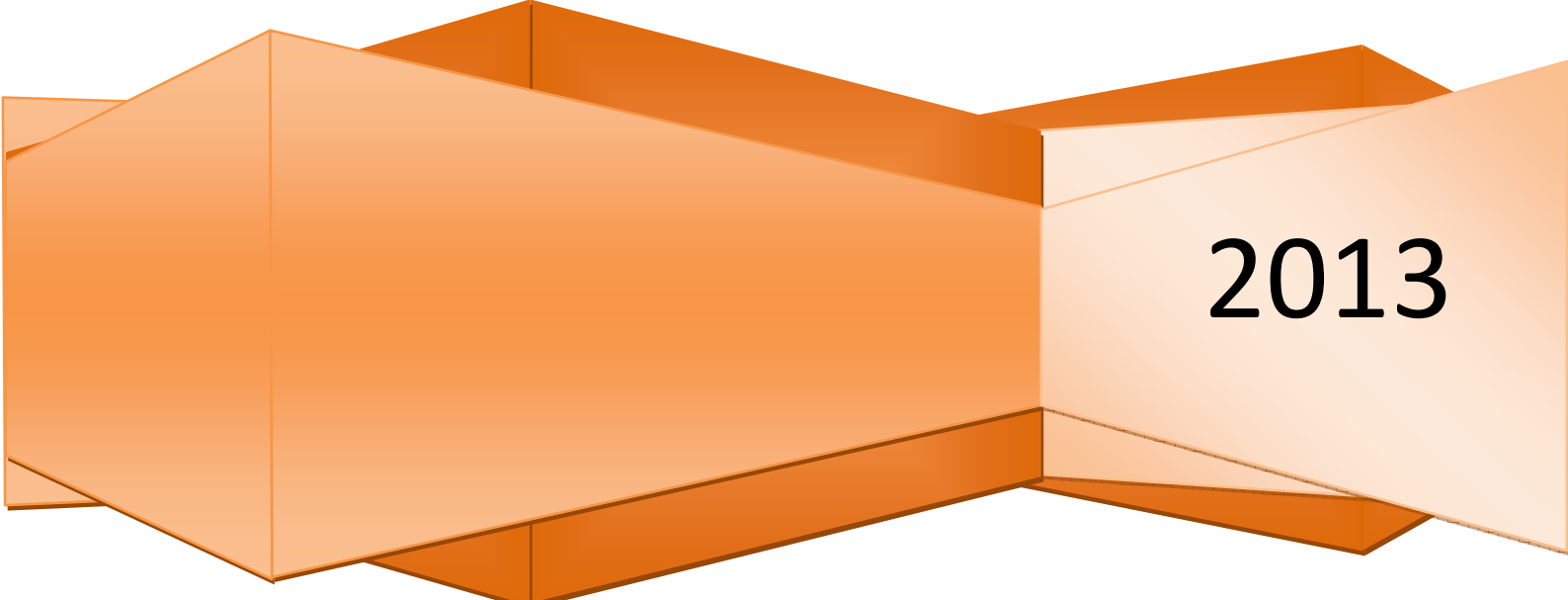


SUDAN TRADE POINT

GUM ARABIC IN SUDAN



2013

What is Gum ?



Acacia is one of the most popular vegetation of the plant kingdom. Although there are over 1100 Acacia species world wide, Acacia Senegal and Acacia Seyal remain the most commercially exploited species of the whole Acacia resource. Both species are of African origin. The Sudanese gum belt extends from latitude 10 to 18 where the habitat Acacia Senegal is sandy soils -arid zones- from latitude 13 upwards. The species play an important ecological role in improving climatic conditions; and preventing desert encroachment. Acacia Seyal domain is the wet clay soils of Central and Northern Sudan -the rich Savanna regions,- from latitude 10 downwards. The whole area of the gum belt is around 25200 squared kilometres (6000 feddans) and is inhabited by over five million Sudanese people. The extensive area of the Gum Arabic belt MAKES SUDAN THE DOMINANT PRODUCER OF GUM ARABIC WITH OVER 80% OF WORLD PRODUCTION AND A GUM ARABIC MARKET SHARE OF AROUND 60%. Gum Arabic is an ancient ingredient that has been used since 4000 BC or even before. The name "Gum Arabic" is believed to be used to describe the gum as it is shipped from Arabian ports to world wide distributions centres (mainly Europe).

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Gum Arabic production begins with the Sudanese farmer, who tends and protects his very valuable trees throughout the year. At exactly the right time of year, determined by his knowledge, local conditions and expertise acquired over many years (usually around Mid October), the farmers "tap" their trees and the gum exudes where the bark has been cut. Six weeks later the first gum collection is made. Up to three further collections are made at three-week intervals. The farmer then transports the gum to sell it in one of the gum auction markets. Local Merchants buy the gum at agreed



floor price or higher. The gum is then delivered to cleaning sheds, where the gum is selected and graded into three distinct grades: clean amber sorts "CAS", siftings and dust. The graded gum is then sold by the merchants to the GAC. The gum, packed into 50 or 100-kg burlap bags is then transported to exit ports from Sudan, mainly Port Sudan on the Red sea. GAC provide different grades of Gum Arabic from the distinct two types of Gum Arabic: Hashab or Kordofan derived from Acacia Senegal trees and Talha derived from Acacia Seyal trees. Gum Arabic exported by GAG is mainly Crude of the grades: Hand Picked Selected (HPS), Cleaned Gum , Siftings and Dust. Whereas all the above grades are of the type "Hashab or Kordofan" derived from Acacia Senegal trees, Gum Talha which is derived from the Acacia Seyal trees is also exported in the crude form and it is exported as one grade. GAC is also exporting Kibbled Gum Arabic of the type Acacia Senegal (Hashab, Kordofan). However, Gum Arabic is traded in processed forms as well: mechanical or sprayed dried forms and application-specific forms are some of its more sophisticated forms.

Physical and Chemical Properties of Gum Arabic :

- Gum Arabic is a pale white orange brown solid that breaks with glassy fracture.
- Highly soluble in water and solution upto 55% can be obtained.
- It is insoluble in oils and most organic solvents.
- It is regarded as 95% soluble fiber.
- Gum Arabic contains neutral sugars like Rhamnose, Arabinose and Galactose.
- It contains Glucuronic acid and 4 – methoxyglucuronic acid.
- Includes cationic components like calcium, magnesium, potassium and sodium.

- Molecular weight ranges from 200,000 to 300,000 and as high as 600,000

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Season of Production

Usually around Mid October

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Applications of Gum Confectionery



This is one of the most important applications. Gum Arabic from Acacia Senegal is the recognised preferred natural constituent for the production of high-quality soft candies. Here the gum is mainly used (and gives the best possible performance) in the raw form, which enables the manufacture of a soft, chewy candy. It renders the product soft but firm, long lasting in the mouth, and provides a clean, non-sticky chewing. Reduced calories soft candies, with a percentage of Gum Arabic ranging up to 40-50%, have been recently and very successfully launched.

Gum Arabic is an excellent flavour carrier and is used by formulators for imparting a clean, long lasting fresh taste. Gum Arabic may be used to emulsify the flavour oils or fats in confections or to retard crystallisation in high sucrose confections. The film forming ability of Gum Arabic makes it a useful ingredient for confectionery coatings including the pan-coating of fruits and nuts. In addition, speciality anti-cariogenic (anti-tooth decay) candies have contained Gum Arabic, which is resistant to degradation by the microorganisms in the human mouth responsible for such effects.

Miscellaneous Bakery Applications

Wherever film forming and emulsifying properties without affecting product taste or rheology are needed, Gum Arabic is an ingredient that must be considered.

Beverages

As the emulsifying agent of choice, Gum Arabic is widely used in a broad range of beverages. The completeness and stability of the emulsions produced even in normally difficult low acid environments have kept Gum Arabic as an essential ingredient for this usage. It is also used as a component-clouding agent in a wide range of beverages. It can also be used as a clarifying agent in the production alcoholic beverages, such as high quality wines.

Encapsulated Flavours

Dry packaged products such as instant drinks, desert mixes, soup bases and "off-the-shelf" spraydried flavours may be formulated using Gum Arabic. Flavour protection, desirable flavour release, long shelf life, and high dispersibility are the advantages offered by Gum Arabic.

Pharmaceuticals, Vitamins and Cosmetics

Spraydried Gum Arabic is used both as a carrier in capsules and as a tableting excipient. One of its oldest and best-known uses has been in cough syrups. Gum Arabic may be used in cosmetic products such as facemasks, hair creams and fixatives, protective creams and lotions.

High Fiber Formulations

Gum Arabic, in the hands of creative food technologists, may be formulated as part of the natural nutritional supplements that help to add soluble fiber in a palatable form. Gum Arabic has a long history of being used in concentrations as high as fifty percent in certain confections.

Miscellaneous Industrial Applications

The ability of Gum Arabic to form highly uniform films and to "carry numerous ingredients through cospraydrying, has made it a recognised option in sprayed glazes, also high technology ceramics, and as a flocculating agent in ore refining of certain minerals. It also has uses in paper coatings, textile sizing and finishes, metal corrosion inhibitors, office glues, emulsion prints, and

pesticides. A major use is in lithographic inks, where its ability to form excellent films makes it particularly suitable for the treatment of photosensitive plates.

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Future Potential

Gum Arabic from Acacia Senegal is an ancient natural product truly suitable for inclusion in the list of food ingredients for the 21st century. It is natural and in plentiful supply.

Gum Arabic has functional properties unequalled by chemically modified starches and other substitutes. This allows for the formulation of superior products having longer shelf-life etc. New beverage innovations, such as wine coolers, novel confectionery coatings, high fiber drinks and powders, and synergistic combinations with other gums, attest to ongoing research and new product formulation using Gum Arabic. New patents utilising Gum Arabic in confectionery coatings and lithography have been recently granted, and funding for further research into new uses for this product has been made available by both the Gum Arabic Company and international aid organisations.

Efforts on the supply side to breed new varieties of Acacia Senegal that provide gum with especially desirable properties should add nuance and opportunity to the food formulator's palette. The introduction of more advanced quality control and grading/sifting/cleaning operations in the Sudan should further standardise Gum Arabic supplies, allowing for more efficient gum processing and more specific gum grades, readily available directly from the origin.

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Investment Opportunities

Processing Gum Arabic

Gum Arabic is one of the most important cash-generating export crop in Sudan. It is one of the best of its type in the world. The project aims at processing gum Arabic, locally, to improve exports and benefit from the value-added.

The sites producing gum Arabic in Sudan:

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|------------------------------|--------|
| - Kordofan region | 49.3% |
| - Kassala region | 24.4% |
| - Darfur region | 23.4 % |
| - White and Blue Nile region | 2.9% |

The proposed sites for erecting the project:

Near the production collection regions.

The productive capacity: 4000 tons per year.

Methods of gum Arabic processing:

- The mechanical method.
- The method of sprinkle drying.
- The mechanical Method:
- Preliminary cleaning unit.
- Air cleaning and sorting unit
- Breaker.
- Refining mill and granules production mill.
- Conveyor belts.
- Packing unit with weighing machine.
- Quality control laboratory.
- Electrical control panel.

The sprinkle Drying Method Equipment

- Dissolving container.

- Sifters with various openings.
- Sedimentation cylinder and the solution concentration cylinder.
- Drying and spraying unit.
- Cylinder drying unit.
- Solar energy unit for heating water.
- Cleaning and sorting unit.
- Quality control laboratory.

Area : Estimated at 800 m² ; as follows:-

144 m² Production hall.
280 m² First cleaning shed.
48 m² Second cleaning shed
250 m² Stores
75 m² Offices + utilities

Raw Materials: gum Arabic – packing materials (Jute sacks)

Directory of Exporters: www.tpsudan.ogv.sd

Trade Statistics: www.tpsudan.gov.sd