Report on Isabgul Seed

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Preface

Psyllium is the common name used for several members of the plant genus Plantago whose seeds are used commercially for the production of mucilage. The genus Plantago contains over 200 species. P. ovata and P. psyllium are produced commercially in several European countries, the former Soviet Union, Pakistan, and India. Plantago seed known commercially as black, French or Spanish psyllium is obtained from P. psyllium and P. arenaria. Seed produced from P. ovata is known in trading circles as white or blonde psyllium, Indian Plantago or Isabgul. Isabgul, the common name in India for P. ovata, comes from the Persian words "isap" and "ghol" that mean horse ear, which is descriptive of the shape of the seed. India dominates the world market in the production and export of psyllium. Psyllium research and field trials in the U.S. have been conducted mainly in Arizona and also in Washington.

Isabgul was a native of Persia, now grown in the western part of India. The main producing states are Gujarat, Rajasthan, MP & Harayana as a cash crop in the Mehsana, Patan and Banaskantha districts of north Gujarat. Presently, India is the largest producer as well as exporter of Isabgul and Psyllium husk in the world. It is also grown in Rajasthan, Madhya Pradesh, Haryana and Bihar states. The crop is mainly cultivated in Gujarat, Madhya Pradesh and Rajasthan. Among the above states Gujarat is the main hub for the production as well as processing. Gujarat and Rajasthan are reported to have an area of around 60,000 hectares under its cultivation. The climatic conditions of the Gujarat & Rajasthan are most suitable for the Isabgul cultivation; and both the states contribute almost equally in terms of production, but regarding further processing and manufacturing of husk, Gujarat is the leading state.

Isabgul is an important medicinal crop of India. It is a stemless herb. The husk is the rosy-white membranous covering of the seed, which constitutes the drug, mainly given as a safe laxative, particularly beneficial in habitual constipation, chronic diarrhea and dysentery. It is a 100% natural product. It is a soluble fiber (is viscous and forms gel in water). The soluble fiber comes from the dried husk of the psyllium seed. That is, psyllium husk is the cleaned dried outer coating of the Psyllium Seed.
Isabgul seed

Uses

Recent interest in psyllium has arisen primarily due to its use in high fiber breakfast cereals and from claims that these high fiber cereals containing psyllium are effective in reducing cholesterol. Several studies point to a cholesterol reduction attributed to a diet that includes dietary fiber such as psyllium. Research reported in The American Journal of Clinical Nutrition concludes that the use of soluble-fiber cereals is an effective and well tolerated part of a prudent diet for the treatment of mild to moderate hypercholesterolemia. Research also indicates that psyllium incorporated into food products is more effective at reducing blood glucose response than use of a soluble fiber supplement that is separate from the food. Although the cholesterol reducing properties and glycemic response properties of psyllium containing foods are fairly well documented, the effect of long term inclusion of psyllium in the diet has not been determined. Cases of allergic reaction to psyllium containing cereal have been documented.

Psyllium is produced mainly for its mucilage content, which is highest in P. ovata. Mucilage describes a group of clear, colorless, gelling agents derived from plants. The mucilage obtained from psyllium comes from the seed coat. Mucilage is obtained by mechanical milling/grinding of the outer layer of the seed. Mucilage yield amounts to approximately 25% or more (by weight) of the total seed yield. Plantago seed mucilage is often referred to as husk or psyllium husk. The milled seed mucilage is a white fibrous material that is hydrophilic (water-loving). Upon absorbing water the clear colorless mucilaginous gel that forms increases in volume by ten-fold or more. Psyllium is mainly used as a dietary fiber, which is not digested by action in the small intestine. The purely mechanical action of psyllium mucilage absorbs excess water while stimulating normal bowel elimination. Although its main use has been as a laxative, it is more appropriately termed a true dietary fiber.

Psyllium mucilage is also used as a natural dietary fiber for animals. The dehusked seed that remains after the seed coat is milled off is rich in starch and fatty acids and is used in India as chicken feed and as cattle feed.
Isabgul seed

Psyllium mucilage possesses several other desirable properties. As a thickener, it has been used in ice cream and frozen deserts. A 1.5% weight/volume ratio of psyllium mucilage exhibits binding properties that are superior to a 10% weight/volume ratio of starch mucilage. The viscosity of psyllium mucilage dispersions is relatively unaffected between temperatures of 68 to 122°F, by pH from 2 to 10 and by salt (sodium chloride) concentrations up to 0.15 M. These properties in combination with psyllium’s natural fiber characteristic may lead to increased use by the food processing industry. Technical grade psyllium has been used as a hydrocolloidal agent to improve water retention for newly seeded grass areas and to improve transplanting success with woody plants.

Climatic Conditions and Harvesting

Isabgul is the highly environmental sensitive crop. Its cultivation requires certain temperature, dry atmosphere, clear sky etc. More specifically, it requires a cool climate and dry sunny weather during maturation, even a mild dew, cloudy weather or light showers cause seed shading. 20oC-25oC temperature is required for seed germination, whereas at the time of maturation it requires 30oC -35oC temperature. It requires 50 -125 cm annual rainfall.

The Soil

Isabgul grows best on light, well drained, sandy loams. The nutrient requirements of the crop are low. In North Gujarat, the soil tends to be low in nitrogen and phosphorus and high in potash with a pH between 7.2 and 7.9. Nitrogen trials under these conditions have shown a maximum seed yield response with the addition of 20 lb/acre of nitrogen. The fields are generally irrigated prior to seeding to achieve ideal soil moisture, to enhance seed soil contact, and to avoid burying the seed too deeply as a result of later irrigations or rainfall. Maximum germination occurs at a seeding depth of 1/4 in. Emerging seedlings are frost sensitive; therefore planting should be delayed until conditions are expected to remain frost free. Seed is broadcast at 5 to 7.5 lb/acre in India. The flower spikes turn reddish brown at ripening, the lower leaves dry and the upper leaves yellow. The crop is harvested in the morning after the dew is gone to minimize shattering and field losses. In India, mature plants are cut 6 in. above the ground and then bound, left for a few days to dry, thrashed, and winnowed.
Isabgul seed

Harvesting

- Isabgul is an irrigated Rabi crop which remains in the field for about 4 months.
- Its cultivation period is October-November. The plant bears the flowering spikes in about 60 days after sowing and matures in the next 2 months. That means blooming begins two months after sowing and the crop become ready for harvest in February-March.
- After maturation, the crop turns yellowish and the spikes turn brownish. The yellowing of the lower leaves is an indication of maturity.
- The crop is harvested to close to the ground in the early morning hours to avoid losses owing to seed shading.
- The harvested material is stacked for 1 or 2 days, made to be trampled by bullocks, winnowed and separated seed is collected.
- Peak marketing season of Isabgul-husk is March – June.

Crop rotation

The following crop rotations are being adopted in various parts of India.
- Soybean - Isabgul
- Maize - Isabgul
- Sorghum - Isabgul
- Groundnut - Isabgul
- Maize - Isabgul - Greengram

Growing Area

The main producing states are Gujarat, Rajasthan, MP, and Haryana. In Rajasthan Isabgul producing areas are mainly Jalore, Sirohi, Badmer, Pali, Chittore, i.e. mainly southern Rajasthan.
Isabgul seed

State specific Isabgul growing centers in India:

<table>
<thead>
<tr>
<th>Region:</th>
<th>GUJARAT</th>
<th>RAJASTHAN</th>
<th>M.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NORTH GUJARAT</td>
<td>SAURASHTRA</td>
<td>KUTCH</td>
</tr>
<tr>
<td></td>
<td>Districts</td>
<td>Taluks</td>
<td>Districts</td>
</tr>
<tr>
<td></td>
<td>Banaskantha</td>
<td>Deesa</td>
<td>Junagadh</td>
</tr>
<tr>
<td></td>
<td>Diyodar</td>
<td>Jamnagar</td>
<td>Bhuj</td>
</tr>
<tr>
<td></td>
<td>Bhabhar</td>
<td>Rajkot</td>
<td>Nakhatran</td>
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<td>Radhanpur</td>
<td>Gondal</td>
<td>Abadasa</td>
</tr>
<tr>
<td></td>
<td>Mehsana</td>
<td>Mehsana</td>
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<tr>
<td></td>
<td>Visnagar</td>
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<td></td>
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<tr>
<td></td>
<td>Vijapur</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Unjha</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patan</td>
<td>Chanasma</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>Becharaji</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sabarkantha</td>
<td></td>
<td></td>
</tr>
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</table>

Isabgul Production

State-wise production estimates for Isabgul

<table>
<thead>
<tr>
<th>State</th>
<th>2005-06</th>
<th>2006-07</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (in ha)</td>
<td>Production (in tons)</td>
</tr>
<tr>
<td>Gujarat</td>
<td>24621</td>
<td>15225</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>81783</td>
<td>34650</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>4300</td>
<td>2625</td>
</tr>
<tr>
<td>Total</td>
<td>110704</td>
<td>52500</td>
</tr>
</tbody>
</table>

Note: The figures are market estimates.
Isabgul seed

Production Trend in Gujarat:

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (hectare)</th>
<th>Production (MT)</th>
<th>Bags</th>
<th>Productivity(Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991-92</td>
<td>34200</td>
<td>24000</td>
<td>300000</td>
<td>700</td>
</tr>
<tr>
<td>1992-93</td>
<td>41200</td>
<td>23500</td>
<td>293750</td>
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<td>1993-94</td>
<td>29900</td>
<td>18300</td>
<td>228750</td>
<td>613</td>
</tr>
<tr>
<td>1994-95</td>
<td>36100</td>
<td>23000</td>
<td>287500</td>
<td>635</td>
</tr>
<tr>
<td>1995-96</td>
<td>34300</td>
<td>19600</td>
<td>245000</td>
<td>573</td>
</tr>
<tr>
<td>1996-97</td>
<td>40000</td>
<td>25300</td>
<td>316250</td>
<td>632</td>
</tr>
<tr>
<td>1997-98</td>
<td>41300</td>
<td>32300</td>
<td>403750</td>
<td>782</td>
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<tr>
<td>1998-99</td>
<td>40500</td>
<td>27400</td>
<td>342500</td>
<td>676</td>
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<td>1999-2000</td>
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<td>207500</td>
<td>688</td>
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<tr>
<td>2001-02</td>
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<td>20100</td>
<td>251250</td>
<td>635</td>
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<td>2002-03</td>
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<td>2003-04</td>
<td>27400</td>
<td>18400</td>
<td>230000</td>
<td>672</td>
</tr>
</tbody>
</table>

The above table indicates the year-wise production of Isabgul in Gujarat. Production varies due to various reasons. The prime determinant of Isabgul production as well as price is demand for Isabgul in the international market. The main byproduct of Isabgul is Psyllium Husk, which is used for medicinal purposes and the leading pharmaceuticals companies are the buyers.

Isabgul is stored by the farmers as well as stockiests for better price realization. Stored produce also affects the production indirectly.

Isabgul crop is highly environment sensitive. In case of adverse climatic conditions the crop affects severely and production declines drastically. These are some of the reasons for the fluctuations in year wise production.
Isabgul seed

District-wise Isabgul production in Gujarat

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>12600</td>
<td>611</td>
<td>5600</td>
<td>534</td>
<td>11200</td>
<td>687</td>
<td>12400</td>
<td>625</td>
</tr>
<tr>
<td>2</td>
<td>Mehsana</td>
<td>3700</td>
<td>722</td>
<td>900</td>
<td>0</td>
<td>1300</td>
<td>687</td>
<td>1500</td>
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</tr>
<tr>
<td>3</td>
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<td>100</td>
<td>674</td>
<td>000</td>
<td>0</td>
<td>000</td>
<td>687</td>
<td>200</td>
<td>587</td>
</tr>
<tr>
<td>4</td>
<td>Jamnagar</td>
<td>1700</td>
<td>771</td>
<td>100</td>
<td>389</td>
<td>000</td>
<td>687</td>
<td>200</td>
<td>579</td>
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<tr>
<td>5</td>
<td>Junagadh</td>
<td>100</td>
<td>674</td>
<td>100</td>
<td>668</td>
<td>200</td>
<td>687</td>
<td>400</td>
<td>587</td>
</tr>
<tr>
<td>6</td>
<td>Kutch</td>
<td>8200</td>
<td>738</td>
<td>4500</td>
<td>389</td>
<td>3700</td>
<td>688</td>
<td>5300</td>
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<td>7</td>
<td>Rajkot</td>
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<td>0</td>
<td>000</td>
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<td>8</td>
<td>Surendranagar</td>
<td>600</td>
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<td>100</td>
<td>687</td>
<td>100</td>
<td>587</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>27400</td>
<td>676</td>
<td>1170</td>
<td>583</td>
<td>16600</td>
<td>688</td>
<td>20100</td>
<td>635</td>
</tr>
</tbody>
</table>

Banaskantha has the lion’s share- 63%, in Isabgul production in Gujarat, with Kutch occupying the second position at over 25%. Other districts include Mehsana, Sabarkantha, Jamnagar, Junagadh, Rajkot and Surendranagar.

The district wise maximum arrival in the ‘mandis’ of Gujarat including the arrival from Rajasthan is as follows. The arrival from Rajasthan is high because Gujarat has better processing facilities and also because more prices are offered here.

Before few years Gujarat used to contribute about 2/3 of the total production, but in the recent time due to the high risk associated with the production and irregular prices & storage problems, Gujarat has shifted its focus on processing mostly.

Production Trend

Isabgul growing is confined to a very limited area and its production is also not very large, therefore authentic data of national level are not available but as per trade Gujarat & Rajasthan both together produce approximately 90% of the total crop produced in
Isabgul seed

India. Total production of Isabgul in India remains 12-13 lakh bags, i.e. approximately 90000 MT to 100000 MT. As per trade’s view, both the states contribute almost equally. But recently, Rajasthan is getting an edge over Gujarat in case of production. Gujarat produces about 40-45% of the total production.

The production of Isabgul is demand driven but solely depends on the climatic conditions. Every year about 1200000 bags (each of 75 kg) of Isabgul (*approximately 90000 tones) is required to be produced in order to meet the demand. But its production is highly variable year after year because of its environmental sensitive nature. Due to the above two factors (production figure and its demand driven nature) the price also varies accordingly.

Other basic facilities like irrigation, electricity availability are also important price and production determining factors of Isabgul. Government of India doesn’t provide any type of assistance or support to the Isabgul growers, which also affects the production.

The buyers of Isabgul main products i.e. husk are generally the multinational drugs & pharmaceutical companies. There are fewer buyers in terms of number & larger in terms of quantity demanded. They are having the high influence over the Isabgul prices. They often, by forming cartels, suppress the prices of Isabgul.

The non availability of hybrid seeds in India severely affects the net output of Isabgul. There has been not much research on the improvement of quality of seed. Therefore year after year farmer use same seed for their produce as seed next crop.

The main product Isabgul Husk obtained about 25% - 26% from the Isabgul seed. The major portion of husk (about 80-90%) is exported. Therefore various determining factors like - international export competitiveness, currency exposures, political influence, EXIM policy etc. affect the industry.

There is no risk management mechanism available in the trade to hedge the risk associated with the fluctuations of prices, except entering into traditional forward contract with the buyers. While entering into the forward contract main problem is the storage, as husk is highly sensitive to the climatic conditions. It immediately absorbs
Isabgul seed

moisture from the environment due to lack of scientific storage, which mars the quality, fiber content and color of the husk.

Price Trend

The prices are influenced by the demand and supply condition. However, the previous years’ stock plays an important role in the determination of prices. The unbranded psyllium husk is highly sensitive to the demand-supply gap. However branded & value added processed husk are less price sensitive in international market due to the cartel of importers’ pressure. The price of Isabgul is determined by visual inspection method.

Isabgul seed Price Volatility in Unjha Mandi

For the last 4 years approximately the price trend of average quality Isabgul seed was Rs 400 – Rs 450 per 20 Kg. Three varieties usually arrive in the market- packed quality (premium quality), foreign quality and lower foreign quality.
Isabgul seed

Isabgul Processing

Psyllium husk is the main product of Isabgul. Husk is the outermost skin of the seed which is removed by mechanical process. Total recovery of husk is around 25 to 26 % from the seed. The price of husk is dependent of its purity/color. Husk of 100% purity is sold at the highest price which is obtained after first milling of the seed and further husk is removed in the subsequent milling process where purity and color gets diluted. In the market lowest grade is of 85 % purity and highest grade is of 100 % purity are quoted / traded at a definite price variance.

Since husk has time tested and proven record of medicinal value, it has world wide acceptance and subsequent demand. If we consider processing of seed to the tune of 70 to 80 % of the total production (75000 MT Isabgul Seed). Husk production can be estimated about 18,000-19,000 MT, out of which 14,000-15,000 MT is exported every year.

The processing activities are mainly undertaken in Gujarat. During the processing the millers remove psyllium husk from the Isabgul seeds. This process is called de-husking. The main byproducts are:

- **Lali**: Used as cattle feed.
- **Chito**: Used as Pig feed.
- **Khakho**: It is used to prevent ice slipping
- **Golaisab**: Used as cattle feed.

Why Gujarat is the processing hub?

Before few decades Gujarat was the only producer of Isabgul. So, Gujarat farmers and traders were well aware regarding the crop, risk associated with it and return generated.

The farmers and traders have an in-depth knowledge of Isabgul production & its uses. So it is easy for the traders and farmers to incorporate business. Availability of
Isabgul seed

developed infrastructure facilities and risk taking attitude of Gujarati people has driven for the forward integration.

1. Suitable climatic conditions
All the necessary climatic conditions for Isabgul cultivation are highly satisfied in Gujarat. In addition, storage chain is also available near the processing centers to store the finished goods. All this has led Gujarat towards achieving prominence.

2. Demand-supply gap
Day by day the demand for the processed husk is increasing throughout the world and the irregularity in production and resultant volatility in its prices attracts traders to enter in to the business.

3. Easy availability of raw material
Although Rajasthan is the biggest producer, the farmers of Rajasthan sell Isabgul in Gujarat’s APMCs at Unjha, Siddhpur, Patan etc because these mandis fall near to southern Rajasthan. So it is convenient for the Rajasthan growers to sell their crop in Gujarat. They get more affordable prices at Gujarat APMCs.

4. Proximity to developed APMCs like Unjha and important ports
Unjha is one of the biggest APMCs of Asia. All the processing centers are set up near by Unjha at Siddhpur-Mehsana highway. There is highest arrival of Isabgul at Unjha. The traders are also in the business of processing.

5. Forward & backward integration
Traders in Gujarat themselves have started running their processing centers and hence forward integration takes place; and the millers sometime directly buy from the farmers, in that sense it is backward integration.

6. Financing for business
The traders invest their funds in the processing also in order to get better returns. By trading activities they can get the raw material at the lower rate and through processing they can earn more return. So they have kept the flow of finance towards processing.
Isabgul seed

7. Supply chain management
Traders procure the raw material needed in a specific quantity and quality by their own firms, process it and then sell it locally as well as abroad. They are equipped with the internal information of business.

Variety-wise Classification

Isabgul is an annual plant. Plantago genus comprises 50 species, out of which 10 species are grown in India. Amongst them, 3 are important. They are Plantago ovata, P. indica and P. psyllium.
But in trade practices only two names are well known as major variety – ‘Packet quality’ and ‘Foreign quality’. Packet variety is considered as the best quality.

Market Scenario

India has the largest market share in the production, processing and export of Psyllium husk (~36%) among all the contributing countries. During 2002-03, India’s export was about 25,583 tonnes of psyllium husk, worth INR 2.5 billion and 404 tonnes of seed, worth INR 2 million.
India exports Isabgul seeds and husk worth more than Rs 25 million annually. From the total production of husk in Gujarat, 75% is exported.

Export Demand

There are reported to be around 70 organisations all over the country undertaking export of Isabgul husk and seed. Handful of these organizations are found to have lion’s share of the total export from India.

Most of the leading exporters/processors are based in Sindhpur in Mehsana district in Gujarat and in Palanpur in Banaskantha District. In Rajasthan about 90% of the gross production of Isabgul in India is exported, with nearly 93% of the export being of husk.

The largest buyer of Isabgul from India is the United States, accounting for around 75% of the total husk exports from India. The psyllium husk is bought by the pharma and drugs companies. The main buyers are Procter & Gamble (USA), Dr Morepen (USA), Al Parigo (USA). The other main importers of psyllium husk and seeds are: USA, Canada,
Isabgul seed

Japan, Germany, Italy, France, Britain, China, Korea, Malaysia and Taiwan. Germany is the largest single importer of seed.

Domestic Demand

The local demand for the psyllium is also increasing day by day. About 20 to 25 % of total production of Husk i.e. 3,000-4,000 MT is consumed in the domestic market. Indian pharmacy companies Like Dabur, Baidynath, Dr. Reddy are also using psyllium husk for making various drugs. There are various local brands having good market size across the country.
Isabgul seed

Market Channel

Packaging

Isabgul seeds

As per the traders view the Isabgul seeds has the longer shelf-life. The seeds are dry & can be stored for 8-10 years. They generally keep the seeds in the simple gunny bags with or without plastic lining. The raw Isabgul is kept in the simple gunny bags of 75 kg per bag.
Isabgul seed

Psyllium husk

Psyllium husk are highly sensitive to environmental parameters. To enhance the self life it should not be exposed to moisture and air. That is why it is packed in plastic coated jute bags. However it can also be packed in paper bags, synthetic bag, drum packs with plastic coating. The packaging generally maintained in the following way:

<table>
<thead>
<tr>
<th>No.</th>
<th>Type</th>
<th>Volume</th>
<th>Plastic coating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jute bag</td>
<td>25kg</td>
<td>1-layer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 kg</td>
<td>2-layer</td>
</tr>
<tr>
<td>2</td>
<td>Paper bag</td>
<td>As per requirement</td>
<td>3-layer</td>
</tr>
<tr>
<td>3</td>
<td>Synthetic bag</td>
<td>As per requirement</td>
<td>As per requirement</td>
</tr>
<tr>
<td>4</td>
<td>Drum packing</td>
<td>50 kg</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Jumbo packing</td>
<td>950 kg</td>
<td></td>
</tr>
</tbody>
</table>

Shelf Life and Storage practices of Isabgul

Psyllium seeds have a longer shelf-life approximately 8-10 years, so they are simply stored in gunny bags. So far as the husk is concerned, it can not be stored for a longer period as starts to loose color, change in fiber content problems because of growth of bacterial Mets occurs. Psyllium husk’s shelf life remains only 6 months in ordinary and traditional storage conditions.

Psyllium husk is packed in the airtight plastic coated bags in order to prevent from the atmospheric humidity. Moreover while storing enough care is taken from pest attack. Psyllium husk is stored on wooden pallets; they keep the husk at least two feet away from wall in order to prevent it from moisture. Fumigation on regular interval is done to preserve it for longer period of time.

Why Futures Trading in Isabgul Seed?

The crop size of Isabgul seed in India is about 1 lakh MT per year, worth Rs.200 Crores approximately. Still the important issue is that this commodity is very price sensitive because it is vulnerable to erratic climatic conditions and subsequent export demand.
Isabgul seed

The farmers are scattered throughout the different regions and they have not formed any association to influence the prices of Isabgul. Above all, due to lack of Government’s assistance, the farmers have to unwillingly go for distress sale.

Since there is cartel of the importers i.e. multinational pharmaceutical companies, exporters always remain under pressure for short selling. This subsequently suppresses the market and price volatility which brings an adverse impact on trade. If mechanism of price discovery of futures market is available to the trade, farmers and trade as whole may get edge over the dominating role of the importers.

We therefore strongly feel that Isabgul seed is the fittest commodity for futures trading for the benefit of exporters, processors and the growers.