PRODUCTION AND MARKETING SCENARIOS OF JAGGERY IN INDIA WITH SPECIAL REFERENCE TO ANDHRA PRADESH

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Introduction

India is a founder member of General Agreement of Tariff and Trade (GATT), established in 1948 along with 22 other nations. World Trade Organization (WTO) was established on 1st January,1995 with 110 membership nations including India. The present membership strength is 144 and 30 other nations are actively considering membership. The 8th Round Summit of GATT at Uruguay (1986-91) finalized the draft, Agreement on Agriculture (AoA), which became effective from 1st July, 1995.

Many expressed concerns and apprehensions fearing adverse impact of World Trade Agreement (WTA) signed by India. The present day ill of agriculture and crashing prices are being attributed to WTA. This is mainly due to the fact that the implications and consequences of WTA are not fully understood by many. No doubt, there are both advantages and disadvantages due to WTA. But, the WTA provides great opportunities for marketing the produce and products globally for the member countries. The main aim of WTA on agriculture was to encourage fair trade in agriculture by removing trade distortions resulting from differential levels of input subsidies, price and market support, export subsidy and other kinds of trade distorting support. This facility can, however, not be exploited by developing countries, because developed and developing countries do not have the same level field for operations. So, in this context, it is thought appropriate to study the implications of WTA on Indian agriculture with reference to major agricultural

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commodities. Since, jaggery is one of the major commodities exported from India and Andhra Pradesh state, the same is considered for this in-depth study.

Methodology

Sugarcane is one of the most important cash crops cultivated in India. India ranks second in the world next to Brazil both in area and production of sugarcane. But, in term of yield, India stood at 5th place among major producers in the world. During 1998, it was grown in an area of 39.60 lakh ha with a total production of 2650 lakh M.T.(cane). It is also estimated that about 30% of the cane produced in India, is being used in the manufacturing of jaggery.

Andhra Pradesh state ranks 5th in production of sugarcane in the country. In the year 1998-99, it was grown in an area of 0.21 m.ha. The total production of sugarcane in the state was 16.68 m.tonnes. About 60% of the cane produced in the state is being converted into jaggery in the state.

For studying the growth rates of area, production and productivity of sugarcane both at All-India level and Andhra Pradesh level and similarly for the production of jaggery and Khandsari at all-India level, the requisite information was collected from FAO, Year Book, 1999, CMIE Reports, Indian Agriculture, 1999 and Agriculture Statistics at a Glance-2000. The export competitiveness of jagery in the present study has been assessed by working out Nominal Protection Coefficient (NPC). It is the ration between domestic price to the border price. Symbolically,

$$NPC=pd/pb$$

Where, NPC=Nominal Protection Coefficient
pd=Domestic price of a commodity.
pb=Border price of a commodity

In working out the export competitiveness of jaggery at all-India level, it is the exportable hypothesis which is relevant, was taken into consideration. Under this hypothesis, the jaggery is deemed to be competitive at Mumbai and Chennai ports. For Andhra Pradesh state, the exports competitiveness was studied taking into consideration the cost of production ratios between Andhra Pradesh and All-India level. The data regarding export prices, domestic prices and cost of production of jaggery was collected from different sources like Indian

Agriculture 1999, Agricultural Situation in India Monthly Journal of Government of India and Commission for Agricultural Costs and Report, 2000. The internal transportation costs of jaggery upto the selected ports, Mumbai and Chennai were collected from Container Corporation of India, Hyderabad.

For studying the marketing scenario of jaggery in India, Anakapalle regulated market in Andhra Pradesh was selected purposively, as it ranks next to Muzaffarnagar market in Uttar Pradesh. At market level, the market structure and price spread for jaggery were studied to assess the degree of market competitiveness and marketing efficiency respectively. For studying these aspects in detail, 60 farmers, 30 commission agents, 30 local exporters, 30 local wholesalers and 30 retailers were selected.

Results and Discussion : World Scenario

India ranks second in the world next to Brazil (Table 1) both in area and production of sugarcane. These two countries taken together accounted for 45.80 per cent area and 48.17 per cent production respectively in the year 1998. China, Mexico, Thailand and Australia are the other major producers of sugarcane in the world. Among these, Australia marked the highest yield with 1003.52 q/ha followed by Mexico (795.04 q/ha), China (713.17 q/ha) and Brazil (684.36 q/ha). India ranks 5th in yield rankings among major producers in the world and its yield level is lower than average yield of cane in the world.

Table 1: Major producers of sugarcane in the world (1998)

Countries	Area ('000 ha)	Production ('000) MT	Yield (kg/ha)
India	4944	338348	68436
Brazil	3960	265000	66919
China	1201	85666	71317
Mexico	615	48895	79504
Thailand	930	46025	49489
Australia	409	41044	100352
Cuba	1100	35000	31818
WORLD	19438	1252266	64423

Source: FAO Year Book (1998)

Domestic Scenario

Sugarcane occupied 2.15 per cent of gross cropped area in the year 1996-97. Among different states in the country, Uttar Pradesh accounted for the largest shares in acreage and production of sugarcane (Table 2). Its share in total area and production of cane stood at 48.3 per cent and 39.3 per cent respectively during 1998-99. Maharashtra occupies second place in area and production after Uttar Pradesh with 13.0 per cent and 15.9 per cent shares respectively. These two states are followed by Tamil Nadu (15.8 per cent), Karnataka (9.6 per cent) and Andhra Pradesh (5.6 per cent) in sugarcane production and these five states collectively account for 86.31 per cent of total sugarcane production in the country in the year 1998-99.

Table 2: State-wise area, production and yield of sugarcane in India

State	Area(m.ha)	Production (m.tonnes)	Yield(kg/ha)
Uttar Pradesh	1.97	116.30	59019
Maharashtra	0.53	47.15	88998
Tamil Nadu	0.35	46.67	134156
Karnataka	0.31	28.45	91199
Andhra Pradesh	0.21	16.68	78038
Gujarat	0.20	13.57	69110
Haryana	0.13	6.88	55040
Bihar	0.11	5.23	48547
ALL-INDIA	***4.08***	***295.73***	***72560***

Source : Agricultural Statistics at a Glance-2000.

The state of Tamil Nadu ranked first in yield among all the states in the country, where the yield is found to be 1341.56 q/ha. Tamil Nadu was followed by Karnataka and Maharashtra which ranked second and third in yield rankings during the same period with yield levels 911.99 q/ha and 889.98 q/ha respectively. The yield levels in these three states are higher by 184.89 per cent, 125.68 per cent and 122.65 per cent as compared to the National average (725.60 q/ha).

Growth rates in area, production and yield of sugarcane for the country and for the state of Andhra Pradesh were worked out during several periods and the results are presented through table 3. It is clear from the table that, during the aggregate period 1949-50 to 1998-99, the area, production and yield of sugarcane at All-India level

showed positive growth rates. However, the growth rate of area under sugarcane showed declining trend during the selected two sub-periods(1949-50 to 1964-65 and 1967-68 to 1998-99). The growth rate of production during the sub-period 1949-50 to 1964-65 is 4.26 per cent per annum, but it was decreased to 3.14 per cent during 1967-68 to 1998-99. This is mainly due to decline in the growth rate of area during the sub-period 1967-68 to 1998-99. But, a little increase in the growth rate in yield during the same sub-period, slightly compensated the production growth rate.

In Andhra Pradesh state, the area and yield of sugarcane are showing positive growth rates (1.53 per cent and 3.13 per cent respectively) for the past three decades (1970-71 to 1998-99). During the same period, the production of sugarcane is declining at a rate of 0.02 per cent per annum. During the sub-period 1970-71 to 1984-85, both area and yield of sugarcane showed positive growth rates (0.85 and 0.55 per cent respectively) and with a low magnitude. But, production showed declining trend at the rate of 0.31 per cent per annum. However, this trend was totally improved during the sub-period, 1985-86 to 1998-99 as both area and yield of sugarcane showed higher positive growth rates (3.62 and 11.70 per cent respectively) due to the introduction of high yielding and short duration varieties of sugarcane. Hence, during the same period, the production of sugarcane showed positive growth rate (0.93 per cent) when compared to -0.31 per cent during 1970-71 to 1984-85.

Table 3: Growth rates (%) of area, production and yield of sugarcane during different periods

Period	Area	Yield	Production
1. All-India			
1949-50 to 1964-65	3.28	0.95	4.26
1967-68 to 1998-99		1.36	3.14
1949-50 to 1998-99	1.83	3.08	1.22
2. Andhra Pradesh			
1970-71 to 1984-85	0.85	0.55	-0.31
1985-86 to 1998-99	3.62	11.70	0.93
1970-71 to 1998-99	1.53	3.13	-0.02

Source: 1. All-India data were collected from Agricultural Statistics at a Glance-2000.
2. Andhra Pradesh data (1955 to 1993) were collected from CMIE Report (Agriculture-2000)

Jaggery Production and Trade

At present, nearly 30 per cent of the sugarcane produced in the country in a normal year (a year in which the production of sugarcane matches consumption) goes into the production of jaggery. Muzaffarnagar in Uttar Pradesh is considered as Asia's largest jaggery market. The other main markets in the country are Anakapalle (40 kms from Visakhapatnam district) in Andhra Pradesh, Mandya in Karnataka, Salem in Tamil Nadu, Hapur in Uttar Pradesh, Patna in Bihar and Mumbai and Kolhapur in Maharashtra.

The details of output of jaggery and khandsari from 1982-83 to 1997-98 was shown in table 4. It is clear from the table that the output of jaggery and khandsari reached a peak during 1993-94 and 1996-97 due to bumper harvest of sugarcane crop and was lowest during 1986-87 and -1995-96 as the crop was adversely affected by bad weather and pest attack. For other years, the jaggery and kandsari production is concentrated between 80 lalh.MT to 98 lakh.MT. The growth rate worked out for the production of jaggery and khandsari during this reference period is only 0.79 per cent (non-significant) and this indicates the production of jaggery and khandsari is more or less stagnated.

Destination-wise Exports of jaggery from India

The study on the destination-wise exports of jaggery from India reveals the concentration of exports in a few countries. The direction of jaggery exports

Table 4: Production of jaggery and khandsari in india (Lakh.M.T.)

Year	Production	Year	Production
1982-83	86.65	1990-91	90.73
1983-84	95.41	1991-92	89.67
1984-85	91.05	1992-93	92.00
1985-86	82.48	1993-94	105.18
1986-87	79.25	1994-95	96.00
1987-88	83.00	1885-96	74.09
1988-89	93.91	1996-97	108.07
1989-90	85.73	1997-98	98.57
	Compound Growth Rate (%) : 0.79		

Raw Data Source: Indian Agriculture, 1999

during the last four years(1994-95 to 1997-98) is presented in table 5. The figures reveal that, continuos exports were made to Canada, Malaysia, Singapore, UAE, UK and USA. For Sri Lanka and France, eventhough the exports were irregular, the quantum of exports are higher. On the whole, the large share of total exports were made to Malaysia (1994-95), France and Malaysia (1995-96), Malaysia and Sri Lanka (1996-97) and France, Pakistan and Portugal (1997-98) when compared to other countries. Malaysia is the chief importer of jaggery from India, as the exports are regular and at significant proportion during the reference period. It is interesting to note that, eventhough, Pakistan and Portugal do not appear as chief importers of jaggery from 1994-95 to 1996-97, they occupied first and second places in importing the largest share of jaggery exports from India in 1997-98. In recent years, there has been a quantum jump in the exports of jaggery from India, due to its wider acceptance in terms of quality.

Table 5: Country-wise exports of jaggery from India (M.tonnes)

Country	1994-95		1995-96		1996-97		1997-98	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Canada	130	1.53	161	0.51	197	0.84	227	0.49
France	—	—	10,500	33.14	—	—	10,032	21.92
Malaysia	4134	48.67	4972	15.69	6948	29.56	1468	3.21
Pakistan	—	—	—	—	—	—	21196	46.31
Portugal	—	—	—	—	—	—	10500	22.94
Singapore	121	1.42	235	0.74	290	1.23	79	0.17
Sri Lanka	167	1.97	20	0.06	13328	56.70	-	—
UAE	597	7.03	528	1.67	460	1.96	528	1.15
UK	245	2.88	595	1.88	140	0.59	547	1.19
USA	227	2.67	177	0.56	377	1.60	395	0.86
Total	8493	—	31677	—	23505	—	45767	—

Source: Indian Agriculture, 1999

Export Competitiveness of jaggery

NPCs have been worked out to determine the export competitiveness of jaggery in the selected countries and the results are presented in table 6. In order to find the export competitiveness of jaggery, exportable hypothesis, that is more relevant is taken into consideration. Under this hypothesis, jaggery is deemed

to be competitive with the selected countries at Mumbai and Chennai ports.The table reveals that, jaggery is an efficient exportable commodity from India, as the average NPCs (1994-95 to 1997-98) worked out are less than unity for UAE and UK countries. It is moderately competitive in these countries as the value of NPC falls between 0.75 to 1.00. However, it is less competitive in Malaysia and Singapore as the average NPCs (1994-95 to 1997-98) worked out are more than unity. Even though, the quantum of exports to the selected countries is increasing over the period, the increase in cost of production of sugarcane and jaggery is hampering its competitiveness in the international market. Countries like Peru, Egypt and Zambia are exporting jaggery at a very low price in the international market, thereby, adversely affecting India's trade in the international export market. Similar results were obtained from Andhra Pradesh state, where the export competitiveness was studied for jaggery, by taking into consideration cost of production ratios.

Table 6: Export Competitiveness (NPCs) of jaggery in the selected countries

Year	Malaysian		UAE		UK		Singapore	
	India	AP *	India	AP *	India	AP *	India	AP *
1994-95	1.46	1.73	0.76	0.90	0.80	0.95	1.43	1.69
1995-96	1.55	1.64	0.70	0.74	0.79	0.83	1.47	1.56
1996-97	1.22	1.39	0.66	0.75	0.78	0.89	1.14	1.30
1997-98	1.12	1.17	0.73	0.77	0.71	0.75	0.80	0.84
Average	1.34	1.48	0.71	0.79	0.77	0.86	1.21	1.35

Note: * indicates Export competitiveness from Andhra Pradesh taking into consideration cost of production ratios

Market structure for jaggery in Anakapalle market

Gini ratios were worked out for studying the market structure of jaggery, as it clearly explains the extent of inequality in the distribution of volume of business in the market. The market is considered to be more competitive as the value of Gini coefficient approaches zero and vice versa when it takes a value closer to one. The results of the analysis presented through table 7 reveals that, there exists a moderate degree of competitiveness for jaggery in Anakapalle market, as the value of Gini coefficient is only 0.48 and this market can be classified as slightly concentrated oligopoly based on Bain's classification. Hence, suitable steps should be taken to promote the competitiveness of jaggery in Anakapalle market.

Price spread for jaggery in Anakapalle market

The details of price spread of jaggery in Anakapalle market are presented in Table 8. The following are the marketing channels identified for jaggery.

1. Farmer - Import Commission Agent - Exporter - Local wholesaler - Retailer - Consumer

2. Farmer - Import Commission Agent - Local wholesaler - Retailer - Consumer

Table 7: Size distribution of commission agents handling jaggery in Anakapalle market.

Class	$	1993-94		1994-95		1995-96		1993-96	
		%	CU	%	CU	%	CU	%	CU
<2000	20.00	2.55	2.55	2.92	2.92	2.99	2.99	2.82	2.82
2000-3000	13.33	4.68	7.23	5.19	8.11	4.87	7.86	4.91	7.73
3000-4000	10.00	6.51	13.74	7.04	15.15	7.07	14.93	6.87	14.60
4000-5000	16.67	8.55	22.29	9.51	24.66	8.45	23.38	8.84	23.44
5000-6000	13.33	11.17	33.46	10.93	35.59	11.05	34.43	11.05	34.49
6000-7000	6.67	13.81	47.27	13.83	49.42	13.72	48.15	13.79	48.28
7000-8000	6.67	16.01	63.28	14.70	64.12	15.98	64.13	15.57	63.85
8000-9000	10.00	17.13	80.41	16.92	81.04	16.78	80.91	16.94	80.79
>9000	3.33	19.59	100.00	18.96	100.00	19.09	100.00	19.21	100.00
GINI RATIO		0.50		0.47		0.48		0.48	

NOTE: Classification based on quantity handled by a commission agent (quintals/year)
$ indicates percentage of commission agents to total
% indicates percentage of quantity handled to total
CU indicated cumulative total
Source: Kumar (1998)

Table 8: Producer's share in consumer's price of jaggery at Anakapalle market.

Particulars	Channel I		Channel II	
	Amount (Rs/qtl)	% to consumer rupee	Amount (Rs/qtl)	% to consumer rupee
Marketing charges	87.17	8.62	97.72	9.66
Middlemen Margins	103.45	10.23	51.26	5.07
Total marketing costs (1+2)	190.62	18.85	148.98	14.73
Price paid by the consumer	1011.25		1011.25	
Producer's share in consumer's rupee		81.15		85.27
Marketing efficiency Index		4.35		5.79

Source: Kumar (1998)

It is clear from table 8 that , the total marketing costs paid by the producers, exporters, wholesalers and retailers was higher in channel I (Rs 190.62 i.e.18.85% of consumer's price) when compared to channel II 9Rs 148.96 i.e.14.73 % of consumer's price). As the total marketing costs are lower in channel II, the producer's share in consumer's price is higher in channel II (85.27%) when compared to channel I (81.15%).

Conclusions

To conclude, India is the second largest producer of sugarcane in the world. But the disheartening aspect is that, the present use of cane to produce jaggery is on a declining trend (37.4% in 1990-91 to 26.7% in 1995-96). Besides this, there is a greater need to improve the export competitiveness of jaggery in the international market, as the jaggery is found to competitive only in UAE and UK countries. Hence, selecting a suitable variety of seed, improving processing efficiency, reducing cost of cultivation/production of jaggery, encouraging farm level grading, and storage facilities, improving transportation and market information network etc should be given more attention. In this context, the application of Integrated Pest Management (IPM), Integrated Nutrient Management (INM) strategies, strengthening the marketing infrastructure, conducting periodic studies on export competitiveness of jaggery in the international market, etc. should be given more importance for earning India's due share in the world market.

Reference

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