



COMMODITY PROFILE – GUAR SEED

Guar, or cluster bean, (*Cyamopsis tetragonoloba* (L.) is a drought-tolerant annual legume crop. The Guar legume plant is an agricultural product grown in arid zones of west and North West India and parts of Pakistan. The seeds of the guar plant have three parts i.e. the germ, the endosperm and the husk. The popular guar gum, which is used in mining, petroleum drilling and textile manufacturing sectors, is obtained from the endosperm of the seed of the plant.

Guar Seed Extracts

Guar seed consists of three parts, germ (43-47%), endosperm (35-42%) and the husk (14-17%). Extracts from Guar seed include Guar Split/Gum (29%), Korma (30-35%) and Churi (35-40%). Guar split/gum is further refined to Guar powder. The by-product of Guar Gum industry consisting of the outer seed coat and germ material is called guar meal. The Guar meal after gum Extraction is a potential source of protein and contains about 42% crude protein, which is one and a half times more than the level of protein in guar seed.

Guar gum & Splits

Approximately 90% of total Guar produce is used for production of Guar Gum and rest is used for culinary purposes and cattle feed etc. Guar gum, also called guaran, is a galactomanan. Guar gum is produced from the endosperm, which is about 35-42 percent of the guar seed mass, and mainly consists of gum Poly groups of monogalactoses (a type of sugar). Different grades are made based on purity and present viscosity of powers in water. Guar gum has almost 8 times the thickening power as corn starch, and is used in dressings, sauces, milk products, and baking mixes.

Guar meal

A by-product of the guar processing is guar meal (mixture of husks and germ), which is a potential source of protein. It is the major by-product that is obtained after seed processing in to gum. It is used both for cattle as well as poultry feeding. It can be used up to 10% in poultry diet and can replace up to 100% protein supplements such as groundnut oil cakes in ruminants.

Importance & Uses

Guar is an important source of nutrition to animals and humans and is consumed as a vegetable and cattle feed. Apart from being consumed as feed for animals or vegetable for human consumption, it is used as thickener in cosmetics, sauces and salad dressings. Industrially it is used in mining, petroleum drilling and textile manufacturing.

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 seeds
- Mature seeds are used as an emergency pulse in time of drought

Cattle feed

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

Medicinal purposes

- Leaves are eaten to cure night blindness.
- Seeds are used as a chemotherapeutic agent against smallpox.
- Seeds are used as laxative.

Industrial usage

- Guar gum is used in paper manufacturing, textiles, printing, cosmetics and pharmaceuticals.

- Guar gum is used as a thickening agent and additives in food products such as instant soups, sauces, processed meat products, baked goods, milk and cheese products, yoghurt and ice-creams.

Climate

Guar tolerates high temperatures and dry conditions and is adapted to arid and semi-arid climates. When moisture is limited, the plant stops growing but doesn't die. While intermittent growth helps the plant survive drought, it also delays maturity. Guar responds to irrigation during dry periods. It is grown without irrigation in areas with 10 to 40 in. of annual rainfall. Excessive rain or humidity after maturity causes the seeds to turn black and shrivel, reducing their quality and marketability.

Guar Seed Seasonality

Guar seed is grown as a kharif crop in India. The crop is generally sown after the monsoon rainfall in the second half of July to early August and is harvested in late October to early November. The Guar is a naturally rain fed crop and is grown without irrigation in areas with 10 to 40 in. of annual rainfall. Excessive rain or humidity after maturity causes the beans to turn black and shrivel, reducing their quality and marketability.

Sowing Season: July-August

Harvesting Season: October-November

Peak Arrivals Season: November-January

The peak arrival season begins from the month of November and extends up to the month of January.

Global Scenario

India is the major producer of guar seed and gum, making up 80-85 per cent of the total global supply. Pakistan, Sudan and parts of USA are the other major Guar growing countries. World market for Guar gum is estimated to be around 150,000 tons/ year, 70% of which is produced by India & Pakistan.

Global Demand Scenario

The consumption pattern of guar seeds is largely influenced by the demands from the petroleum industry of United States of America and the oil fields in the Middle East as the derivative products of these seeds are quite useful in the petroleum drilling industries. The USA is the largest consumer with an annual consumption of 70,000 tonnes of guar & its derivatives. Germany & China account for about 24 per cent of global consumption together.

The major importing countries for guar and its derivatives are Canada, China, Chile, Australia and USA.

Global Supply Scenario

India dominates the production and trade in guar and its derivatives though it is also successfully grown in Pakistan, USA, South Africa, Brazil, Zaire and Sudan. The world's total production of guar seed hovers around 10-15 lakh tonnes. World market for guar gum is estimated to be around 2.0-2.5 lakh tones per year.

India is also the world leader in the exports of guar and its derivatives followed by Pakistan. The major countries exports guar gums are India followed by Pakistan, USA and Italy.

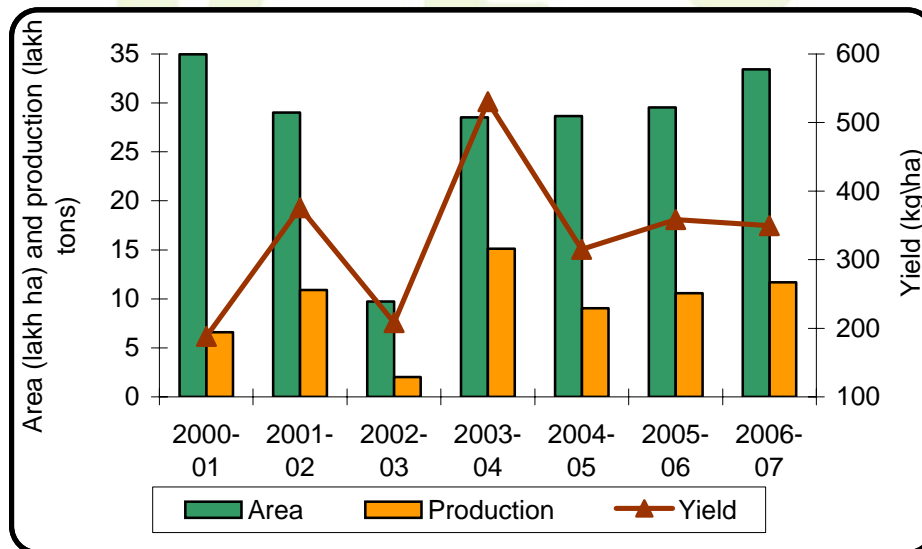
Domestic Scenario

India is the world's largest producer of guar in the world, which contributes to 80% of the total production. The average production of Guar seed in the country is 7-8 lakh tonnes and fluctuates largely from year to year based on rainfall pattern. India is also the largest producer of guar gum products.

Guar seed production has declined to 8.5-9 lt in 2008-09 against 10.5-11 lt in 2007-08. Carry overstocks of last year are around 2.5-3 lt. Thus, total supplies for 2008-09 stands at about 12 lt in the current crop season between October 2008 and September 2009.

Area, Production and Yield of Guar Seed in India

Fig. 1: Area, Production and Yield of Guar Seed



Source: Department of Agriculture

The acreage of guar seed in India averaged at 27.70 lakh hectares for the period of 7 years (2000-01 to 2006-07). In 2002-03, the acreage of guar seed was lower. Thereafter, there has been considerable increase in the area covered under guar. The average production for the period of 7 years (2000-01 to 2006-07) was 9.4 lakh tons. The production of guar seed is

highly fluctuating over the years. The production was at its peak in 2003-04 with 15.13 lakh tons. The level of yield is fluctuating much over the years. It has averaged at 332 kg per hectare for the period of 7 years (2000-01 to 2006-07). Since 2004-05 till 2006-07, the yield was found to be almost steady.

Major Guar Seed producing States & Trading Centers

Guar seed is grown in the northwestern parts of country encompassing states of Rajasthan (Churu, Nagaur, Banner, Sikar, Jodhpur, Ganganagar, Sirohi, Dausa, Bikaner, Hanumangarh and Jhunjhunu), Gujarat (Kutch, Banaskantha, parts of Mehsana, Sabarkantha, Vadodara and Ahmedabad), Haryana (Bhiwani, Gurgaon, Mahendragrh and Rewari) and Punjab (Bhatinda, Ferozpur, Muktsar and Mansa).

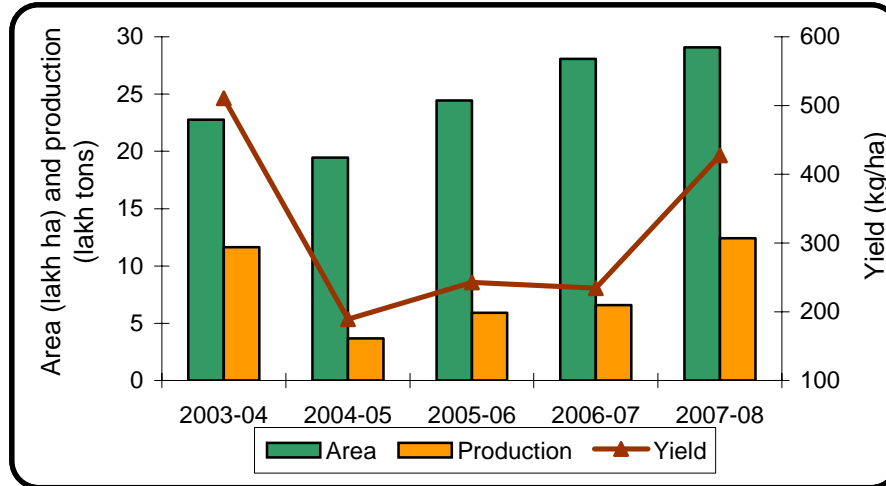
Rajasthan is the largest growing state of Guar seed in the country accounting for 70% of total production. The other producers are Gujarat, Haryana, Punjab, Uttar Pradesh and Madhya Pradesh.

Table 1: Guar Seed Major Producing States & their Trading Centers

State	Major Trading Centers
Rajasthan	Hanumangarh, Sriganganagar, Bikaner, Jodhpur, Sikar, Jaipur, Jaisalmer, Barmer and Nagaur
Gujarat	Kutch, Banaskanta, Sabarkanta, Mehsana and Patan
Haryana	Adampur, Ellenabad, Fatehbad, Hisar, Sirsa and Bhiwani
Punjab	Bhatinda

Area, Production & Yield of Guar Seed in Major States

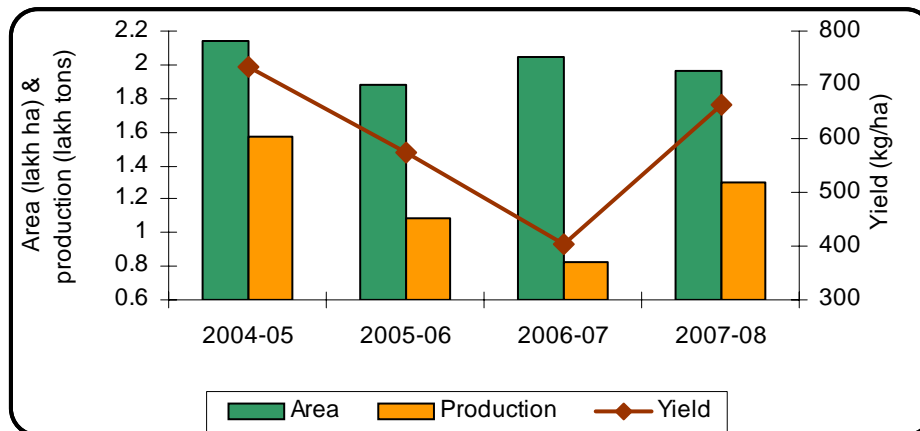
Fig. 2: Area, Production and Yield of Guar Seed in Rajasthan



Source: Department of Agriculture

Rajasthan is the major producing state of guar seed in India. The area under guar seed in the state is averaged at 24.76 lakh hectares for the period of 5 years from 2003-04 to 2007-08. The acreage of guar seed has been increasing for the last 3 years. In 2007-08, the acreage was at its peak at 29.09 lakh hectares. The average production for the period of 5 years from 2003-04 to 2007-08 has been 8.05 lakh tons. In 2007-08, the production was at its peak at 12.4 lakh tons. The average yield for the period of 5 years from 2003-04 to 2007-08 was 321 kg per hectare.

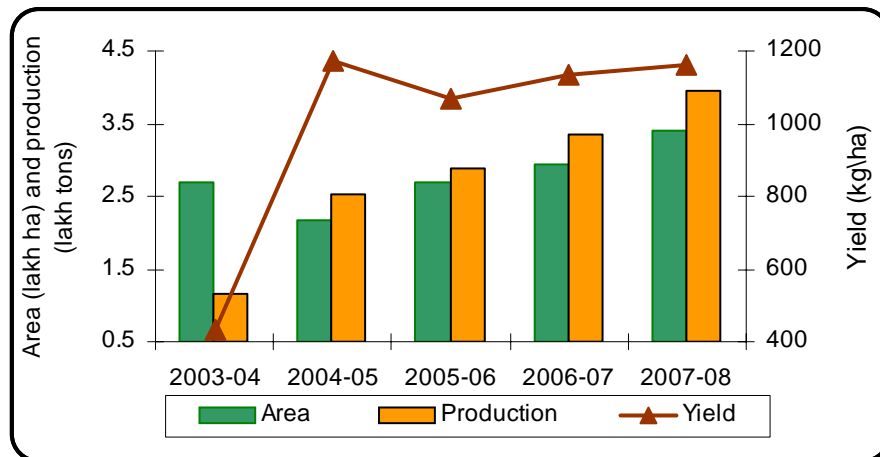
Fig. 3: Area, Production and Yield of Guar Seed in Gujarat



Source: Department of Agriculture

The acreage under guar seed and production in Gujarat averaged at 2 lakh hectares and 1.19 lakh tons respectively for the period of 4 years from 2004-05 to 2007-08. In 2004-05, the area covered under guar was at its peak at 2.14 lakh hectares. There was a declining trend in the production of guar seed from 2004-05 to 2006-07 and then it has recovered in 2007-08. The production was at its high in 2004-05 at 1.57 lakh tons. There has been a sharp decline in the yield of guar seed from 2004-05 to 2006-07. The yield was at its high in 2004-05 at 733 kgs per hectare. The average yield for the period of 4 years from 2004-05 to 2007-08 stood at 593 kgs per hectare.

Fig. 4: Area, Production and Yield of Guar Seed in Haryana



Source: Department of Agriculture

The average area under guar seed and production in Haryana for the period of 5 years from 2003-04 to 2007-08 were 2.78 lakh hectares and 2.77 lakh tons respectively. In 2007-08, the area was at its peak at 3.40 lakh hectares. In the state, there has been a considerable increase in the production over the period of 5 years from 2003-04 to 2007-08. The production was at its high in 2007-08 at 3.95 lakh tons. The level of yield since 2004-05 was almost steady, while it has recorded lowest level of 435 kgs/ ha in 2003-04. The average yield was 994 kgs / ha for the period of five years from 2003-04 to 2007-08.

Exports from India

India is the leading exporter of guar seeds and guar gum with a share of about 80% in the global demand. The major importing countries of Indian guar products are EU, USA, Germany, France, United Kingdom, South Africa, Netherlands, Italy and Japan.

Table 2: Guar Seed Exports from India (Qty in million kgs and value in million USD)

Export Particulars	2005-06		2006-07		2007-08	
	Qty	Value	Qty	Value	Qty	Value
Guar seed	0.36	0.19	1.29	1.25	0.01	0.01
Guar gum refined splits	49.38	53.76	41.27	42.88	63.71	74.66
Guar gum treated and pulverized	134.19	180.82	147.85	206.67	140.43	200.29
Guar meal	3.15	2.44	0.19	0.19	7.03	3.29

Source: DGCIS Annual Export

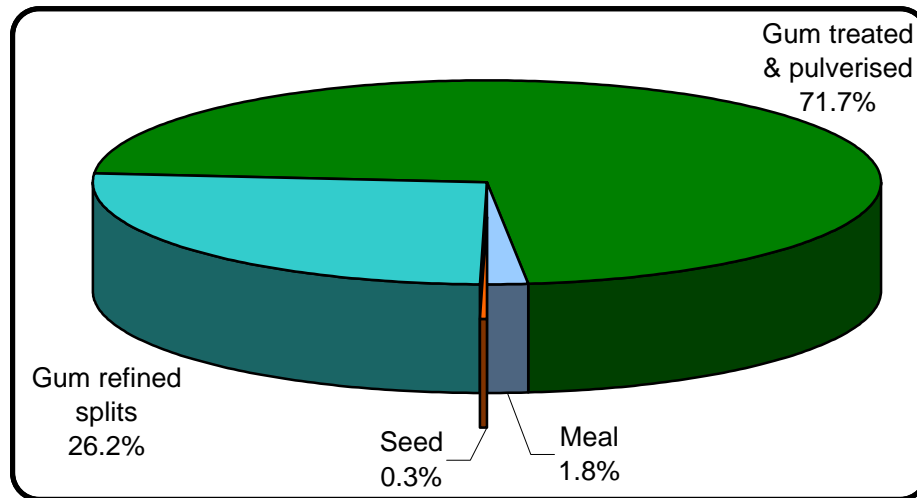
Guar export from India is increasing over the years. It has averaged at USD 255 million from 2005-06 till 2007-08. It has recorded the level of USD 278 in 2007-08.

India exported 2.20 lakh tonnes (lt) of guargum in 2007-08 against 2.40 lt shipped the previous year, a drop of 8 per cent largely due to weakness in the dollar. Even as the dollar gained strength against rupee in the current year, exports are likely to be affected by the economic slowdown and may decline by 10 per cent.

Composition of Guar Exports

There has been significant variation in the value of exports of various products of guar for the period 3 years from 2005-06 to 2007-08. Guar gum treated and pulverized is the major by-product that is exported by India with a share of about 71.7% in total exports. Guar gum refined split is the other major composition of exports with a share of about 26% in total exports.

Fig. 5: Composition of Guar Exports Avg. from 2005-06 to 2007-08 (Qty in mln kgs)



Source: Department of Commerce

The other major countries those supply to global market included Pakistan, USA, Italy, Morocco, Spain, France, Greece and Germany etc. In the major international markets, India has to compete with these countries.

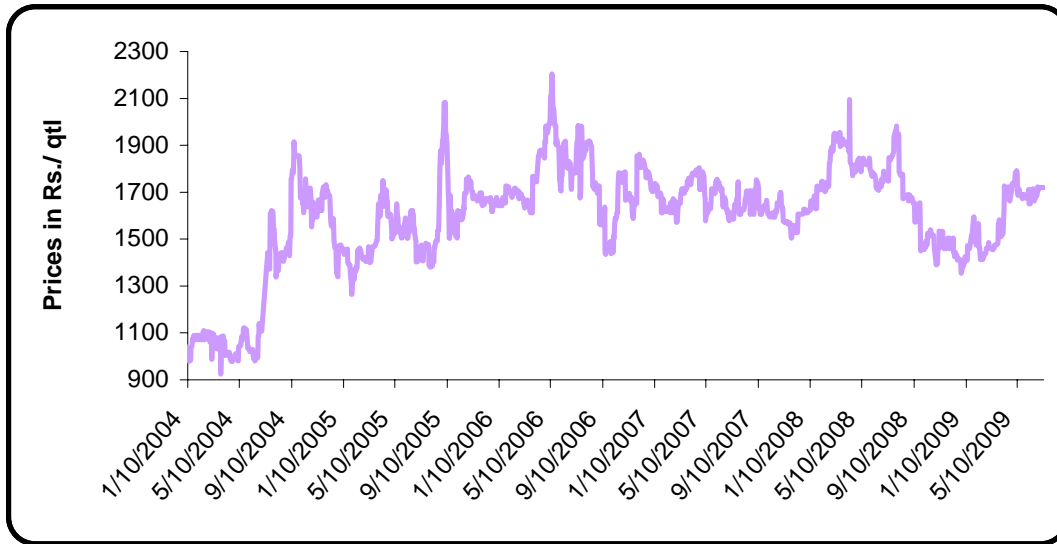
Guar Seed Prices

Guar being export oriented commodity its price behaviour in domestic market is largely determined by the overseas demand of guar products. Apart from the demand factor, a huge fluctuation in domestic production of guar seed also affects the prices to a great extent.

Generally, rainfall and prices have a negative correlation as production is largely dependant on the rainfall given the guar crop is largely grown as rainfed crop. The guar prices have shown a great degree of volatility over the years as the supplies of the commodity is quite erratic depending upon the monsoon conditions.

The price of guar seed peaks during the month of April on tight supply and strong demand. Normally, prices rule strong during April till September every year as it is lean supply season.

Fig. 6: Guar Seed Prices at Ganganagar (2004-09)



Source: AGMARKNET

Factors influencing Guar Seed Prices

- Production pattern, which is linked to monsoon rainfall
- Weather conditions and rainfall pattern
- Stocks in the hands of traders or producers
- Demand from overseas market for Guar & its derivatives products

References

- CRN India
- Department of Agriculture
- Department of Commerce
- AGMARKNET