



Guar: Gold, no more a fodder

Guar is a drought resistant Kharif (summer) grain legume. About 90% of the world's guar is produced in the South Asia. In Pakistan, the crop is mostly cultivated in Thar, Kohistan and Nara valley in Sindh, Cholistan and Thal in the Punjab, Las Bella, Makran, and the eastern side of the Bolan Hills in Balochistan. Guar seed, has a shelf life of 5-6 years.

Gum is the primary marketable product of the guar plant. The seeds, extracted from the dried pods of plant, have the following contents; the most important part of them being endosperm:

Hull or seed coat	14 to 17 %
Germ or protein	40 to 47 %
Endosperm or gum	35 to 42 %

Guar gum is obtained by grinding the endosperm of guar seed. A variety of methods is used to separate guar endosperm from the hull and germ for manufacturing different grades of gum. Due to its complex nature, thermo mechanical process is generally used for preparing edible and industrial grades. The hull is loosened by soaking it in water and then removed by charring it with flame treatment. After that, different pulverizing / sieving is done to separate germ from endosperm, reducing the endosperm to fine particle size. The purity of the product depends on effective separation of the hull and germ from the endosperm. One method of the manufacturing process of guar gum is shown in the flow chart.

The most important characteristic of guar gum is its ability to rapidly develop viscosity in fresh water. As it is an economical thickener and stabilizer, it has several diversified uses in textile, food processing, cosmetic, mining, paper, pharmaceuticals, oil drilling industry and explosives.

The by-product of the guar gum industry consists of outer seed coat and

Table 1: Global Importers of Guar Gum
Mucilages and thickeners, whether modified or not, derived from guar seeds

Value US \$'000'

Countries	2008	2009	2010	2011	% increase in 2011 over 2008
U.S.America	171.383	110.537	248.481	979.535	82.50
Germany	52.908	46.479	51.691	81.228	34.86
China	28.74	25.747	28.491	46.461	38.14
Italy	19.994	16.098	19.566	36.276	44.88
Canada	16.629	7.333	13.002	30.692	45.82
Russian Federation	N/A	N/A	27.757	26.133	N/A
Japan	13.622	11.039	13.574	19.959	31.75
United Kingdom	8.76	9.487	12.814	19.906	55.99
Belgium	17.326	14.107	10.326	14.959	-15.82
South Africa	4.549	4.749	9.691	14.62	68.89
The Netherlands	10.117	8.758	11.452	13.979	27.63
Australia	9.463	6.136	7.726	13.517	29.99
Mexico	6.729	6.73	7.577	13.055	48.46
Thailand	7.651	6.485	8.589	11.22	31.81
Argentina	5.122	2.641	4.529	10.219	49.88
Denmark	5.526	4.182	5.49	10.014	44.82
Brazil	4.976	5.141	5.895	9.007	44.75
Republic of Korea	6.439	6.38	7.891	8.603	25.15
Spain	4.358	3.797	4.309	8.065	45.96
Poland	3.307	3.116	3.73	7.347	54.99
Malaysia	1.059	2.354	2.437	4.123	74.31
Singapore	4.381	2.23	2.866	3.712	-18.02
Philippines	1.178	1.824	2.196	2.779	57.61
Sweden	1.491	1.34	1.783	2.271	34.35

Source: Trade Map (ITC)

Table 2: India's export to the world
Value US \$ '000

Product	2008	2009	2010	2011	% increase in 2011 over 2008
Guar Treated and Pulverized	242.059	190.031	498.070	2,987.917	1134.38
Guar Refined Split	58.590	32.782	104.568	398.487	580.13
Guar Refined Split	9.714	13.106	13.822	24.589	153.13
All Guar Products	310.363	235.919	616.460	3,410.993	999.03

Source: Trade Map (ITC)

germ material. It is called guar meal or guar korma. This meal is used as an excellent concentrate for livestock, including poultry.

The quality of the gum is determined by its viscosity, which may range from 2000 to 7000 cps. The top grade has food and pharmaceutical applications. The gum has no calorific value. It is suitable for diet foods like diabetic syrups and low calorie slimming foods. The finished product has a storage life of over one year, without change in viscosity.

The lower grades of the gum are used for non-food purposes. A substantial volume of the gum is used in oil well drilling industry because of its friction-reducing properties. Guar gum stiffens water so much that a mixture is able to carry sand sideways into wells drilled by horizontal fracturing, also known fracking.

Due to its cost-effective performance, guar gum has now become a primary component of water based fracturing fluids. Fracking experts in the west believe that without guar gum, they could not have fracturing fluids. The development of hydraulic fracking has opened many regions having shale gas deposits to drilling by using guar gum.

As per a report in New York Times, the phenomenal rise in demand for guar gum in gas drilling industry has brought unprecedented prosperity for guar farmers in the Indian part of the Thar Desert. Companies in India are signing contracts with farmers guaranteeing a return of not less than US \$800 per acre for guar plantation.

Being the single largest producer of Guar in the world, India has taken full benefit from the accelerating demand for the precious gum in the world market. Guar gum has acquired the status of one of India's major foreign exchange earners.

Pakistan exports Guar gum to over 50 countries around the world. It is evident from Table-IV that Pakistan's export of Guar gum increased by 27.19% from 27,991 tons in 2010-11 to 35,602 tons in 2011-12. The single largest destination of our export is USA. The country's imports from Pakistan swelled by 1872% to 10,787 tons in 2011 to 2012 from 547 tons in 2010 to 11.

Table 3: Export from Pakistan

Commodity by countries	JULY-JUNE 2011-12	JULY-JUNE 2010-11	Increase in 2011-12 over 2010-1
	Tons	Tons	Percent
GUAR GUM	35,602	27,991	27.19
U.S.America	10,787	547	1872.00
China	8,801	6,542	34.52
Japan	3,362	2,606	29.01
Germany	1,908	1,360	40.29
Denmark	1,447	952	52.03
United Kingdom	1,138	10	11282.00
Italy	1,132	469	141.12
Netherlands	957	1,415	-32.36
Spain	773	90	758.89
Canada	745	900	-17.22
Malaysia	664	547	21.31
Korea, Republic of	416	204	104.12
Philippines	384	80	380.59
Belgium	294	580	-49.27
Australia	235	138	70.65
Brazil	232	-	
Thailand	196	22	791.82
South Africa	170	816	-79.17
Singapore	169	80	111.25
Sweden	168	8	2137.33
Russian Federation	165	6	2653.50
Chile	165	59	181.20
Argentina	156	180	-13.50
Mexico	153	160	-4.38
United Arab Emirates	123	839	-85.38
Poland	95	135	-29.63
Qatar	81	180	-55.00
Viet Nam	75	262	-71.39
Indonesia	60	20	200.00
Sri Lanka	52	-	
Saudi Arabia	16	365	-95.67
Venezuela, Bolivar. R	15	75	-79.71
Peru	9	275	-96.68
Swaziland	7	157	-95.53

Source: TDAP

Demand for guar gum is extremely high due to oilfield fracking needs. The federal government and the provincial governments in Pakistan may take the following measures for benefiting from this opportunity.

1. Farmers may be provided comprehensive training to cultivate Guar along modern scientific lines, selecting the right variety of seeds which give higher yield with high endosperm content. They may be given international exposure, arranging their visits to renowned modern research centers of Guar in the world, such as the one in Texas, USA.
2. The government may provide attractive incentives to guar farmers, including permission to import duty free tractors and agriculture implements under Actual Users Scheme.
3. Forward/ backward linkages may be developed between farmers and processors to ensure elimination of the middle man, remunerating prices for farmers and guaranteed supplies of raw material to processors at stable prices.
4. Government may grant Export Processing Zone status to Special Economic Zone setup near Guar growing areas and provide the investors facilities matching those available to their counterparts in EPZs.
5. Government may provide substantial subsidy in the cost of machinery and plants as well as liberal loans on soft terms to enterprise Guar farmers for setting up plants in growing areas.
6. Guar Research Institutes may be established in Chundko in Tehsil Naro of district Khairpur, and Uthal in district Lasbello, the main guar gum

regions of the country. The institute may conduct research to develop improved, early- maturing, drought-resistant and high-yielding varieties with higher pod-set characteristics, having bold seeds with larger endosperm content and high viscosity.

7. Skills of technical people presently engaged in the industry may be upgraded, to keep them abreast with the latest developments taking place in the sector world wide.
8. 'Grow More Guar' campaigns may be launched in arid and semi-arid zones, encouraging farmers to bring increased acres under guar cultivation. For achieving this objective, irrigation network should be expanded to cover areas deprived of water, ensuring regular and sustained supply of raw material to the processing industry to meet increasing demand in the world market. With concerted efforts, the vast sprawls of waste lands in Kohistan, Thar and Nara valley in Sindh; Lasbello, Makran, Dasht and Sibbi in Balochistan; Cholistan and Thal in the Punjab and suitable areas in D.I.Khan in KP could be brought under guar cultivation.
9. Technical assistance in the soil up-gradation, improvement in rain water storage and irrigation system could be obtained from the countries keenly interested in importing bigger quantities of gum from here e.g. China, Japan, Australia, Italy and USA, etc.
10. Techno Centres may be established near the growing areas to identify and make latest cost-effective technologies available for processing industry.
11. Gum processors may be encouraged to participate in international exhibitions, enabling them to present their capabilities and exhibit proof of their quality before global players.
12. Pakistan's Trade Officers abroad may conduct workshops / seminars for creating awareness about Pakistan as a major source of Guar Gum in the world. ♦

