh tons previous year and is to be significantly higher than average output. Acreage under the crop has also increased by over 10% from previous year. Fig. 2 shows the graph depicting annual production of guarseed for the last 13 years.

**Fig. 1: Guar Producing States in India with their percentage share**

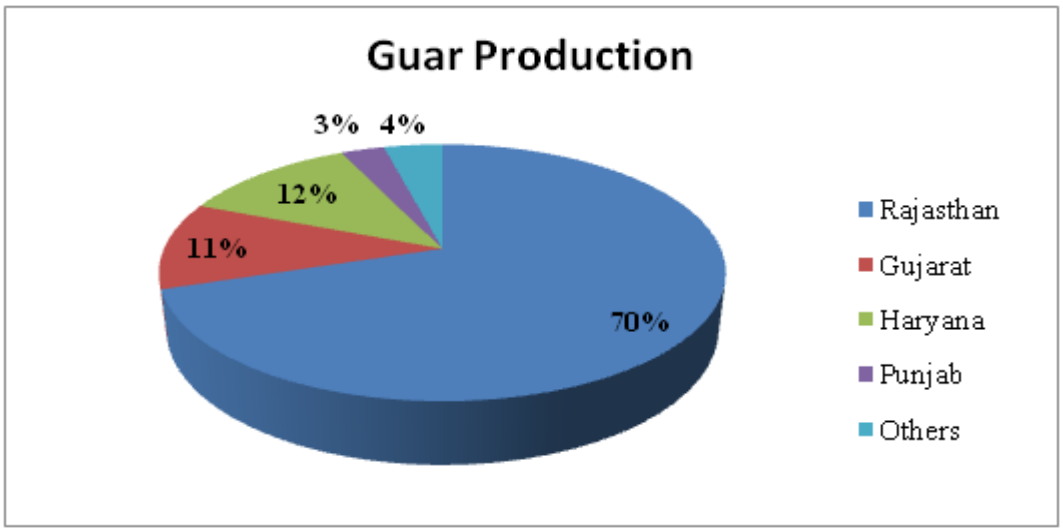
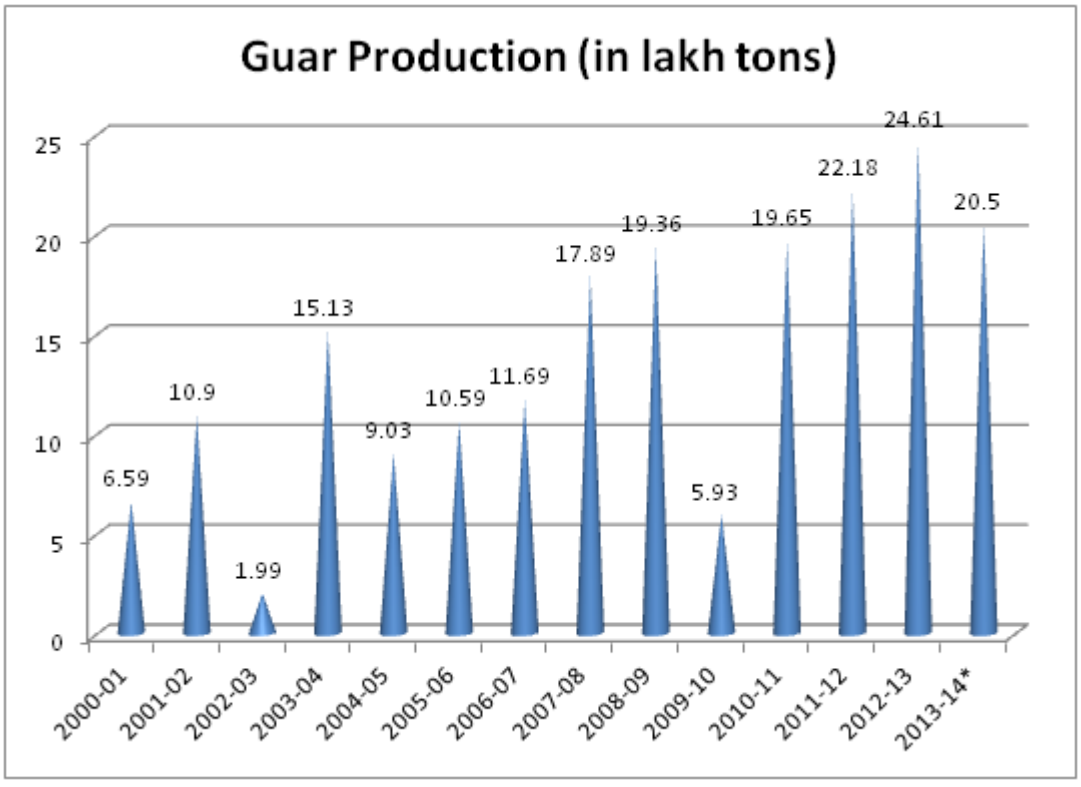



**Table 1: Acreage, Production & Per Acre Yield of Guar Seeed**

| Year | Area ('000 hectares) | Production ('000 tons) | Yield (Kg/hectare) |
|---|---|---|---|
| 2000-01 | 3497.4 | 658.8 | 188 |
| 2001-02 | 2903.1 | 1089.9 | 375 |
| 2002-03 | 975.1 | 199.2 | 204 |
| 2003-04 | 2854.0 | 1513.4 | 530 |
| 2004-05 | 2867.4 | 903.3 | 315 |
| 2005-06 | 2955.5 | 1059.0 | 358 |
| 2006-07 | 3343.7 | 1169.3 | 350 |
| 2007-08 | 3472.6 | 1788.5 | 515 |
| 2008-09 | 3862.5 | 1935.8 | 501 |
| 2009-10 | 2989.6 | 593.1 | 198 |
| 2010-11 | 3382.2 | 1965.3 | 581 |
| 2011-12 | 3444.2 | 2217.6 | 644 |
| 2012-13 | 5151.7 | 2460.7 | 478 |

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation

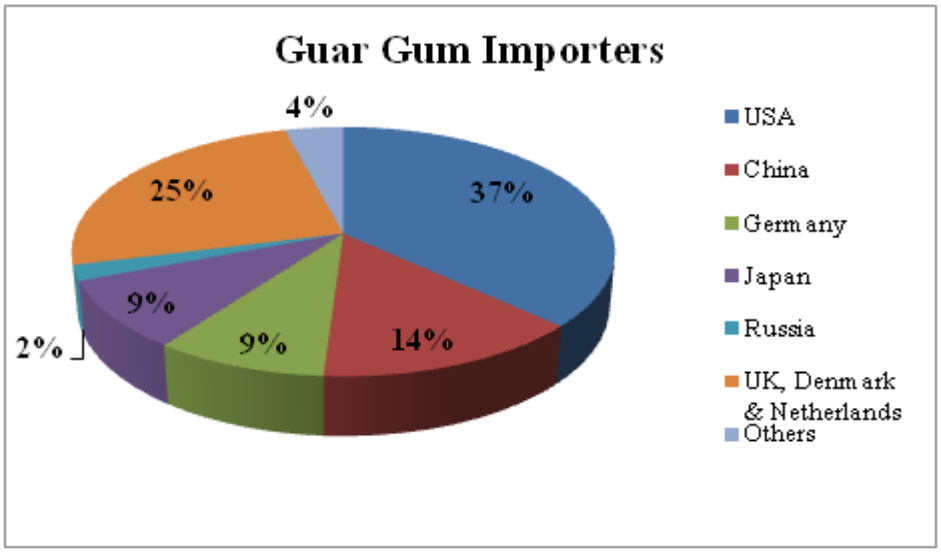
**Fig. 2: Guar Production (in lakh tons)**




**GUAR SEED – CONSUMPTION**

Fig 3 depicts the guar gum importing countries of the world along with their percentage share.

**Fig. 3: Guar Gum Importing Countries with percentage share**




World market for guar gum is estimated at around 6-7 lakh tons/year, 80% of it being produced by India and Pakistan. USA is the largest consumer of guar gum consuming about 37%, China consumes 14%, Germany & Japan 9% each while Russia, Italy & Others constitute the remaining 31% of world trade. The world market for guar gum is mature and is increasing steadily at rate of more than 2% per year. The market growth areas are Asia and South America, and as standards of living increase, it will result in increased consumption of processed food.

The global market for Guar is estimated to about Rs. 300-400 billion per annum. About 75% of the total guar production in India is exported. Jodhpur is the most important processing centre of Guar Gum and contributes approximately 40% of the World Guar Gum supply. On an average, India exports about 3.0 to 3.5 lakh MT of guar gum to various countries but peaked in 2011-12 to 7.07 lakh tons with value of Rs. 165.24 billion. The guar exports in the year 2012-13 dropped to about 4.06 lakh tonnes with value of Rs. 212.87 billion, owing to much higher prices of guar gum. Due to the heavy dependence on monsoon, the production of guar has been erratic and has direct and corresponding effect in the price of Guar and Guar Gum which have been fluctuating widely in the past 4-5 years. India exports Guar Gum to about 124 countries, with regular exports to about 70 countries. US, China & Germany are biggest importers of Guar gum from India constituting 70%. Table 2 shows the annual export quantity and value of guar gum to various countries.

**Table 2: Export Quantity & Value of Guar Gum**

| Year | Export Quantity (in Lakh MT) | Export Value (in Rs. Crore) |
|---|---|---|
| **2007-08** | 2.11 | 1125 |
| **2008-09** | 2.6 | 1339 |
| **2009-10** | 2.18 | 1133 |
| **2010-11** | 4.42 | 2939 |
| **2011-12** | 7.07 | 16524 |
| **2012-13** | 4.06 | 212.87 |

Source: APEDA Agri Exchange

**EXTRACTION PROCESS**

Guar gum is produced from endosperm and consists mainly of gummy Poly groups of monogalactoses with small amount of fibre and minerals. The gum is a Polysaccharide with a straight chain of mannose units and one galactose is 2:1. The gum contains about 6% protein. Different grades are made on the purity and present viscosity of the powders in water.

Pods are sun-dried after harvest and seeds are separated manually. Seed consists of three parts: Germ (43-47%), Endosperm (35- 42%) and husk (14-17%). The seeds are processed in various stages like roasting, sieving and polishing. Several methods have been used for the manufacture of different grades of guar gum but due to its complex nature, the thermo mechanical process is generally used for the manufacture of edible grade and industrial grade guar gum. The germ is separated from the endosperm and two halves of endosperm called as un-dehusked Guar splits is obtained. The un-dehusked splits of guar seeds are first cleaned to remove the foreign materials. The un-dehusked splits thus obtained are then heated in a rotary standard temperature furnace (where the outer coating of the fibre becomes brittle and can be removed in further process). The hot un-dehusked splits are taken to scraper machine where un-dehusked splits are scraped from the outer solid layer of fiber and clean splits are obtained which are known as dehusked splits. Thin layer on endosperm splits is removed by polishing & refined Guar splits are obtained. The endosperms contained in dehusked splits then undergo differential grinding and shifting to get various grades of guar gum. The guar powder is obtained from these refined guar splits using various processes which is used in various industries. Guar gum/split extracted from the seed accounts for 30% of whole seed (+/- 4% variance). The ratio of churi and korma varies from 30% to 41% depending upon the quality of the seed. Guar gum is further refined to guar powder, while the by-products churi and korma are used as cattle feed. These by-products of the guar processing, also known as guar meal (mixture of husks and germ), are a potential source of protein. It is used for cattle as well as poultry feeding. Toasting of guar meal improves its nutritive value. It can be used up to 10% in poultry diet and can replace up to 100% protein supplements such as ground nut oil cakes in ruminants.

Table 3 represents the by-products of guar seed after processing:

**Table 3: By-Product of Guar Seed after Processing**

| By-Product | Weight (in %) |
|---|---|
| plit/gum | 29 |
| Churi | 30 |
| Korma | 37 |
| Others | 4 |

Guar is more than 6 times as effective as starch in thickening power and is used for upgrading starches. Various derivatives of Guar Gum are available that will stiffen gels even up to a water content of 99%. Commercially important derivatives of Guar gum are:

a) Hydroxy Alkylated Guar gum
b) Carboxy Methylated Guar gum
c) Oxidised Guar gum
d) Acetates of Guar gum
e) Cationic derivatives of Guar gum
f) Sulphated Guar gum
g) Guar gum formate
h) Guar gum acryl amide
i) Borate cross linked Guar gum
j) Reticulated Guar gum
k) Carboxy methyl hydroxy propyl Guar gum
1) Depolymerised Guar gum

## PROPERTIES OF GUAR POWDER

The properties of Guar Powder, which make it useful in various applications, are:

- Easy solubility in cold and hot water
- Film forming property
- Resistance to oils, greases and solvent
- Better thickening agent
- Water binding capacity
- High viscosity
- Functioning at low temperatures

## USES OF GUAR GUM

Guar gum is the primary marketable product of the plant. Highly refined guar gum or guar powder is used as a stiffener in soft ice cream, a stabilizer for cheeses, instant puddings and whipped cream substitutes. Low grade of guar gum is used in cloth and paper manufacture, oil well drilling muds, explosives and number of other industrial applications.

Apart from this, guar beans are normally used as a vegetable for human consumption and the crop is also grown for cattle feed and as a green manure crop.

The traditional uses of guar are as follows:

***a. Human Consumption***

- Immature pods are dried, salted and preserved for future use
- Immature pods are dried and fried like potato chips
- Green pods are cooked like French beans
- Mature seeds are used as an emergency pulse in time of drought

***b. Cattle Feed***

- Plants are cut and fed as green forage.
- Beans are boiled in a large kettle and fed to cattle a high protein source.

***c. Medicinal Purposes:***

- Plants are mashed, then mixed with oil and used as a poultice on cattle boils.
- Leaves are eaten to cure night blindness.
- Seeds are used as a chemotherapeutic agent against smallpox.
- Boiled guar seeds are used as poultices for the plague, enlarged livers, head swellings and on swellings due to broken bones.
- Seeds are used as laxative.

***d. Crop and Soil Improvement:***

- Plants are used as shade for ginger
- Guar commonly is used as a cover crop and green manure.

The uses of guar can be summarized as:

- ***Industrial uses:*** Oil well drilling, textiles printing, paper making, explosives, mining, tobacco, water treatment, fire-fighting, etc. These sectors consume 50-55 percent of guar gum.

- ***Food:*** Frozen foods, bakeries, dairy products, canned products, dressing, instant mixes, beverages, pet foods, etc., which consume 35-40% of gum.

- ***Pharmaceuticals:*** Diabetic treatment, laxative, slimming aids and ointments, tablet preparation, etc. consuming about 5% of total guar gum.

- ***Cosmetic and Miscellaneous:*** Hair Setting, Soaping and Shampoos, Lipsticks, Mosquito coils, etc. consuming about 5% of total guar gum.

## MARKET INFLUENCING FACTORS

- Changes in output/produce due to fluctuations in rainfall.
- Demand and supply mismatch
- Hoarding and black marketing
- Government policies
- Speculation

## RESEARCH METHODOLOGY

The objectives of the present research are:

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

The study uses secondary data collected from the website of NCDEX and websites related to Ministry of Agriculture, Government of India. The future contracts data since 1st January 2011 was used. The data for open, high, low & close price and the volumes for the future contracts formed the basis of the study. The data was tabulated and moving averages were calculated. Technical Analysis, which is based on past price trends, volumes and open interest of the commodity and has been highly effective in forecasting the prices, has been used for the study. It is one of the most relied tools across the World for forecasting prices of stocks, commodities and currencies. The study aims to forecast guarseed prices to a certain degree of reliability, based on technical analysis, to help those involved in the trading of this commodity. The single most important aspect in trading is to identify the price trend 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 (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 were prepared to identify the cyclical trend and the forecasts were made on the basis of these price trends.

## DATA ANALYSIS AND INTERPRETATION

Fig 4, 5 and 6 shows the daily price and moving average price charts of Guarseed with volume and open interest and Fig 7, 8 and 9 show the Candlestick Chart pattern for Guarseed Futures.

As seen from the charts, the Guarseed prices have been in a continuous gradual uptrend, starting from about Rs.1800 levels in 2010 and rising to about Rs. 3400 – Rs. 3500 levels by June 2011. A sudden rally in Guarseed prices to about Rs. 4800 levels was observed in July 2011 on the news of

high export demand and poor monsoon forecast. Thereafter, the prices went into lateral consolidation in the range of Rs. 3900 – Rs. 4800 from July 2011 to November 2011.

After November 2011, the Guarseed prices went berserk on extreme speculative activity and the prices shot up from Rs. 4000 to Rs. 30000 in a span of 4 months. Guarseed prices went beyond all fundamental and technical ranges, while the 75DMA and 300DMA stood at about Rs. 23000 and Rs. 15800 respectively.

The speculative activity in Guarseed and Guargum trading by operators led to the price escalation. Neither exchange nor Government could take adequate steps to control this speculation. The inadequate control mechanism of exchange and the Government failure in timely intervention led to the extreme situation. This uncontrolled speculation led to heavy losses for many traders and investors across the country. Finally, to control the extreme price rally and speculative activity, Government on March 22, 2012, announced to ban all futures trading in Guarseed and Guargum till further notice. The trading in these commodities was banned effective March 27, 2012. All positions were compulsorily squared off at the prevailing rates of about Rs. 25000 – Rs. 28000.

The trading in these commodities remained banned for about 14 months, when in May 2013, Government permitted to re-launch future trading in Guar products. Guarseed contracts were re-launched on May 14, 2013 at prices of about Rs. 10000.

Guarseed prices came down to about Rs. 7000 levels by July 2013 while the next contract of October 2013 traded at Rs. 5000. The October contract, after hitting a low of Rs. 3960 in mid-August, bounced back to Rs. 8000 by mid-September and retracted back to about Rs. 5000 by October 2013. Since, October 2013, the Guarseed prices moved laterally in range of Rs. 3950 – 6500 levels, till October 2014.

In mid-October 2014, it finally gave a bearish signal, with the daily prices falling below 75DMA at about Rs. 5500 levels. The bearish trend was confirmed further as prices went below 300DMA at Rs. 5180 levels in November 2014. Further weakening was visible as the prices broke below its long-term support of around Rs. 4000 in February 2015, first time after July 2011. The prices hit a low of Rs. 3522 in February 2015.

After hitting a low of about Rs. 3522, the prices moved sharply upwards with large volumes moving above 75DMA and 300 DMA to touch a high of Rs. 5400 in early May. The prices went into a lateral consolidation in the month of May taking support at 300 DMA levels of about Rs. 4880 and on the upside by the recent highs of Rs. 5400 levels. In early June, the prices again fell back below 300 DMA and further below 75DMA, showing lack of strength. The prices have once again broken upwards from 75DMA on June 25, 2015 with large volumes, showing strength.

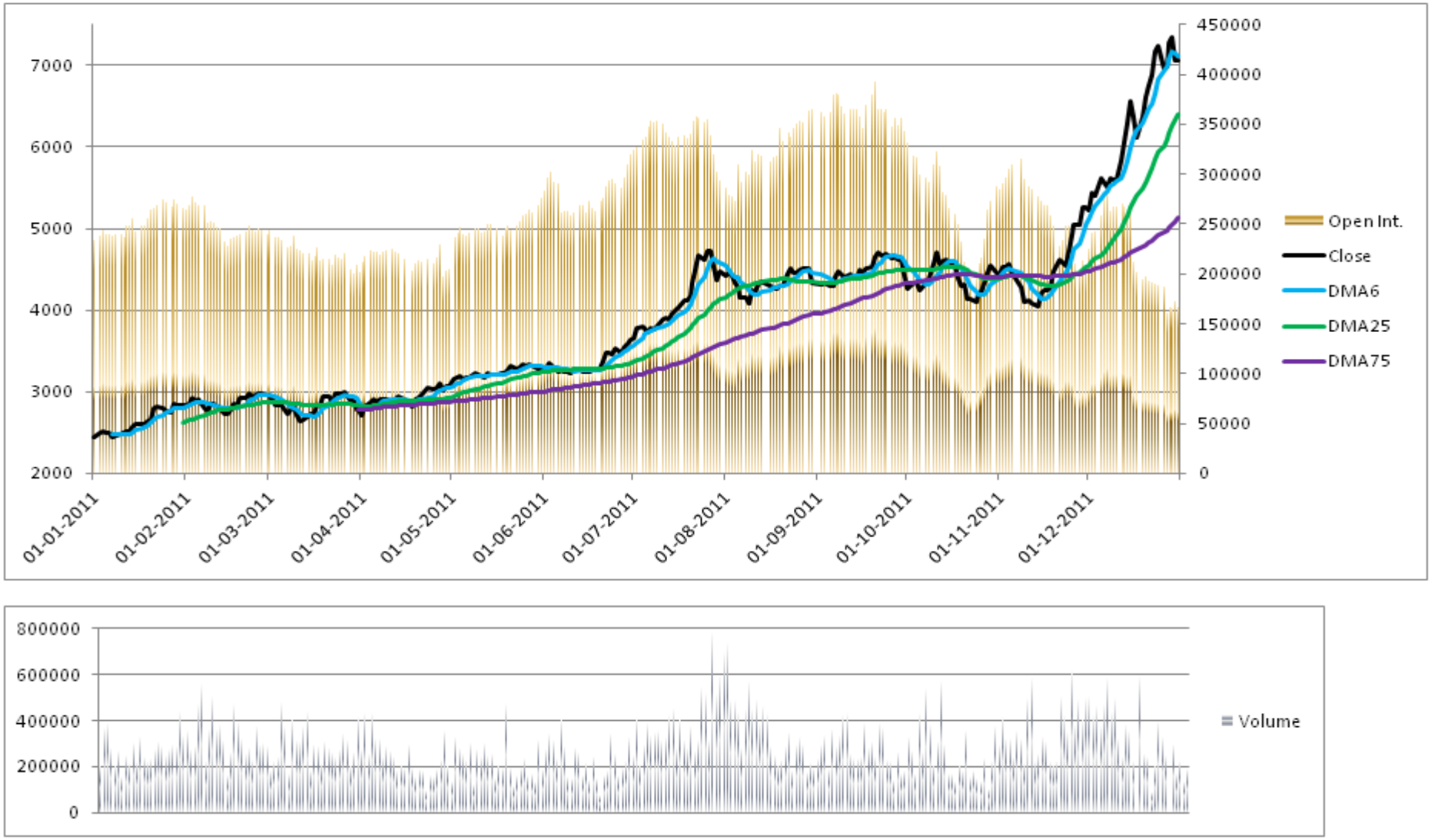



**Fig.4: Daily and Moving Average Chart of Guarseed for period of Jan. 1, 2011 to Dec. 31, 2011 with Volume & Open Interest**

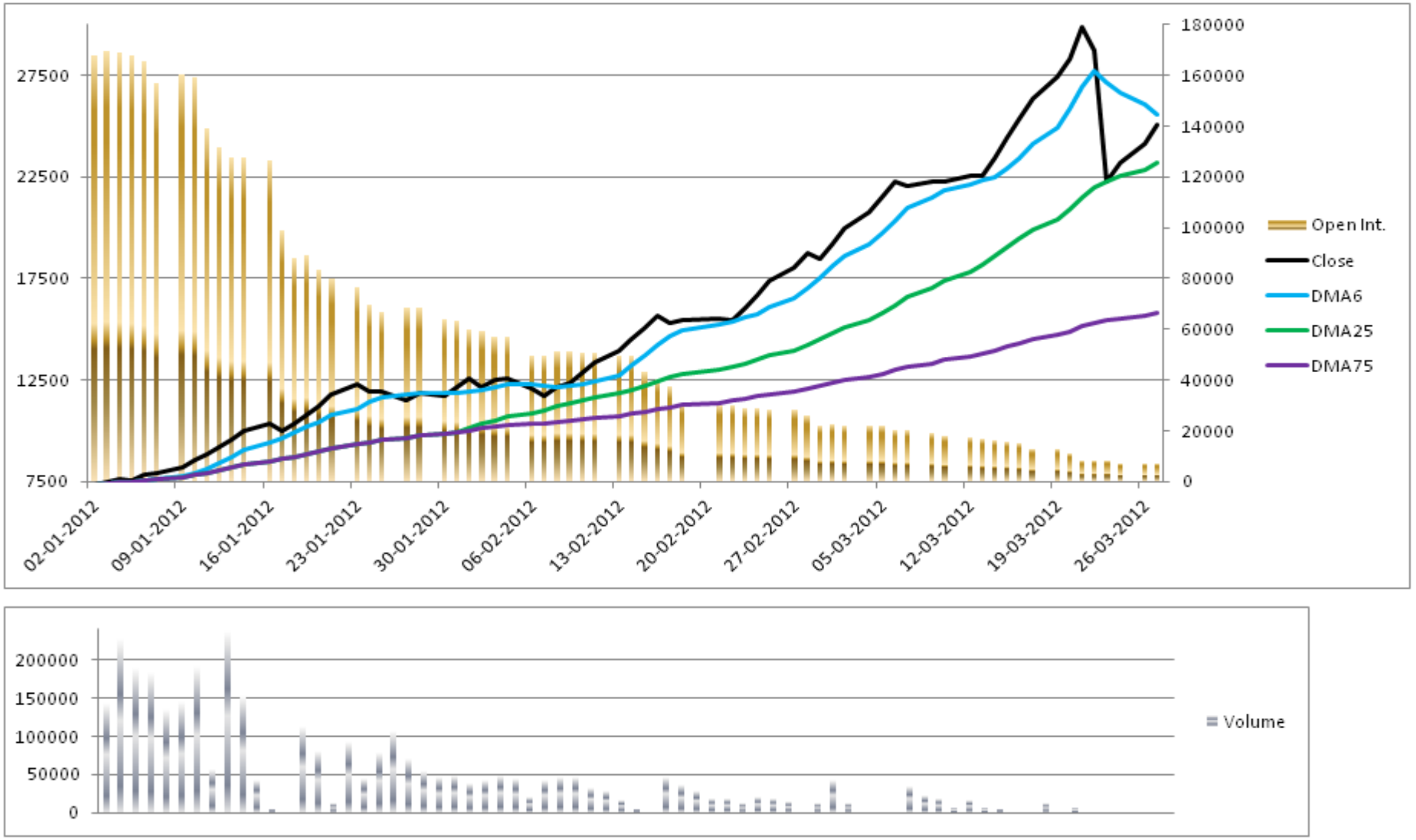



**Fig. 5: Daily and Moving Average Chart of Guarseed for period of Jan. 1, 2012 to Mar. 27, 2012 with Volume & Open Interest**

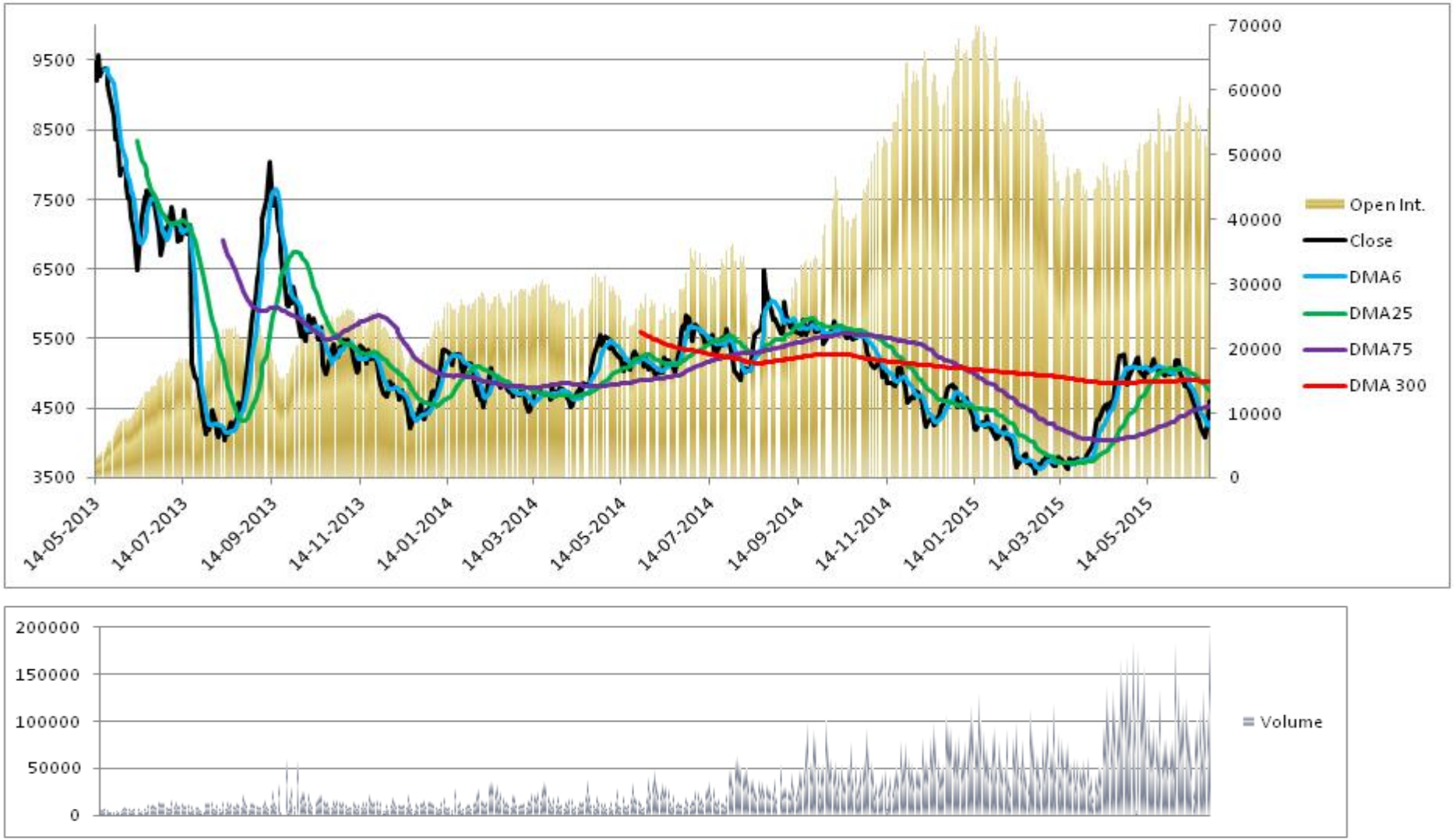



**Fig. 6: Daily and Moving Average Chart of Guarseed for period of May 14, 2013 to June 25, 2015 with Volume & Open Interest**

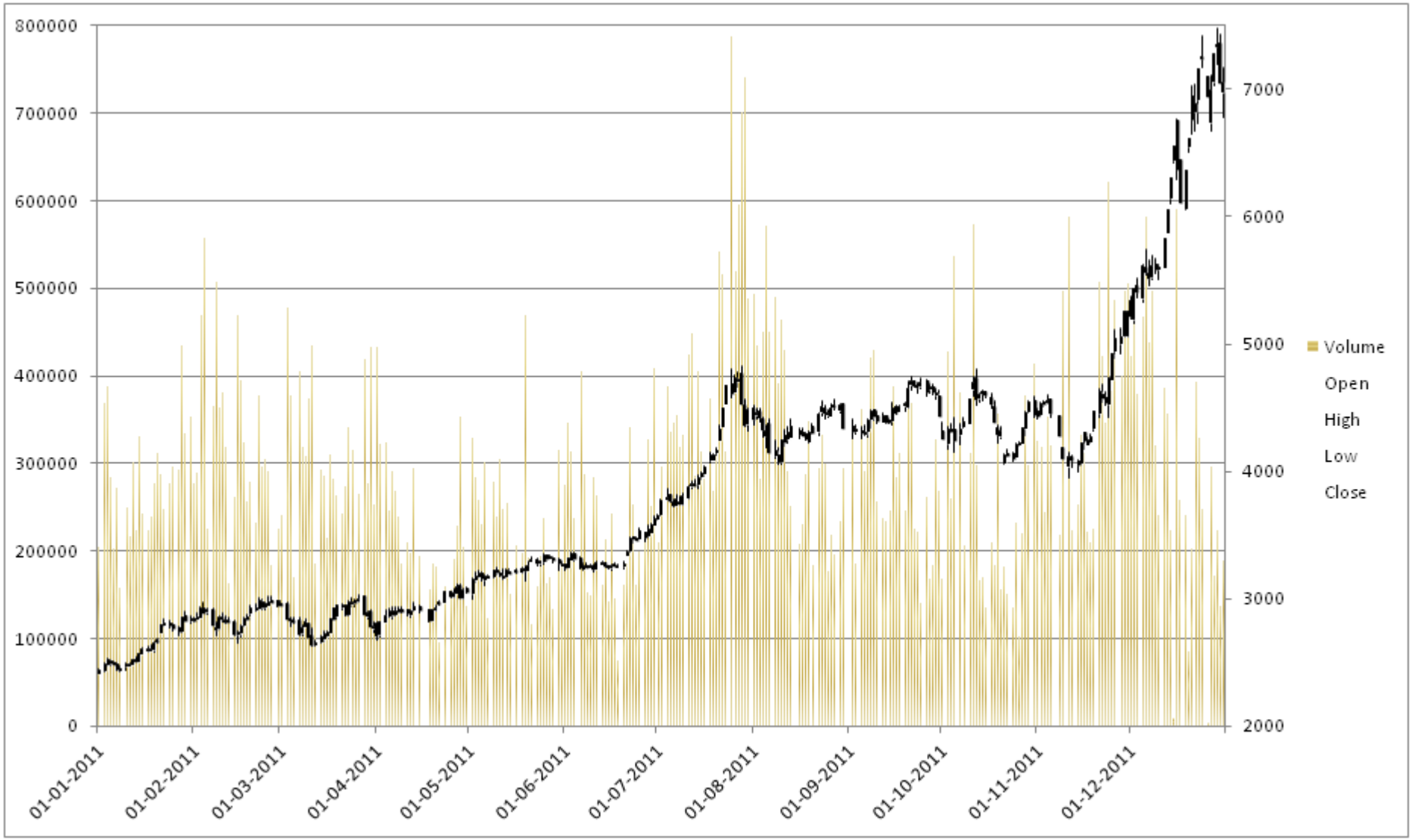



**Fig. 7: Candlestick Chart of Guarseed for period of Jan. 1, 2011 to Dec. 31, 2011**

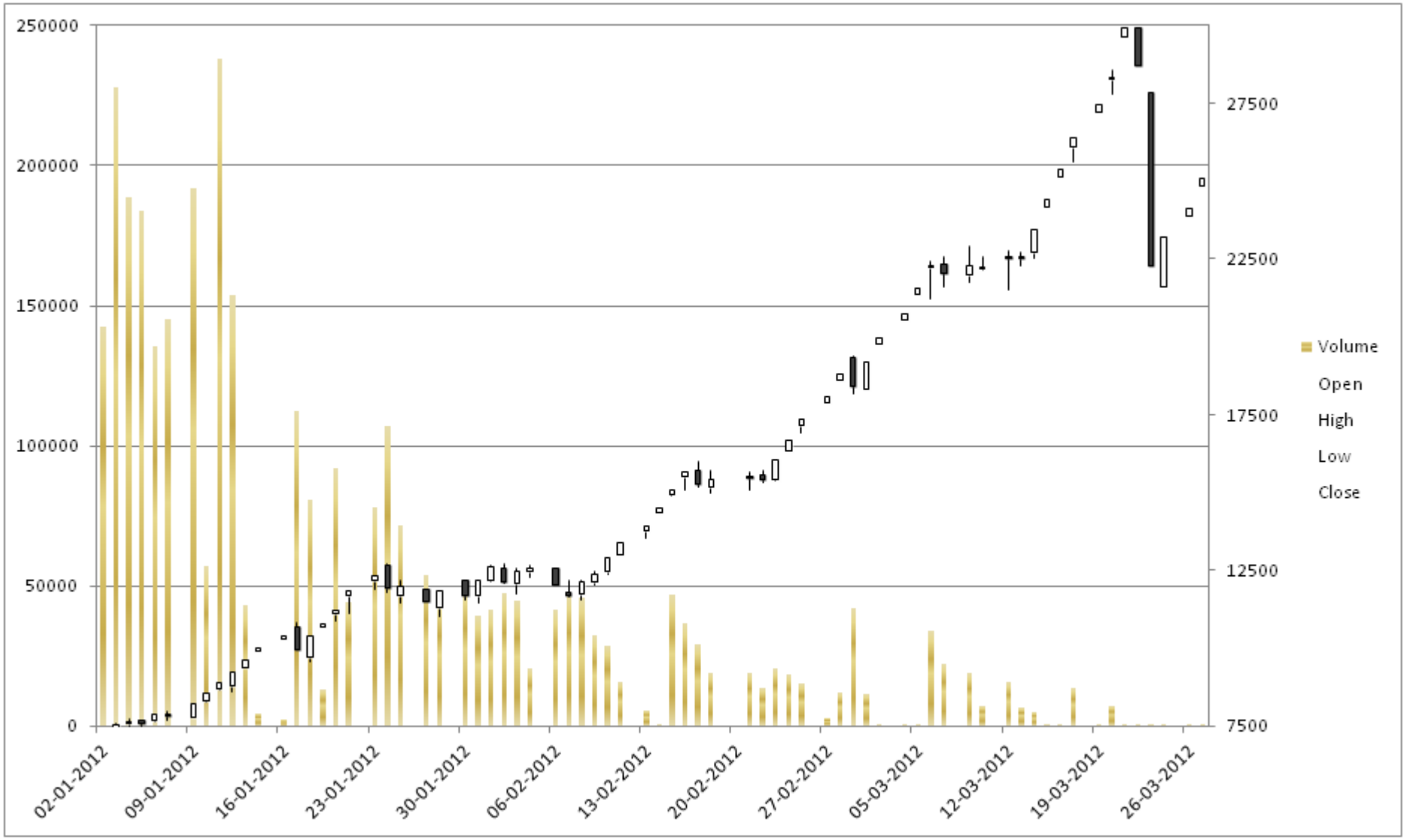



**Fig. 8: Candlestick Chart of Guarseed for period of Jan. 1, 2012 to Mar. 27, 2012**

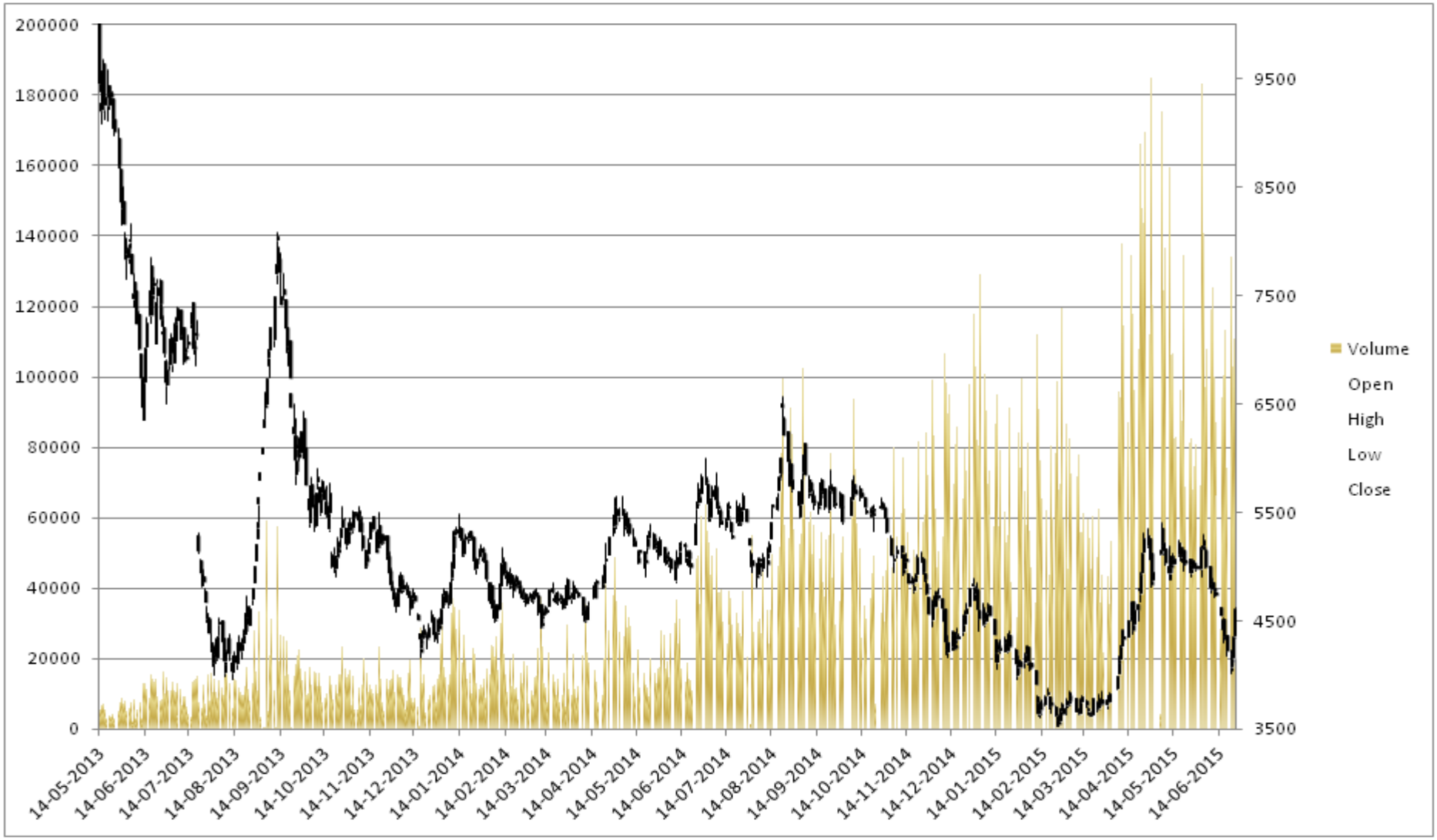



**Fig. 9: Candlestick Chart of Guarseed for period of May 14, 2013 to June 25, 2015**

## CONCLUSION

In the recent past, Guarseed prices have once again shown signs of strength, moving above the crucial levels with large volumes. The breakout above the 75 DMA, i.e. Rs. 4529 levels seems crucial indicating the start of a bull phase. Guarseed prices are likely to move upwards in the coming months. The bull phase will be further confirmed as the Guarseed prices move above the 300 DMA levels, i.e. Rs. 4885 levels by end-June and early-July.

The sowing season for Guarseed is about to start but owing to high demand, expectation of an extremely good monsoon (as the pod yield decreases with heavy rainfall), crop arrivals expected only by November to December and dependent on the vagaries of monsoon, the bullish phase in Guarseed prices is likely to sustain and gain further momentum.

In the coming months, Guarseed prices are likely to move upwards to the crucial levels of Rs. 6500 by September and further to about Rs. 9500 – Rs. 10500 levels by year end.

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