

**NATIONAL MULTI-COMMODITY
EXCHANGE OF INDIA LIMITED**

NMCE

Trade with the Pioneer
National Multi-Commodity Exchange of India Ltd.

Report on Guar seed



4th Floor H. K. House,
B/h Jivabhai Chambers, Ashram Road,
Ahmedabad, Gujarat 380 009 INDIA
Phone: 91-79-4008 6039 Fax: 91-79-4008-6040
Email: contact@nmce.com URL: www.nmce.com

Table of Contents

| | |
|---|----|
| Introduction | 3 |
| Growing Area | 3 |
| Cropping Season | 3 |
| Production..... | 4 |
| Guar seed Production..... | 4 |
| International scenario | 5 |
| Indian scenario | 6 |
| About Guar Gum | 6 |
| Guar gum derivatives..... | 7 |
| Demand (%) from user-industries in major countries..... | 7 |
| Production of guar seeds | 8 |
| Uses | 10 |

Guar seed

Introduction

Guar or cluster bean is believed to have originated in Africa but is been grown throughout southern Asia since ancient times as a vegetable and fodder crop. Guar has been cultivated in India and Pakistan for ages for use of its tender pods as fresh vegetables and other parts of the plants to be used as cattle feed. The plant is extremely drought-resistant, being able to absorb efficiently all ground water. It grows therefore easily in those semi-arid regions where less hardy crops perish. The major world supplier of guar seed are India, Pakistan and United States.

Growing Area

Guar is a crop of semi arid–sub tropical areas spread over the North and North West of India and East and South East of Pakistan. Guar is grown in arid zones of Rajasthan, some parts of Gujarat, Harayana, Madhya Pradesh. Jodhpur City in the North Western state of Rajasthan in India is the most important processing centre of Guar Gum and contributes approximately 40% of the world's Guar Gum supply.

This crop is a drought-tolerant, warm-weather, deep-rooted summer-growing annual legume. It grows well in soils of low fertility in the arid and semi-arid areas of the tropics and subtropics where the rainfall is summer-dominant.

Cropping Season

In India, the sowing season for guar seed is end of July and it is harvested during November. It is usually 90 days crop.

Guar seed

Guar is a rain fed monsoon crop, which requires 8-15 inch of rain in 3-4 spell. 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. Then it requires plenty of sunshine and dry weather to come up really well. During harvesting period it again needs good sunshine in order to dry up and become usable for industries.

Production

Production of Guar is mainly concentrated in the arid region of Rajasthan, Gujarat, Haryana and some part of Punjab. Rajasthan contributes more than 70% in Guar production therefore industry based on Guar is also concentrated at Jodhpur and surroundings in Rajasthan.

| Year | Area - '000 Hectares | Production - '000 Tonnes | Yield - Kg/Hectare |
|---------|-------------------------|-----------------------------|-----------------------|
| 1997-98 | 2301.2 | 962.7 | 418 |
| 1998-99 | 1922.1 | 488.5 | 254 |
| 1999-00 | 2933.9 | 375.1 | 128 |
| 2000-01 | 3497.4 | 658.8 | 188 |
| 2001-02 | 2903.1 | 1089.9 | 375 |
| 2002-03 | 974.1 | 202.6 | 208 |
| 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 |

Guar seed Production

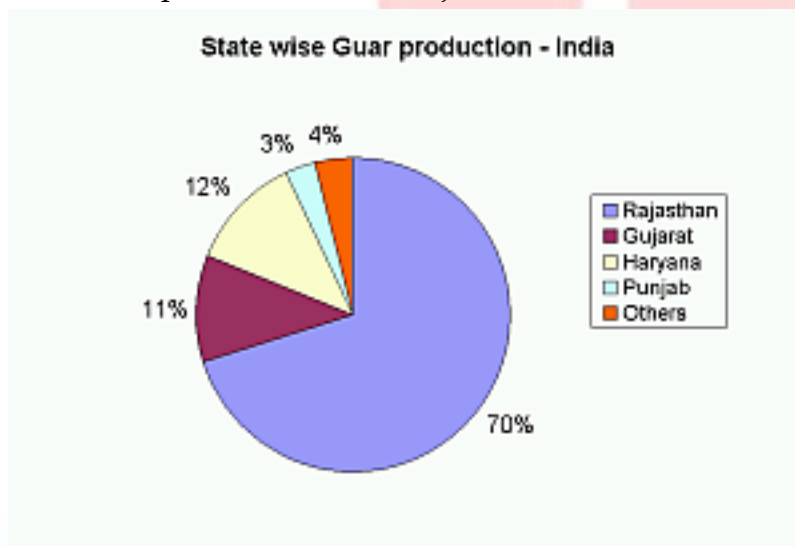
The average production of Guar seed in the country is 10-11 lakh MT and fluctuates largely from year-to-year based on rainfall pattern. Since guar seed is largely grown and traded in Rajasthan and minor crop at national level, this state has been taken as reference for all the studies on Guar seed. The production fluctuates from just 2 lakh tones to 15 lakh tones. The annual production is directly related to the rainfall and yield except during 2002-03, the area declined to

Guar seed

9.74 lakh ha even though the country had received good rainfall during 2002.

Last five years production data of Guar given as under:

Rajasthan is a leading producer of guar accounting for about 75% of all India's output. The districts of Bikaner, Churu, Ganganagar, Hanumangarh, Jodhpur, Barmer, Nagaur, Pali and Jaisalmer account for 80% of the total production in Rajasthan.



Indian Guar Gum is exported every year to the tune of 1 to 1.15 lakh MT to various countries and domestic consumption is estimated somehow 20 to 30 thousand MT per annum. It is evident from the above that the trend of production has been erratic due to heavy dependence on monsoon. This has direct and corresponding effect in the price of Guar and Guar Gum. We have witnessed fluctuation in prices from Rs 850 / quintal to Rs 3200 / quintal during the last 4-5 years. Guar being pest resistant and longer self life is the fittest commodity for hedging so that risk of price volatility can be managed and supplement stability to the market.

International scenario

India is the largest producer of Guar seed in the world, constitute about 80% of the total production. Pakistan, USA, South Africa, Malawi, Zaire and Sudan are other major producing countries. World market for guar gum is estimated to be around 150,000

Guar seed

tons/year, 70% of which is produced by India and Pakistan. The USA is the largest consumer of guar gum with an annual consumption of 45,000 tonnes which represents 25% of world trade. Germany & Japan consume another 23% between them with the UK, Denmark and the Netherlands combining take further 22% of world trade. The world guar market is a mature one and increasing steadily (>2% per year). The area of growth is in Asia and South America as standards of living increase resulting in the increased consumption of processed food.

Indian scenario

India is the world leader in production (80% of world production) of guar, which is grown in the northwestern parts of country encompassing states of Rajasthan (Jodhpur, Ganganagar, Sirohi, Dausa, Bikaner, Hanumangarh and Jhunjhunu districts), Gujarat and Haryana and Punjab. Rajasthan is the largest growing state of Guar seed in the country accounting about 70 percent of total production and remaining is in Gujarath and Haryana. Guar seed in India is monsoon depended crop cultivated under rainfall. In some parts of country like Ganganagar in Rajasthan, Haryana guar seed in cultivated under irrigation sources. Sowing of Guar seed starts in India in July and rainfall of 6-9 inch during this period is very vital for the crop. In Pakistan, before 90s, about 80% of the guar was grown under irrigated conditions therefore per hectare yields were higher. The major markets for Guar seed are Jodhpur, Bikaner, Ganganagar, Jaipur, Alwar etc.

The global market for Guar is estimated to about Rs. 1000 crore per annum. About 75% of guar production is exported. There is huge demand for guar derivatives and these have extensive use in a number of industries such as petroleum, Textile, Paper, Food and Pharmaceuticals etc

About Guar Gum

Guar seed

Guar gum is a white to yellowish white powder. It is nearly odorless. It is extracted from the seed. Guar Gum Refined Splits (Endosperm) is the sole raw material for processing Guar Gum Powder for Pharmaceutical and Food Grade material. Guar gum is an emulsifier, thickener, and stabilizer approved for use in a wide range of foods, cosmetics, and pharmaceuticals. It is sold as a white to yellowish odorless powder, which is available in different viscosities and different granulometries depending on the desired viscosity. Its thickness is a function of temperature, time, and concentration.

Guar gum derivatives

Guar splits and gum powder are further processed to make various derivatives as per requirements of end-user industry such as petroleum, Textile, Paper, Food and Pharmaceuticals etc.

The world market for guar gum and derivatives is estimated to be about US\$ 400 million in 1998-99 and growing at 12% annually as newer applications for diverse industries like pharmaceutical and food are being discovered.

The global consumption of guar gum is estimated at about 1.5 lakh MT per annum. The major consumers are USA (50,000 MT), Germany (30,000 MT) and India (25,000 MT). USA and Europe are the two key markets, which accounts for about 80% of world imports of guar gum and guar splits. USA alone accounts for about 37% of guar gum exports from India followed by UK (16%) and Germany (15%). Other important countries for guar gum are HongKong, Italy, Netherlands and Japan. It is estimated that about 30-35% of guar gum imported in European countries is re-exported to other European countries after derivative manufacturing. R-export from USA is about 10% of total imports to countries like Canada and Mexico.

Demand (%) from user-industries in major countries

Guar seed

India and Pakistan are the only major exporters of guar splits and guar gum powder. Total exports of guar products were around 130,000 MT in 1997-98 from these two countries. The global market for guar is estimated to be over 1000 crore and India dominates the world trade of guar gum and splits contributing about 70-80% of world exports while Pakistan accounts for the rest 20-30%. Total export of guar and guar products from India in value terms is Rs. 815 Crore for 1999-2000.

It is estimated that India exports about 75% of the total guar gum produced, while rest 25% is consumed in domestic market mainly in textile printing. Guar products are exported in three forms viz, guar gum powder, guar splits and guar meal. Out of the total export, about 63% is contributed by guar gum powder and remaining 36% is by guar splits whereas guar meal is negligible.

Production of guar seeds

The production of guar seed in the world is limited to India and Pakistan. Due to poor crop in Pakistan for last 3-4 consecutive years and unsuccessful attempts for cultivation of Guar in Sudan and some other African countries; India has a virtual monopoly over this crop. Total world production of guar seed is estimated at around 10 lakh MT. India and Pakistan, together accounts for more than 95% of world guar seed production.

The pattern of Guar production is quite erratic as it is cultivated on marginal land in rain fed areas. The total production during last 10 years have been ranging between 5 lakh – 9lakh tones annually. Within India Rajasthan is the major producer of Guar accounting for its three fourth of production. Other guar producing states are Haryana and Gujarat and some small quantities are produced in Punjab, M.P, U.P and Orrissa.

State wise production of guar gum in India

| <i>State</i> | <i>Production (lakh MT)</i> | <i>Percent</i> |
|------------------|---------------------------------|----------------|
| <i>Rajasthan</i> | <i>7.00</i> | <i>77</i> |

Guar seed

| | | |
|--------------------------|-------------|------------|
| <i>Haryana</i> | <i>1.00</i> | <i>11</i> |
| <i>Gujarat</i> | <i>1.00</i> | <i>11</i> |
| <i>Punjab and others</i> | <i>0.10</i> | <i>1</i> |
| Total | 9.10 | 100 |

Source: CMIE

Guar in Rajasthan

Rajasthan is the largest producer of guar gum in the country, accounting for about 80% of total area and about 77% of total seed production. It produces about 0.7 million MT of guar seed per annum from 1.99 million ha with effective productivity of about 370 kg/ha. The productivity in Rajasthan is poor as 98.5% area under guar cultivation is under rainfed conditions.

Strengths

Climatic conditions are suitable in Rajasthan for the production of Guar seeds as its water requirement is very low.

All India Coordinated Research Project on arid legume, Bikaner is working for the development of new improved varieties.

Central Arid Zone Research Institute (CAZRI) is situated at Jodhpur and Guar is one of the important crops on which R&D programmes is focused.

Jodhpur is the biggest trading centre for guar in India, as ICD for guar is located in Jodhpur. Other main centers are Bikaner and Barmer.

Rajasthan Infrastructure Agenda “2025” About 70% of installed guar processing capacity in India is in the state of Rajasthan.

Top exporters of guar and its derivatives are from Rajasthan.

Like mentioned earlier there is wide fluctuation in the production of Guar due to its dependences on rain. In the year 2000-01 there was considerable decline in production of guar in the state. The table below shows the district wise production of Guar in the state:

Guar seed

One advantageous property of guar gum is that it thickens without the application of heat. Guar Gum has the following properties, which make it useful in variety of applications.

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

[Granulometric → pertaining to distribution of grain sizes in sand etc.]

Uses

Guar, one of the most versatile seed, is rich in multiple properties and uses. Guar Seed is the basic Raw Material. The Guar Seed is processed and the following are the results:

Guar Seed → Guar Gum Refined Splits (Endosperm) → Guar By-products Churi & Korma for Cattle Feed.

After removal of the gum, the seed material can be used for stock feed as it has high protein content (35%), but the material.

Application of Guar Gum→

Guar Gum is generally used as an excellent and reasonable thickener and stabilizer in many aqueous systems.

The main uses are:

➤ Food:

▪ Bakery

One of the major applications for guar gum powder is the production of bread. Even small quantities of guar gum powder added to the dough increase the yield, give

Guar seed

greater resiliency, improve texture and give longer shelf life.

- **Dairy**

In this field guar gum is used as an excellent binder of water and a stabilizer. It is used in the production of ice-creams, sherbets, cheese, liquid milk products, and others.

- **Meat**

Guar can be used as lubricant and excellent binder for various meat products. It allows storing with less loss of weight and can decrease the filling time for cans.

- **Dressing and sauces**

Guar can be used as an excellent thickener to improve the stability and appearance of salad dressings, barbecue sauces, relishes, ketchups and others. It is quite compatible with highly acidic emulsions.

- **Beverages**

Guar can be used as stabilizer for chocolate drinks, fruit nectars, and juices.

- **Miscellaneous food applications**

- Dry soups, sweet dessert, canned fish in sauce, frozen food items and others.

- **Pharmaceutical and Cosmetics**

- Guar Gum can be used as a thickener for various cosmetics and pharmaceuticals. In compressed tablets Guar Gum can be used as a binder and disintegrator.

- Several studies have found significant decrease in cholesterol levels after administration of guar gum in human consumption.

- Industrial application of guar gum includes the **textile industry** where guar gum's excellent thickening properties are used for textile sizing, finishing and printing.
- In the **paper industry** Guar is used as an additive where it gives denser surface to the paper used in printing.

Guar seed

- In the **explosive industry** guar is mixed in Ammonium Nitrate, Nitroglycerine and Oil explosives, where it helps maintain the explosive properties of the product even in wet conditions.
- In the **food, pharmaceutical and cosmetics industry** Guar Gum is used as an effective binder, stabilizer, disintegrator and thickener.

