

POPULATION GROWTH AND DEMAND AND SUPPLY SITUATION OF SUGAR AND GUR IN BANGLADESH

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ABSTRACT

During 1990-91 to 2005-06 average total area under sugarcane was 89 thousand hectares only 1.07 per cent of the total cultivated area where as production was 4167 thousand tons. For the same period average yield of sugarcane was 46.6 t ha⁻¹ and sugar production was 170 thousand tons. Availability of sugar both from internal production and importation during the aforementioned period was 0.49 million tons on an average. Mean domestic production and importation of sugar and jaggery (locally called 'gur') were 0.89 million tons met 54% of the country's demand and deficit was 0.75 million tons (45% of the internal demand). Per capita availability of sugar and gur were 3.92 kg and 3.17 kg as against demand of 10 kg sugar and 3 kg gur respectively during the period. The growth rates of sugarcane cultivation area, sugarcane production, yield, gur production and sugar import during the aforementioned period were -1.11, -1.01, 0.62, - 4.37, 0.18 and 18.82 % respectively. Date palm and palmyra palm plantation may be an alternative source of sugar and gur to meet up the increasing demand of sugar and gur in Bangladesh.

Key words: Sugarcane, sugar, gur, demand, supply, gap

INTRODUCTION

Sugar is indispensable for health and if it is not taken directly, it must be taken from other sources of carbohydrates in the food. Since sugar, as it is called, a cheap source of instant energy, a person should take it liberally. According to the nutritionists (CSIR, 1957), "a person requires a minimum of 44 lb (20 kg) of sugar or equivalent quantity of gur per year in his (or her) diet". It is believed that there is a strong positive relation between total sugar consumption and health standard of a nation. According to FAO recommendation (13.0 kg sugar per person per annum) at present Bangladesh requires 1.80 million tons of sugar for 140 million people. The annual per capita consumption of sugar in the country is 5.80 kg (Sugar + gur in terms of sugar). In the neighboring countries as Sri Lanka, India and Pakistan are 12.50 kg, 13.47 kg and 20.50 kg respectively, while in the developed countries between 25-30 kg (Bench mark survey, 1996). Per capita consumption of sugar is very important in the context of health, IQ, calorie intake of the nations. Hence, it is necessary to produce more domestic sugar and gur to maintain our minimum health standard for our growing population through the increase production of sugarcane in Bangladesh.

In Bangladesh, sugar industry is the most important agro-based rural industry. But now the existence of this industry is questionable due to its huge losses each year. Although, more than 0.6 million farm-families are dependent on sugar industry for their subsistence. Most of the sugar mills are located in the North-western zones of the country where concentration of sugarcane cultivation is high. Currently, on an average the principal raw materials, sugarcane, for producing sugar is growing in 0.18 million hectare of land of which almost 50% is located in the sugar mills zones, where sugarcane is mostly used for sugar production and remaining 50% is situated in the non-mill zones, where sugarcane is mostly diverted for gur and juice production (Bench mark survey of Sugarcane, 1996). Sugar industry added value to final output in the form of sugar and its by-product. Further it is value added in our national economy when the final output is marketed to the consumer via dealer (distributor,

wholesaler and retailer). Therefore, there is a wide scope of increasing sugar production and its by-product through sugarcane processing which will meet up not only to growing demand of sugar but also to create enormous scope of employment in the country. Furthermore, sugar industry plays an important role to develop infrastructure in rural areas, rural employment, income of the farm families, contributes to national exchequer, foreign exchange saving, poverty reduction and value addition to the sugar as well as by-product industries (Alam *et al.*, 2005).

With the present population growth rate at 1.48 per cent per annum, the population will be at 20 cores in 2020 (Economic Review, 2006). At present, 14 sugar mills are in operation under BSFIC (Bangladesh Sugar and Food Industries Corporation) with a capacity of 0.20 million tons of sugar production per year. Bangladesh liberalized her economy during early 1990s and entered into free market economy, which lead reduction of import tariffs to all commodities including agricultural commodities. As Bangladesh is not self sufficient in sugar production it is needed to import sugar to meet increasing demand of sugar. However, due to government policy remarkable changes have been happened in crop practices during early nineties. It might be due to the confluence of irrigation and power tiller technology. Farmers are now showing almost rational attitude towards selecting enterprises. Sugarcane crop has to compete with high value short duration crops like HYV rice, vegetables, pulses etc to sustain. So, there is a great threat to retain land under sugarcane cultivation in order to meet up ever increasing demand of sugar.

MATERIALS AND METHORDS

All the sugar mills of Bangladesh were selected for the study. Data were generally collected from published sources like annual report/MIS report of Bangladesh Sugar and Food Industries Corporation (BSFIC), Bangladesh Sugarcane Research Institute (BSRI), Directorate of Agricultural Extension (DAE), Bangladesh Bank (BB) and Bangladesh Bureau of Statistics from 1990-91 to 2005-06 crushing seasons. Descriptive statistics and time series data were used to analyse the data of the study. For growth analysis exponential growth rate model was used.

$$y = ae^{bt} \text{ or, } \log e^y = \log e^a + bt$$

Where,

y = Sugarcane area, production, yield, sugar production,
t = time period, and
 $e^b - 1$ be the compound growth rate.

RESULTS AND DISCUSSION

Acreage, production and yield of sugarcane

There have been considerable temporal fluctuations in both acreage and production of sugarcane. Fluctuations in sugarcane production consequently result in temporal fluctuations in sugar production. The main factors attributed to these production variations were reducing of sugarcane areas which is subjected to relative profitability of competitive crops, damages of sugarcane due to natural calamities and non-availability of sugarcane to the sugar mills for milling. Availability of sugarcane for milling is highly co-related with the price of sugarcane offered by the sugar mills. During 1990-91 to 2005-06 average total area under sugarcane was 89 thousand hectares where as production was 4167 thousand tons. For the same period average yield of sugarcane was 46.6 t ha⁻¹ and sugar production was 170 thousand tons. At present, total cultivated area in Bangladesh is 8.29 million hectares of which only 1.07 per cent under sugarcane cultivation (BBS, 2005). The growth rates of sugarcane cultivation area,

sugarcane production, yield and sugar production during the aforementioned period were - 1.11, -1.01, 0.62 and -4.37% respectively.

Table-1 Acreage, production and yield of sugarcane in Bangladesh (1990-91 to 2005-06)
(In Thousand)

Year	Area (ha.)	Per cent increase/ decrease	Production of Sugarcane (ton)	Per cent increase/ decrease	Yield (t ha ⁻¹)	Per cent increase/ decrease	Sugar Production (ton)	Per cent increase/ decrease
1990-91	95	-	4696	-	49.19	-	246	-
1991-92	96	1.1	4491	-4.4	47.03	-4.4	196	-20.7
1992-93	88	-8.3	4247	-5.4	48.28	2.7	187	-4.1
1993-94	92	4.5	4576	7.8	49.61	2.8	222	18.2
1994-95	99	7.6	5030	9.9	50.81	2.4	270	22.0
1995-96	96	-3.0	4341	-13.7	45.25	-10.9	184	-31.9
1996-97	86	-10.4	4098	-5.6	47.33	4.6	135	-26.4
1998-98	88	2.3	4191	2.3	47.56	0.5	166	23.0
1998-99	94	6.8	4124	-1.6	43.71	-8.1	153	-8.1
1999-00	86	-8.5	3526	-14.5	42.82	-6.6	123	-19.3
2000-01	75	-12.8	3362	-4.7	44.90	10.0	98	-20.4
2001-02	88	17.3	4476	33.1	50.71	12.9	204	107.7
2002-03	105	19.3	4595	2.7	44.59	-14.0	177	-13.2
2003-04	84	-20.0	3948	-14.1	46.52	6.7	119	-32.8
2004-05	78	-7.1	3516	-10.9	44.99	-3.3	106	-11.0
2005-06	75	-3.8	3458	-1.6	46.84	1.9	133	25.5
Mean	89	-	4167	-	46.6	-	170	-
Growth rate	-1.11	-	-1.63	-	0.62	-	- 4.37	-

Source: BSFIC Annual Reports (1990-91 to 2005-06) and BBS (2005)

Domestic sugar and gur production and importation of sugar: The gaps

During nineties per capita incomes of the people have increased higher than previous two decades. This indicates improved economic profile of the people. Last few years importation of sugar increased tremendously due to improved economic profile to met up the required amount of sugar, as Bangladesh is not self sufficient in sugar production. The demand of sugar and gur is increasing with the increase of population in our country. Due to low recovery, supply shortage of sugarcane to mills and under capacity utilization sugar production is not increasing and mean production during 1990-91 to 2005-06 was 0.17 million tons far below than installed capacity of 0.21 million tons (Table 2). Despite government's efforts in achieving required amount of sugar and gur (10.0 kg sugar and 3.0 kg gur per person per annum), the gap between demand and supply of sugar and gur in the country is still high. Taking annual per capita 10.0 kg demand of sugar in 2005-2006 season internal demand of sugar stand at 1.40 million tons. Sugar production in 2005-06 was 0.13 million tons which met only 9 percent of the internal demand of sugar. Bangladesh, through BSFIC and private agencies imported 1.20 million tons of sugar about 85% of internal demand of sugar in 2005-2006 against the effective demand of 1.40 million tons of sugar. During 1990-91 to 2005-06 mean domestic production and importation of sugar and gur were 0.89 million tons met 54% of the country's demand and deficit was 0.75 million tons (45% of the internal demand). Availability of sugar both from internal production and importation during the period 1990-91 to 2005-06 was 0.49 million tons on an average. Per capita sugar availability was 3.92 kg and per capita availability of gur was 3.17 kg as against demand of 10 kg sugar and 3 kg gur respectively during the period. For the last 16 years from 1990 to 2006 there were deficit of around 0.75 million tons of sugar and gur on an average (Table 2). Illegal border trade or either a lower per capita consumption of sugar or both met up this huge deficit amount of sugar. This deficit can be met up either by increasing domestic sugar production as there is scope to increase domestic sugar production upto 0.21 million tons by

increasing recovery per cent, full capacity utilization and management improvement or either by importation of sugar.

Table-2 Production, demand and import of sugar and gur in Bangladesh (1990-2006)

Year	Population (million)	Per capita demand of sugar and gur @13Kg. ('000 ton)	Sugar production ('000 ton)	Sugar import ('000 ton)	Gur production ('000 ton)	Supply of sugar and gur ('000 ton)	Deficit ('000 ton)
1990-91	109.6	1425	246	138	432	816	609
1991-92	111.4	1448	195	50	482	682	766
1992-93	113.2	1472	187	64	415	666	806
1993-94	117.7	1530	221	86	334	641	889
1994-95	119.9	1559	270	156	285	711	848
1995-96	122.1	1587	184	28	371	583	1004
1996-97	124.4	1617	135	207	463	805	812
1997-98	126.7	1647	166	160	415	741	906
1998-99	129.1	1678	153	191	359	703	975
1999-00	131.5	1709	123	115	427	665	1044
2000-01	132.0	1716	98	328	436	862	854
2001-02	133.0	1729	205	210	306	721	1008
2002-03	134.0	1742	177	600	322	1099	643
2003-04	134.0	1742	119	700	450	1269	473
2004-05	140.0	1820	106	1000	450	1556	264
2005-06	140.0	1820	133	1200	450	1783	37
Mean	126.0	1640	170	324	400	894	746
Growth rate	-	1.16	- 4.37	18.82	0.18	-	-

Source: BSFIC Annual Reports (1990-91 to 2005-06), Bangladesh Bank (2006) and BBS (2005).

Strategies for overcoming the situation / How to meet the demand of sugar and gur?

In one hand, the demand of sugar and gur for various purposes keeping pace with population growth is increasing. On the other hand, sugarcane cultivation is now gradually being pushed to low-lying marginal lands prone to water-logging, flooding, drought and salinity stresses due to increased demand/production of cereal and vegetables crops. So, there is hardly scope to increase sugarcane acreage to meet the higher demand of sugar and gur for ever increasing population in Bangladesh. Date palm and palmyra palm gur may be an alternative source of sugar to supplement the increased demand for sugar and gur. According to BBS report, date palm and palmyra palm is grown in around 10755 to 10767 hectares of land and total estimated juice production is 3.34 to 3.48 million tons and @ 10% gur recovery about 0.334 to 0.348 million tons of gur is produced per year in Bangladesh. Date palm and palmyra palm is grown in homestead, embankment, ponds, road sides, and in marginal lands. These trees can survive in severe drought, flood and water logging conditions. There is an enormous scope to increase number of plant population as well as its juice and gur production in Bangladesh, and higher demand of gur can be met out of date palm and palmyra palm and generate rural employment and reduce poverty specially in rural areas.

In Bangladesh, there are 4000 Km of high ways, 145000 Km Kancha roads, 2500 Km bricks soling roads, 5000 Km flood-control embankment (dam) and cross dam 12000 Km. Meter gauge rail 2000 Km and broad gauge rail 1000 Km. In Bangladesh, these types of

fallow/grassing lands are around 0.1 million hectares. Therefore, total of these rail/road/embankment, stands around 0.33 million kilometers (two sides). The 0.33 million kilometers of land maintaining 5 m plant to plant distance, over 65 million trees can be grown. If juice is harvested from on an average, 2/3 rds of total population, 0.86 million tons of gur could be produced annually. It is estimated that a family of 5-6 member can be met from earning of 100 trees, and thereby 0.7 million families can survive and millions of people can be employed. Besides, millions of additional trees can be grown through application of agro forestry approach in the crop fields.

CONCLUSIONS

Due to population growth, increasing land for sugarcane cultivation is not possible which is also decreasing, so to meet up future demand of sugar and gur planting of date palm and palmyra palm in homestead, embankment, ponds, road sides, marginal lands and ail (demarcation mark) that remain fallow would be an alternative. This will increase the production of juice, gur and sugar as sugarcane used for juice and gur making will be reduced. It will also increase the income of the rural people and thus contribute to reduce poverty and upliftment of nutritional status of rural people.

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