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Reforming Guar Industry in India: Issues and Strategies[§]

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Abstract

There is a high year-to-year variation in production of guar, and consequently, in exports of guar and its derivatives. Guar gum is mainly used in the food and bakery industry, the food safety concerns are becoming important for the guar processing industry. The preparedness of guar split and guar gum manufacturing industries for these food safety concerns, high fluctuations in area, production and productivity of guar seed, high volatile prices of guar seed and gum splits, are crucial limitations to the growth of guar industry. The paper has discussed these issues and strategies in guar value chain and guar gum processing industry. Lack of technical knowledge and processing technology for industry-specific value-added products, poor market linkages with farmers and unstable trade policies are the main issues confronting the guar industry. The paper has given some suggestions for reforming guar industry in India.

Key words: Guar, production instability, price volatility, trade, industry, issues and strategies

JEL Classification: Q13, Q17

Introduction

Guar (*Cyamopsis tetragonoloba*) is a drought-tolerant, multi-purpose legume crop cultivated mainly in the *kharif* season in arid environments and is used as animal feed and fodder, green manure and for extraction of gum for various industrial uses. Guar gum is one of the important items of export, and accounts for 0.23 per cent of India's total agricultural exports. Guar gum is the source of a natural hydrocolloid, which is cold-water soluble and forms a thick solution at low concentrations. The guar seed comprises three parts: the seed coat (14-17%), the endosperm (35-42%), and the germ (43-47%). It is from the endosperm that guar gum is derived, which is the prime marketable product of the plant. This spherical-shaped endosperm contains significant amounts of galactomannan gum

(19-43% of the whole seed), which forms a viscous gel in cold water. Like other legumes, guar is an excellent crop for enhancing soil fertility. Its root nodules contain nitrogen-fixing bacteria and crop residues, when ploughed under soil, improve yields of the succeeding crops. The by-products of guar processing, '*Churi*' and '*Korma*' are used as cattle feed. Guar gum recovery normally constitutes around 31 per cent of the total guar seed processed, whereas *Churi* and *Korma* account for 29 per cent and 37 per cent, respectively.

Guar production in India is subject to high year-to-year fluctuations because of variability in intensity and pattern of monsoon rainfall. India is the largest producer of guar and accounts for about 80 per cent of the global guar production. Guar gum, extracted from guar seed, is an important ingredient in producing food emulsifiers, food additives, food thickeners and other guar gum products. India is the largest producer of guar gum products. There is big demand for Indian guar gum products, food additives, food thickener and other products. Guar gum is largely an export-oriented

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commodity as about 80 per cent of the total output is exported. However, the major concern regarding the export of guar derivatives is high year-to-year fluctuations in guar production. Since guar gum is mainly used in the food and bakery industry, food safety concerns have become important for the guar processing industry. Thus, preparedness of guar split and guar gum manufacturing industries for these food safety concerns, high fluctuations in area, production and productivity of guar seed, and highly volatile prices of guar seed and gum splits, are the crucial limitations for Indian Guar Industry.

Looking at the agricultural and industrial importance of this marginalized crop, an attempt has been made to prepare a road map for the overall development of guar production, marketing and processing industry, aligning the views of all the stakeholders in the value chain in the form of single vision strategy. Single vision unites all the parts of the value chain and links the supporting pillars to maximize benefits to all the participants in the industry. The first attempt of this kind was made in Australia for grains by Grain Research and Development Corporation through the Grain Grower Organizations of Australia (GRDC, 2004). The aim of the 'Single Vision Grains Australia' was to evolve a united, vibrant and internationally competitive Australian Grains Industry. Since there have been limited research studies on the guar industry (Kumar and Singh, 2002, Henry *et al.*, 2003; Henry and Kumar, 2005), this study was undertaken to suggest an approach for devising strategies to achieve single vision with the following specific objectives: (i) to identify the critical issues and challenges in production, processing, marketing and export of guar and its derivatives for the long-term profitability and sustainability of guar industry in India, (ii) to analyze the gaps in industry linkages, infrastructure, value addition, research & development and in policy for business growth, and (iii) to suggest strategies for enhancing the value chain to drive the guar industry to meet opportunities and threats.

Approach and Methodology

The approach followed in the study given below:

- Identification of issues critical to the long-term profitability and sustainability of guar production and processing industry. The following issues were considered: (i) Assessment of the current and

potential gaps in relation to guar production, marketing and processing industry, and (ii) gaps in relation to shared vision, strategy, structure, stakeholder responsiveness, skills, leadership, management and the extent to which the shared values support and/or fragment the industry.

- Organisation of a series of stakeholders meetings and group discussions, growers consultations/ personal interviews, reviewing of research, industry strategic planning, etc. A consensus has been arrived at approaches to guar production, industrial distribution and marketing.

Both secondary and primary data were used for the study. The secondary data related to production, prices, and exports were collected from different published sources. Primary data were collected by conducting stakeholders' meetings at different production areas like Jaipur, Jodhpur, Bikaner, Sri Ganganagar, Hanumangarh, Churu, Sikar, Hissar, and Siwani and through personal interview of farmers, market intermediaries and processors.

Production and Supply

The global production of guar seed is estimated at 10-16 lakh tonnes annually, which fluctuates widely, depending upon the monsoon conditions in India, particularly in the western districts of Rajasthan. In the global production of guar seed, the contribution of India is nearly 80 per cent, of Pakistan is nearly 15 per cent and of Sudan, Australia, and USA is 5 per cent. About 75 per cent of the guar gum or other derivatives of guar seed are produced in India and are exported mainly to the USA, China and European countries. In Pakistan, guar seed is mainly grown in Punjab and Sindh provinces with about 80 per cent of the total guar area under irrigated conditions.

In the total guar production of India about 80 per cent was contributed by the state of Rajasthan in TE 1991-92, but this share reduced to about 55 per cent during TE 2007-08. Apart from Rajasthan, guar is grown in the states of Haryana, Gujarat and Punjab. The share of Haryana has increased from 18 per cent in TE 1991-92 to 30 per cent in TE 2007-08. Gujarat contributes about 8 per cent to the total guar production. It is also grown in some parts of Uttar Pradesh and Madhya Pradesh.

India's guar seed production is subject to temporal fluctuations and it ranged between 2 lakh tonnes and 15 lakh tonnes during 2001-02 to 2007-08. The year 2002-03 was marked by the lowest production, merely 2 lakh tonnes due to severe drought, whereas in 2003-04, the production rose to astronomical high levels of 15 lakh tonnes (Table 1) on account of increased acreage due to good rainfall and high prevailing prices in the markets.

The non-availability of short-duration, high-yielding and drought-resistant varieties of guarseed and lower seed replacement ratio are adding to the fluctuations in production and yield of the crop in Rajasthan state. In Haryana, though the crop receives life-saving irrigation, the use of varieties, viz., HG 365, HG 563, etc. developed by the Haryana Agricultural University, Hisar, and extensive use of HYV seeds by the farmers have improved the productivity level of guar in the state.

An index of instability was computed to examine the nature and degree of instability in area, production, and yield of guar in Rajasthan as well as in India. Since, simple coefficient of variation (CV) does not explain

properly the trend component inherent in the time series data, CV around the trend (Instability Index) was used, as suggested by Cuddy and Della Valle (1978), as a better measure of variability. A linear trend, $y=a+bt+e$ was fitted to the indices of area, production and yield for the period 1970-71 to 2007-08 and trend co-efficient "b" was tested for significance. Wherever the trend co-efficient was found significant, the index of instability was constructed using Equation (1):

$$\text{Instability Index} = (\text{CV}) \times \text{sqrt}(1-R^2) \quad \dots(1)$$

Simple linear regression functions were employed for estimating the response of production of guar due to the change in area. The analysis showed that production of guar increased significantly, by 0.31-times in Rajasthan and by 0.35-times in India, with the increase in a unit area (Table 2).

Fluctuations in the area and production of guar in Rajasthan as well as in India are interrelated as a larger area gives higher production if the inputs remain constant. But, variation in yield may be due to weather conditions, technological changes, agronomic practices followed, etc. The growth and instability in area, production and yield of guar in Rajasthan and India

Table 1. Area, production and yield of guar in India: 1990-91 to 2007-08

(Area in '000 ha, Production in '000 tonnes and yield in kg/ha)

Year	Rajasthan			Haryana			All-India level		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
1990-91	2090	946	453	204	148	725	2403	1176	489
1991-92	1559	204	131	131	94	718	1765	346	196
1992-93	1882	583	310	155	93	600	2179	797	366
1993-94	1897	287	151	161	119	739	2101	490	233
1994-95	1959	708	361	156	117	750	2302	939	408
1995-96	1775	274	155	136	104	765	2213	900	407
1996-97	1819	740	407	127	104	819	2125	886	417
1997-98	1985	734	370	137	109	796	2301	963	418
1998-99	1612	320	198	127	82	646	1922	489	254
1999-00	2649	232	87	133	88	662	2934	375	128
2000-01	3056	481	157	148	102	689	3497	659	188
2001-02	2413	763	316	196	127	648	2903	1090	375
2002-03	557	28	50	205	91	444	974	203	208
2003-04	2278	1163	511	269	117	435	2854	1513	530
2004-05	1944	368	189	217	254	1171	2867	903	315
2005-06	2445	593	243	270	289	1070	2956	1059	358
2006-07	2808	658	234	295	334	1132	3352	1100	328
2007-08	2310	622	269	300	408	1200	2849	1262	443

Table 2. Testing the dependency of guarseed production on area: 1970-71 to 2007-08

Place	Constant	Coefficient	t-value	P (T<=t) two tail
Rajasthan	-116.276	0.305766*	4.606236	0.000
India	-66.5149	0.353645*	5.318503	0.000

*represents significance at 1 per cent level

are shown in Table 3. The study has shown that the value of CV for production of guar was 60 per cent for Rajasthan and 44 per cent at all-India level, indicating high instability. The magnitude of CV for yield of guar was higher in Rajasthan (51%) than at all-India level (33%). However, lower CV for area under guar cultivation shows stability in the acreage allocation for this crop. It was mainly due to the fact that under rainfed conditions, farmers have limited alternatives in terms of crop selection, implying thereby that production of guar can be stabilized with the stable yield of the crop over the years.

The compound growth rates in area and production of guar revealed a marginal growth, while in yield a negative growth was found during the period 1970-71 to 2007-08 (Table 3). Thus, the increase in production of guar can be achieved by improving the level and stable growth in the yields.

Price Movement in Guar

Guarseed has a shelf-life of more than 3 years without losing any of its properties or qualities. It requires the barest minimum maintenance and handling environment. Prices of guarseed as well as its derivative products depend much on the monsoon condition and its likely production. The prices have been observed

to be highly volatile and vary from ₹ 850/q to ₹ 3500/q for guar seed and from ₹ 3000/q to ₹ 8000/q for guar gum.

Annual volatility (measured as coefficient of variation) in mandi prices of guarseed at different markets for the past 6 years, i.e., from 2003 to 2008, were worked out and are presented in Table 4. The prices of guarseed were volatile during 2003 and 2004, and the magnitude of price volatility declined thereafter. It may be due to the introduction of futures trade in guarseed and guar gum providing better price discovery and more avenues for price risk management. The high fluctuations in guar prices are mainly due to large variations in area and production of guarseed depending on the spread and level of monsoon rainfall in the producing centres and the demand of guar gum from the importing countries.

The seasonal index of guarseed prices was worked out taking monthly arrivals and prices from two markets, viz. Jodhpur and Ganganagar, from 2001-02 to 2008-09 and are presented in Table 5. It was found that guarseed prices started increasing during pre-harvest and harvest period and declined thereafter in both the markets. The arrivals in the Jodhpur market increased from September and continued up to December. The harvesting of guar grown during the

Table 3. Growth and instability in area, production and yield of guar in Rajasthan and at all-India level: 1970-71 to 2007-08

Items	Instability indicator	Rajasthan	All-India
Area	CGR (%)	1.20	1.14
	CV (%)	29.18	26.61
	Instability Index	26.02	23.47
Production	CGR (%)	1.33	1.05
	CV (%)	60.13	43.73
	Instability Index	58.04	41.42
Yield	CGR (%)	0.12	-0.09
	CV (%)	51.15	32.62
	Instability Index	51.06	32.62

Table 4. Volatility in guarseed prices in different markets

(C.V. in %)

Year	Rajasthan			Haryana		
	Sri Ganganagar	Anupgarh	Hanumangarh	Adampur	Fatehabad	Hissar
2002	1643.6 (5.0)					
2003	1195.9 (26.5)	848.4 (11.2)	917.3 (17.4)		896.3 (7.7)	1022.1 (24.7)
2004	1171.1 (21.3)	1170.8 (20.9)	1305.0 (21.1)		1003.3 (18.6)	980.2 (3.5)
2005	1447.5 (10.2)	1402.4 (9.4)	1370.1 (8.6)	1501.2 (2.1)	1410.6 (8.3)	1272.4 (8.1)
2006	1586.0 (7.9)	1550.3 (8.6)	1606.3 (7.2)	1666.8 (7.3)	1616.4 (8.0)	1701.0 (7.2)
2007	1627.4 (20.2)	1561.4 (5.7)	1585.5 (8.1)	1648.4 (5.7)	1596.9 (7.8)	1596.4 (9.9)
2008	1597.1 (8.3)	1592.9 (7.3)	1569.6 (7.8)	1672.6 (8.2)	1618.3 (8.5)	1514.5 (8.8)

Note: Figures within the parentheses are CV in %

Source: Authors calculations, data collected from Agmarknet website.

Table 5. Seasonal index of guarseed arrivals and prices in Jodhpur and Sri Ganganagar markets

(in per cent)

Month	Prices		Arrivals	
	Jodhpur	Sri Ganganagar	Jodhpur	Sri Ganganagar
April	100.55	100.21	29.93	67.18
May	98.13	97.19	18.69	58.36
June	95.64	96.40	23.74	61.74
July	97.51	95.39	28.06	101.55
August	100.38	103.06	31.88	110.55
September	104.62	103.33	116.92	73.60
October	104.39	101.53	381.86	82.64
November	106.41	102.54	277.69	112.91
December	100.82	100.87	129.11	158.24
January	98.74	99.49	69.74	147.63
February	98.78	98.74	53.30	125.62
March	94.03	101.25	39.06	99.98

monsoon season was started from the month of October. But looking at the crop prospects, the arrivals increased in the month of September from stocks held with traders and farmers. But in Ganganagar, farmers also cultivate irrigated guar in the months of April-May and harvest it during July-August, hence, higher arrivals were witnessed in the market during these months.

Futures Trade for Minimizing Price Risk in Guarseed

Futures trade in guarseed started in April 2004 on NCDEX platform with the objective of price discovery and price risk management. Since then guarseed contracts are being traded on NCDEX, MCX, NMCE and Bikaner Commodity Exchange. Futures contracts for guar gum are available on NCDEX and MCX

Table 6. Volume of trade on commodity bourses

(Volume in lakh tonnes, values in crore rupees)

Year		Guarseed	Guar gum	Agri-commodities	Total commodities	Percentage of agri-commodities	Percentage of total commodities
2003-04	Volume	2	0	491	493	0	0
	Value	225	0	123914	129364	0	0
2004-05	Volume	799	29	1939	1942	43	43
	Value	129523	13412	390188	571760	37	25
2005-06	Volume	1902	80	5819	6789	34	29
	Value	330439	36986	1192227	2155122	31	17
2006-07	Volume	1610	26	5024	6129	33	27
	Value	324881	13132	1317125	3676927	26	9
2007-08	Volume	671	11	3145	5573	22	12
	Value	123753	4941	941361	4065990	14	3
2008-09(Aug' 08)	Volume	301	4	1153	2468	26	12
	Value	57189	1799	288607	2084443	20	3

platforms. Futures trade in agri-commodities provides a good hedging platform to the farmers, processors, exporters, etc. in the value chain.

The total volume of guarseed and guar gum traded on commodity futures exchanges increased continuously in the initial years and accounted for more than 30 per cent of the total volume of agricultural commodities traded (Table 6). The total quantity traded on commodity bourses was 88-times of the total quantity of guarseed produced in the year 2004-05, and it was 179-times in the year 2005-06, 146-times in the year 2006-07 and 53-times in the year 2007-08. The total value of output of guarseed was estimated at ₹ 1,238 crore during 2005-06 (June – July), which has enjoyed a futures turnover of ₹ 299,305 crore (242-times of guar output) during May 2005-March 2006. This shows that futures contracts of guarseed and guar gum are liquid enough and provide sufficient hedging opportunities to minimize price risk.

Guarseed Marketing and Supply Chain

There are a number of guar processing industries in Jodhpur, Bikaner, Ganganagar, Alwar and Jaipur in Rajasthan state, in Bhiwani and Sirsa in Haryana state and Deesa, and Ahemdabad in Gujarat state. These industries can be grouped into guar split manufacturers, and guar gum processors. There are more than 150

split units in India, and the total installed capacity is more than 6 lakh tonnes per annum. There are two types of guarseed processing industries, namely, processing of guarseed to guar gum and guar gum to powder. All the split units have indigenous plant and machinery and are mainly located in Jodhpur, Barmer, Sri Ganganagar and Bikaner districts of Rajasthan. Splits are available in various grades in terms of purity (90%, 92%, 95% and 97%). The pulverized gum is largely marketed as a commodity, and about 40 per cent of the exports are still in the form of refined splits.

Guar is mainly grown during the *kharif* season, and output enters the markets during November-December. The part of produce (5-10%) is retained by the farmers for seed, and animal feed purpose. Guarseed is used for extracting guar split and gum and is used as animal feed.

Guar growers sell their produce to village traders at the farm gate or to wholesaler/ traders through commission agent in *mandi*. Some of the growers sell the produce directly to guar gum split and powder processors also (Figure 1). Thus, nearly 90 per cent of the total guar produced in the country is procured by the processing industry. Split manufacturers procure guarseed from the farmers or village traders in the *mandi* through commission agents. Another supply chain is farmers selling guarseed in *mandi* through

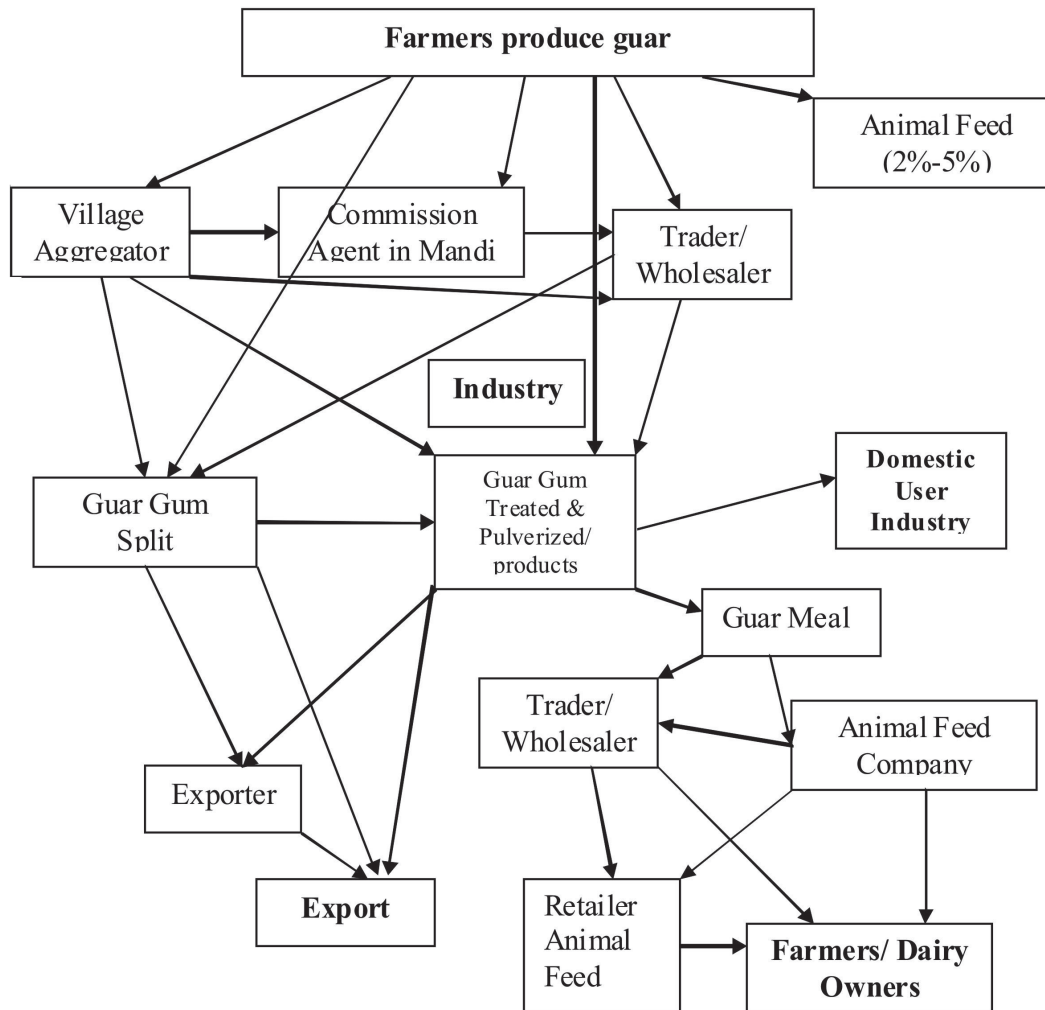


Figure 1. Guar value chain in India

commission agent to stockists/ traders, and traders selling it to split manufacturers or guar gum processors.

Split manufacturers after processing guarseed into split either export directly or through exporters, or sell it to the gum processors. Similarly, gum processors source guarseed from either farmers or village traders in mandi through commission agents or from stockists/ traders, or they procure split from split manufacturers. After processing of guar seed/ split into different industry-specific guar gum products, they export it to the importing countries or sell to the domestic industries for further use. The direct marketing or contract farming practices are seldom prevalent in the guar marketing. Guar meal, a by-product of guar industry, is used as animal feed. The meal is procured by feed manufacturers and sold to livestock-rearers or dairy farms through their distribution network.

International Trade of Guar Derivatives

Guar gum is classified under 'Mucilages and Thickeners' group (HS code 13032) in the harmonized system of classification in the international trade. Mucilages and thickeners include derivatives of locust bean, locust bean seeds and guarseeds. India is the largest exporter of guar gum and mucilages with 38 per cent share of world mucilages and thickeners trade, followed by Spain (14%), USA (9%), Italy (7%), Pakistan (5%) and Germany (4%). Countries like USA, Spain, Italy, Germany, etc. import refined guar split from India and process it into industry-specific guar gum products and re-export it. Major importing countries of guar gum or mucilages and thickeners group are USA (with about 30% of total world mucilages and thickeners import), followed by Germany (12%), Japan (6%), Denmark (6%), Italy (6%), etc.

Table 7. Export of guarseed and derivatives from India: 1987-88 to 2007-08

Year	Guarseed		Guar meal		Guar gum refined split		Guar gum treated & pulverized	
	Quantity (tonnes)	Value (in lakh ₹)	Quantity (tonnes)	Value (in lakh ₹)	Quantity (tonnes)	Value (in lakh ₹)	Quantity (tonnes)	Value (in lakh ₹)
1987-88			57.12	9.52	29868.9	5850.38	22994.6	40482.01
1990-91			60.0	5.9	23344.0	2435.0	26448.1	3373.6
2000-01	143.24	41.13	1720.18	923.52	43954.92	20,597.64	83855.73	38,773.94
2001-02	3.40	7.02	756.00	334.69	32961.36	10,131.20	84165.66	29,843.24
2006-07	1286.21	562.51	192.50	85.87	41266.75	19,328.34	147845.12	93,164.99
2007-08	8.41	2.82	7025.1	1,329.41	63711.36	30,206.81	140430.13	81,038.35
CAGR (%)			25.3	32.1	5.3	14.6	8.6	18.0
CV (%)			132.73	120.77	31.29	64.21	48.32	76.58
CVt (%)			94.57	90.22	16.25	41.90	21.14	36.00

Source: Authors calculation, data collected from DGFT website.

Nearly 80 per cent of guar gum and split produced in the country are exported which fetch a good amount of foreign exchange. Export figures of guar derivatives also show a sizeable inter-year variability. Exports of guar products from India are continuously increasing with the annual compound growth rate of 7.6 per cent in quantity-terms and 17.1 per cent in value-terms. The major items of export among guar products are guar gum treated and pulverized, followed by guar gum refined split and guar meal. The total quantity of guar products exported from India was about 50 thousand tonnes valued at ₹ 5814.54 lakh during 1990-91, which increased to 211 thousand tonnes, valued at ₹ 112577.4 lakh during 2007-08 (Table 7).

The export of guar derivatives has increased sharply from 2005-06. Growth in export of guar meal has been worked out to be 25 per cent in quantity-terms and 32 per cent in value-terms. Export of guar gum refined split has grown at the rate of 5.3 per cent in quantity-terms and 14.6 per cent in value-terms. The export of guar gum treated and pulverized has shown an increase of 8.6 per cent in quantity and 18 per cent in value (Table 7). Coefficient of variation (CV) and Instability Index (CVt) in export of guar products show that the export of guar meal was highly instable and volatile in both quantity and value terms. The CV for value export of guar refined split (64.2%) and gum treated and pulverized (76.6%) indicated high instability in export value realization.

The export composition of guar derivatives showed that export of refined guar splits was 47 per cent and guar gum treated and pulverized was 53 per cent in the year 1990-91. The proportion of refined guar split, an intermediate product, was dropped to 30 per cent of total guar derivatives exported from the country, but still a sizeable quantity of this raw material is exported for processing into different industry-specific guar gum products. The major share of the guar processed in India is exported in the form of either semi-processed product, i.e. refined splits or guar gum powder. In recent years, export of modified/derivatives gums has also started.

The study has observed that export of guar gum treated and pulverized fetched 25-30 per cent higher income to the country compared to the export of guar refined splits. Considering about 5-10 per cent increase in cost of processing splits to gum powder, still 15-20 per cent higher income realization could be achieved, and processing industry could provide employment to more people in the area.

Guar refined split is an intermediate product manufactured from guarseed and is used for processing and producing different industry-specific guar gum products. The USA continues to be the major importer of guar refined split, followed by China, South Africa, Netherlands, Germany, United Kingdom, Spain, etc. During recent years, China has emerged as the largest

importer of guar refined split, according to trade sources China imposes import duty to the tune of 15 per cent on import of guar gum, whereas import of guar refined split is free. Thus, China is encouraging import of intermediate product, processes it into different industry-specific guar gum products and re-export it (Padmanabhan, 2007; 2008). Similarly, all other countries who are importing guar refined split in bulk from India process it and re-export the finished product in the form of industry-specific guar gum products (discussions with exporters). Similar is the situation in the case of USA and European countries.

The USA continues to be the largest importer of guar gum from India with an annual import of more than 53,831 tonnes in the year 2007-08 which represents 38 per cent of total guar gum exports of India. Germany and China are the other major importers of guar gum from India with about 17,135 tonnes and 10,800 tonnes of annual imports respectively, which account for 12 per cent and 7.7

per cent of total guar gum export from India. Other major importers of guar gum are: Italy, South Africa, Russia, Australia, Netherlands, Japan, Brazil, Belgium and Canada. Presently India exports guar gum to more than 90 countries.

The Harmonized System (HS) classification with code 130232 is mucilages and thickeners derived from locust bean seeds or guar seeds. This includes guar meal, guar gum refined split, and guar gum treated and pulverized. Since the guar gum refined split is an intermediate produce, export of this product should not be encouraged. Customs duty for all the products is same (Table 8). The export policy should discourage the export of guarseed and refined split.

Benefits under Vishesh Krishi and Gram Udyog Yojana

The exports of agricultural produce, minor forest produce and village and cottage industry products would be awarded duty free scrip at the rate of 5 per

Table 8. Customs duty on guar and its derivatives

Exim Code	Item description	Customs duty	Central excise duty & tariff	Import policy
07133910	Guarseeds	Customs Basic Duty: 0 Addl Duty (CVD): 0 Spl Addl Duty (Spl.CVD): 0 Excise Cess 3 Customs Cess 2	Cenvat : nil Excise Cess : 3	Free
130232	Mucilages and thickeners, whether or not modified, derived from locust beans, locust bean seeds or guar seeds			
13023210	Guar meal (from 07.12.2008)	Customs Basic Duty: 30 Addl Duty (CVD): 10 Spl Addl Duty (Spl.CVD): 4 Excise Cess 3 Customs Cess 3	Cenvat : 10 Excise Cess : 3	Free
13023220	Guar-gum refined split (from 07.12.2008)	Customs Basic Duty: 30 Addl Duty (CVD): 10 Spl Addl Duty (Spl.CVD): 4 Excise Cess 3 Customs Cess 3	Cenvat : 10 Excise Cess : 3	Free
13023230	Guargum treated and pulverised (from 07.12.2008)	Customs Basic Duty: 30 Addl Duty (CVD): 10 Spl Addl Duty (Spl.CVD): 4 Excise Cess 3 Customs Cess 3	Cenvat : 10 Excise Cess : 3	Free

Source: DGFT website accessed on 20 December, 2008

cent of the FOB value of exports under the *Vishesh Krishi and Gram Udyog Yojana* (VKGUY). In order to promote indigenous sourcing, a built-in incentive has been introduced under the VKGUY for exporters utilizing domestic raw materials for export production. Such exports would get additional benefits under VKGUY @ 1.5 per cent of FOB value of exports compared to those who use imported agricultural products. The benefits are admissible from April, 2004. Through the VKGUY scheme, the incentive is also given for export of an intermediate product or raw material. This matter should be looked into and export of raw material should not be incentivized (stakeholders discussion).

Issues and Suggestions for Boosting Guar Industry and Trade

During meetings with different stakeholders at a number of important locations, several issues related to various aspects of guar emerged. As per the findings

of the study and discussions with stakeholders, the issues and suggestions have been summarized as under:

Research and Development: The issues pointed out by the stakeholders related to research and development on guar production included lack of availability of high-yielding varieties with high viscosity gum, poor access of farmers to production technology and quality seeds, low seed replacement ratio, etc. It was suggested that SAUs/ research centres should develop varieties taking care of the requirements of the industry. The easy availability of production technology and HYV seeds were the main requirements of farmers.

Marketing of Guar and its Products: The issues observed during discussions with stakeholders related to marketing of guar seed and products included lack of containers and transportation facilities for processed products from processing point to the port of export, lack of storage facilities, poor linkage of buyers to

Table 9. Issues and suggestions to strengthen guar industry in India

Theme	Sub-theme	Issues and challenges	Recommendations/ requirements
Research and development	Enhancement in production	Low yield	More area under cultivation of high-yielding short-duration varieties. Improve seed replacement rate.
	Market preferred varieties	Low gum content and low viscosity varieties	High gum content and high viscosity varieties (like HG 365).
	Value drivers for research and development	Low value addition	Cess on guar export to fund R&D. Hydrolysed guar for dietary fibre use. Cationic guar for personal care use. Hydroxypropyl guar for construction, personal care, oil field uses. Odourless and tasteless guar for use in food. Development of HYVs / high viscosity for fast hydrating guar. Removal of odour of guar meal and its use as a protein supplement for human consumption. Research – industry linkage to be strengthened.
Marketing	Market infrastructure	Long distances to port of exports Lack of storage Lack of cleaning and grading units	Develop hinterland ICDs and link to rail network. Warehousing in rural areas. Cleaning & grading units in market yards.
	Marketing efficiency Market information and intelligence	Long supply chain Non-accessible to the farmers	Promote direct marketing and contract farming. Ensure daily market info dissemination. Popularize use of commodity futures for price risk management.

Contd...

Table 9. Issues and suggestions to strengthen guar industry in India — Contd.

Theme	Sub-theme	Issues and challenges	Recommendations/ requirements
Processing	Processing technology	Gap in process / technology for value-added products. Splitting and pulverizing technology.	Import or develop process and technology. Establish techno centre to identify and make available the cost-effective and latest technology for processing. Export promotion council to assign techno-studies.
	Certification issues for export	Multiple certificates required for food grade guar Time-consuming process of getting certificate	Regional laboratories, certification agencies at processing centres.
Industry and export	Policies for export	Substantial export of intermediate products	Policies to encourage export of value- added products & discourage exporting intermediate products. Special assistance for adoption/ import of advanced processing technology.
	Identification of new market opportunities	New applications of guar, action oriented plan	R&D for development of new products and its technology, capacity building industry for food safety aspects.
Industry value chain	Understanding of demand, guar varieties and production requirement	Absence of knowhow with industrialists on various varieties of guarseed	Products are tailor-made as per customer requirement. Dissemination of information on suitable varieties of guar to the processors.
	Demand for specialized labour, professional advice and technical support	Shortage of trained manpower in industry. Lack of knowhow on technology, product biochemistry	Develop trained manpower by imparting technical training. Specific streams of courses relating to hydrocolloids, polymer technology, etc.
Industry-farmer' relationship	Governance and representation of stakeholders	Negligible representation from farmers Farmers groups or cooperatives are missing	Guar growers associations be promoted and strengthened with proper representation.
	Roles, leadership quality, skills, competencies, decision structures	Associations are not very effective	A federation of national guar industry association with regional chapters including farmers groups
	Requirement of whole-of-chain industry body to address fragmentation	Very much required To be aware about the regional disparities and a wholesome approach	R&D institution looking all aspects (right from production to export) of guar. A national approach be devised to rectify the gaps and fragmentation.

farmers, etc. Promotion of direct marketing and contract farming in guarseed is suggested for linking farmers to buyers. Development of hinterland ICDs linked with railway network, and cleaning & grading units in market yards will facilitate the industry. Use

of commodity futures as risk management tool by farmers/ groups need to be promoted.

Processing: The major challenges in guar processing as opined by the stakeholders were: poor research and development in the country for processing technology,

and development of value-added products of gum for use in different industries. It is suggested that a part of revenue from export taxes need to be diverted to create a national level research and development institute for the purpose.

Promotion of Guar Industry and Export: The issues identified relating to promotion of guar industry were lack of certification laboratories in the processing centres, policies promoting export of intermediate product, competition from countries strong in processing of value-added products of gum, etc. The requirement of the stakeholders included establishment of certification laboratories at the processing locations, framing policies discouraging export of intermediate product, and concerted efforts for developing/importing processing technology for value-added products.

Guar Industry Value Chain: The concerns on guar value chain indicated that there was a fragmented supply chain in guarseed and products with lack of skilled manpower and lack of knowhow on technical & emerging market requirements among the small split manufacturers. The measures to strengthen the value chain include development specialized manpower and capacity building of fragmented industry on the food safety aspects.

Guar Industry Associations/ Representation: Though guar industry associations exist in the country, there is lack of farmers groups/ associations and lack of coordination among different associations. Hence, it is suggested that there should be a national level federation of guar industry and farmers associations with close coordination for a better information flow as a backward linkage and product flow as forward linkage.

Conclusions

Fluctuation in production of guar is a major problem in having sustained supply. The major problem of farmers is non-availability of certified seed at the time of sowing. The crop is highly marginalized and whenever water availability is low, the farmers cultivate this crop. None-the-less, India has got comparative advantage in production and export of guar and guar products. Hence, there is a need to encourage cultivation of guar by developing a Research and Development Centre as the centre of excellence.

The major activities of this centre could be collection and dissemination of information, promoting usage of guar and its derivatives, development of processing technology according to the changing market demand and food safety concerns and development of value-added products.

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