

## DIVERSION OF SUGARCANE TO JAGGERY/GUR & KHANDSARI UNITS IN UP IN 2012-13

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### ABSTRACT:

Jaggery/Gur production in India is about 7-10 million tons (mt) per annum, while its per capita consumption is about 5 kg. In the last two decades, the consumption of Jaggery/Gur has fallen significantly by almost half of what it was consumed two decades back. Jaggery/Gur in Uttar Pradesh is one of the largest among other states and contributes about >40% in total Jaggery/Gur production. There are about 22,000-23,000 Jaggery/Gur units along with 43- 45 Khandsari units which have commenced operation in Uttar Pradesh during 2012-13 crushing season. The average capacity of Jaggery/Gur units is about 10 tcd (tonne per day), while Khandsari average capacity is about 350 to 400 tcd. In 2012-13, Jaggery/Gur and Khandsari put together would estimate to crush about 50 to 55 mt of cane. This year UP is estimated to produce 140 mt of sugarcane and out of this about 85-88 mt sugarcane is available to sugar mills for producing sugar during 2012-13. ISMA in its initial estimates for UP has projected 79 lac tons of sugar to be produced in 2012-13 crushing season.

**Keywords:** - Jaggery/Gur, Gur, Sugarcane, Khandsari, tonne per day (tcd)

### INTRODUCTION:

JAGGERY/GUR is the most ancient sweetening agent in India. This is a low grade non-centrifugal sweetener consumed in India, Pakistan, Bangladesh, Africa, Myanmar, China and other countries.

Jaggery/Gur is a pure, traditional, unrefined form of sweetener. It is a good source of minerals like Calcium, Iron, Phosphorous and Protein. Jaggery/Gur industry is very popular in Uttar Pradesh. It contributes >40% Jaggery/Gur production of India. The production of Jaggery/Gur depends on various factors like : - Sugarcane price offered by sugar mills in crushing season, time of commencing the crushing operations at sugar mills, Jaggery/Gur prices and its demand in market. The shape and size of Jaggery/Gur produced vary from place to place. In UP, Jaggery/Gur is produced in different shapes and sizes like **Basket, Laddoo, Pansera, Chaquoo, Khurpa, Ruscutt, Shakkar** (powder Jaggery/Gur).

Jaggery/Gur is mostly manufactured by sugarcane farmers on a small scale using 3 to 4 roller cane crusher and open pan juice concentration furnace. These crushers extracted only 50-60% juice. The rest 20-25% lost due to poor extraction and is burnt with bagasse as fuel. Boiling

sugarcane juice is the second important step in the processing of cane for Jaggery/Gur manufacturing. Jaggery/Gur quality and storability often depend on effectiveness of juice clarification. The main objective of clarification is to make juice clear and light in colour. Various vegetative clarification used in Jaggery/Gur making such as Deola, Bhindi, Phalsa, Castor etc. Chemical clarification also used by many farmers in early part of crushing such as sodium hydrosulphite, Lime, sodium Carbonate, sodium Bicarbonate etc. After the clarification the juice boiled briskly for an hour with the object of evaporating large quantity of water in it. During this period the temperature of boiling juice gradually rises from 100 to 105°C. When the temperature is about 105°C the juice start frothing and from this time onwards the fire is to be regulated to prevent caramelization of the sugar. At 108° C temperature stage, this syrup has to be constantly stirred to prevent charring and spilling over the sides of the pan. At this stage castor/ Mustard/Groundnut oil 10 to 15 ml is added to every pan. This prevents frothing to a certain extent, and also facilitates easy flow of Jaggery/Gur from the pan to the cooling trough. The striking point corresponds to temperature range from 116° C to 120° C. The optimum temperature is found to be 118° C once the striking point is achieved the pan is removed from the fire (or stop fire) and the content are transferred to a wooden , earthen or cemented trough which is called cooling trough for crystallization. ( Baboo and Soloman 1995, Hunsigi 2012).

Indian Sugar Mills Association is making projection of sugar production with the help of scientific methods like satellite mapping of sugarcane acreage along with visual inspection during various growth stages of sugarcane crops. However, availability of quantum of millable cane from the ratoon and plant crop to sugar mills is also determined by quantity of sugarcane utilized by local Jaggery/Gur or Khandsari production units in the state. Diversion of sugarcane to local sweetener production generally depend on sugarcane price offered by sugar mills in crushing season, time of commencing the crushing operations at sugar mills, Jaggery/Gur prices and its demand in market and lastly the number of operational days by sugar mills in the crushing season. Therefore, a field study was carried out to know the quantity of sugarcane utilized for Jaggery/Gur production in UP and their influence on the sugar production in UP.

## **MATERIALS AND METHODS:**

Indian Sugar Mills Association – Statistics & Research wing has collected the information based on the questionnaire reply from the sugar mills and field team visits to different mandis on Jaggery/Gur and Khandsari units commenced across various districts of UP and their expected sugarcane utilization during the season.

**Table-1.** The Questionnaire related to local Gur and Khandsari manufacturers in Mill area.

Name of Mill:- ..... Distt. .... State: - .....

<b>S.No</b>	<b>Particulars</b>	<b>Units</b>
1	GUR UNITS	
1.1	No. of Gur Units (installed) (no.)	
1.2	No. of Gur Units (working in Current season 2012-13) ( no.)	
1.3	Average capacity of Gur Units ( tcd)	
1.4	Avg. Sugarcane prices offered by Gur units to farmer ( Rs. / Qtl)	
1.5	Avg. no. of operational days (no.)	
1.6	Avg. Prices of Gur in local mandis ( Rs./ qtl)	
2	KHANDSARI UNITS	
2.1	No. of Khandsari Units (installed) (no.)	
2.2	No. of Khandsari Units (working in Current season 2012-13) ( no.)	
2.3	Average capacity of Khandsari Units ( tcd)	
2.4	Avg. Sugarcane prices offered by Khandsari units to farmer ( Rs. / Qtl)	
2.5	Avg. no. of operational days (no.)	
2.6	Avg. Prices of Khansari in local mandis ( Rs./ qtl)	

A case study on Muzaffarnagar Gur Mandi was also carried out by Shri Kanwarjeet Singh, Executive (Agriculture Projects) ISMA, to know the quantity of Jaggery/Gur arrival per day, in a particular period and with the special reference to last 5 Year 2007 to 2011.

## **RESULT AND DISCUSSION:**

### **1. JAGGERY/GUR UNITS IN UP STATE DURING 2012-13**

Based on the Questionnaire and field studies, following results were obtained in different zone of UP.

**A. Western Uttar Pradesh** – (approx) 11000 units, which is about 48% of the total universe of units' set-up across state. On an average there are about 300 odd Jaggery/Gur units per operational sugar mill in West UP, which runs about 180-210 days in a year i.e. from second fortnight of Sep to April. The density of Jaggery/Gur units is more in Western Uttar Pradesh due to:-

- More paper mills are concentrated in Western UP, and baggase from Jaggery/Gur units works well as their raw material. As per trade sources, the paper prepared from Jaggery/Gur unit baggase is of better quality. Moreover, Jaggery/Gur units are making extra profit by selling their baggase to paper units.
- Western UP has sugarcane varieties like CoJ-64, CoJ 85, CoS 8436, CoS 88230, CoS 767, CoS 238, CoS 118 etc, which is good for Jaggery/Gur units on account of good Jaggery/Gur recovery.

**B. Central Uttar Pradesh** – (approx) 6500 units, which is about 29% of the total universe of units' set-up across state. On an average there are about 130 odd Jaggery/Gur units per operational sugar mill in Central UP, which runs about 150-180 days in a year i.e. from Oct to Early March.

**C. Eastern Uttar Pradesh** – (approx) 5000 units, which is about 22% of the total universe of units' set-up across state. On an average there are about 115 odd Jaggery/Gur units per operational sugar mill in Eastern UP, which runs about 150-180 days in a year i.e. from Oct to Early March.

This season 2012-13, total Jaggery/Gur units in UP expected to utilize 430-450 lac tonne of sugarcane to produce about 38- 40 lac tonne of Jaggery/Gur , with avg.8- 8.5% recovery percentage.

**2. KHANDSARI UNITS - UP state:** - Khandsari units run almost three months with a crushing capacity of 350-400 tcd.

- **Western Uttar Pradesh** – 11 units
- **Central Uttar Pradesh** – 27 units
- **Eastern Uttar Pradesh** –5 units

Result of the study indicated that approximately 22,000 -23000 units of Jaggery/Gur and 43 - 45 units of Khandsari are working in the State. during current season, however Jaggery/Gur units have come down from the average level of 30,000 - 35,000 and Khandsari units have almost gone down by half in number of units in UP.

**3. Availability of sugarcane for different purpose (2012-13) :** Result presented in table-2 indicates that about 85 to 88 mt cane will be available for crushing in the sugar mills for white sugar production based on the above cane crushing by mills, UP is expected to produce 79 lac tonnes of sugar in 2012-13.

**Table-2 :** Availability of Sugarcane for different purpose in Uttar Pradesh:- 2012-13 (estimation)

S.No	Particulars	Unit Lac tonne	% of total Sugar Production
1	Total sugarcane Production	1400	100%
2	Total sugarcane Required for Planting purpose	72-74	5-6%
3	Total requirement of sugarcane by JAGGERY/GUR Units	433-435	31-32%
4	Total requirement of KHANDSARI units	6-8	1-2%
5	Total requirement of sugarcane for feed/ chew etc	0.50-0.75	0.2-0.5%
6	Total Sugarcane available to sugar mills i.e. Drawal %	870-880	61-62%

*\*Note: - with above Sugarcane crush by mills, UP is expected to produce 79 lac tonne of sugar*

Initially, Jaggery/Gur units were offering Rs. 180 per qtl of sugarcane but after SAP declaration they started offering Rs. 230-250 per qtl of sugarcane. Jaggery/Gur units are still competitive enough as their cost of Jaggery/Gur conversion from sugarcane is Rs. 25-30 per qtl as compare to sugar mills conversion cost of sugar from sugarcane is more than Rs. 70-80 per qtl.

#### **4. Major Market (Mandi) of JAGGERY/GUR in UP.**

##### **Western UP**

- Khatouli
- Shamli
- Gajraula
- Chandpur
- Dhampur
- Shapur
- Nazibabad
- Amroha
- Bulandsher
- Muzzafarnagar

##### **Central UP**

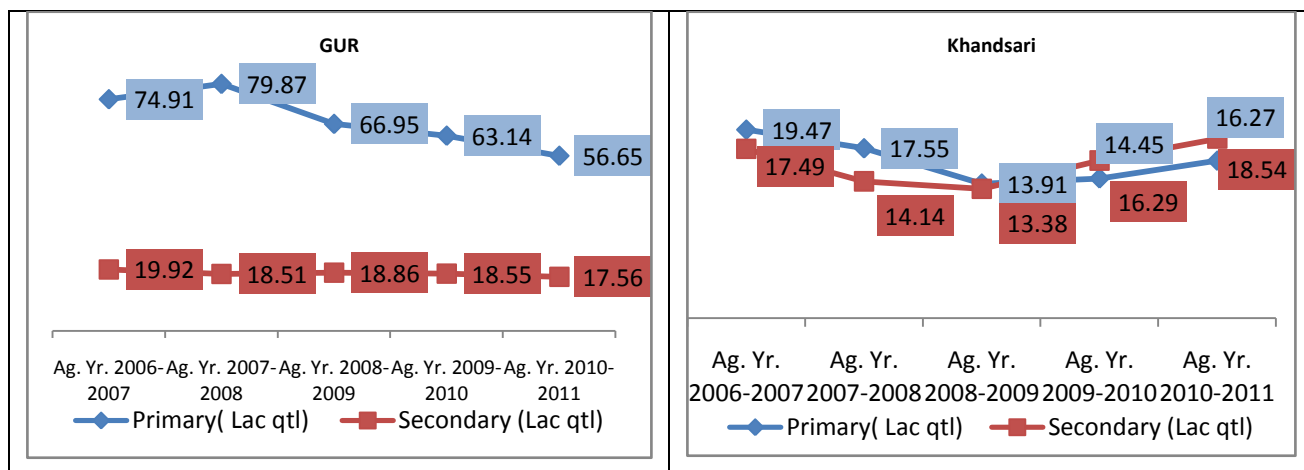
- Hasanpur
- JP nagar
- Moradabad
- Pilibhit
- Lakhimpur
- Nawabganj

- Jaggery/Gur which has been produced in UP has also been sold outside states like Gujarat, Rajasthan, Punjab, J&K, Himachal, Delhi, West Bengal, Odisha and Jaggery/Gur has sold in different forms/shapes/ sizes/ quality and all depends on demand pattern of the respective markets. Different types of shapes are available in the market.
  - **Chaquoo**- Low recovery sugarcane Jaggery/Gur; high melting, High labour cost, basically prepared for household eating purpose.
  - **Khurpa**- High recovery sugarcane Jaggery/Gur, less labour required in its preparation.
  - **Ladoo**- Low recovery sugarcane Jaggery/Gur, more labour required, basically prepared for household eating purpose.
  - **Panchera** - High recovery sugarcane Jaggery/Gur.
  - **Ruscutt**- Molasses solid form, dark brown in color, (cake type having 1/3 juice) basically prepared for in animal feed & alcohol preparation.
- Markets like RAJASTHAN demands Chaquoo type of Jaggery/Gur while GUJARAT market likes Ladoo type of Jaggery/Gur , trade sources say that due to taxation process Jaggery/Gur manufacturer bypassing the mandi and this quantum is about 40-45%. This outside mandi selling gives Rs. 100 – 120/qtl benefit to Jaggery/Gur sellers.
- Jaggery/Gur units shift from UP to MP (distt. Like Narsingpur, Betul, Gwalior), has been noticed over period of time. This is due to no tax taken by MP state govt. for establishment Jaggery/Gur units and there is no mandi Tax and more so, area under sugarcane is increasing every year. The tax on establishing Jaggery/Gur unit in Uttar Pradesh is about Rs. 40 thousand per unit as one time cost to local Municipal Corporation. Taxation Structure in Uttar Pradesh Mandi (Total Tax=5% on Jaggery/Gur arrival in mandi)
  - 2.5% = Mandi tax
  - 1.5% = Commission agent
  - 1% = Labour charge

#### 5. CASE STUDY on Muzaffarnagar JAGGERY/GUR mandi :-

- Jaggery/Gur arrival in Mandi- 15000 bags/day. (1bag= 40 kg)
- Quantity of Jaggery/Gur arrival in particular period.
  - a. 15 Oct -15 Jan =15000 bag/day
  - b. 16 Jan -15 April =20000 bag/day
  - c. 16 April- 30 May =5000 bag/day.

- As per Mandi Samiti report in Mzf ngr Mandi- Last Year Jaggery/Gur arrival 2011-12 = 1081244 qtl. ( Primary arrival, which actually comes from local markets – 926229 qtl & Secondary arrival – 155018 qtl )
- As per Mandi Samiti report in Mzf ngr Mandi – last year Khandsari arrival in 2011-12 = 33722qtl ( Primary arrival, which actually comes from local markets – 29970 qtl & Secondary arrival – 3752 qtl)
- Operations of Jaggery/Gur units.-
  - 15<sup>th</sup> Oct – 15 April = 100% capacity running;
  - 15<sup>th</sup> April – 30 May = 50% capacity running
- Out of Total production of Jaggery/Gur 75% goes to alcohol prod, rest goes for ayurvedic, herbal product, animal feed, eating purpose etc
- Jaggery/Gur units in Uttar Pradesh have been set up on lease basis at farmer's field (on the behalf of farmers). At times, mandi traders are also financing the setting up these units in Uttar Pradesh.
- Last five years mandi arrival of JAGGERY/GUR/ KHANDSARI in Uttar Pradesh Mandis



### **IMPACT OF SUGARCANE DIVERSION ON SUGAR MILLS :**

Sugar millers continuously have been investing on research & development of sugarcane in their catchment area either from their own resources or from the Government Funded Programme like SDF loans to individual mills. ISMA also plays pivotal role along with the help of member sugar mills like-

- Identification and introduction of new varieties.
- Intercropping in sugarcane to increase farmer's income and to sustain sugarcane area.

- Planting technique to improve productivity.
- Ratoon management.
  - Role of ethophon to improve ratoon productivity.
  - Effect of gap filling on productivity of ratoon.

Despite of all these efforts towards cane development by ISMA & individual member factories, major chunk of early maturing variety of sugarcane in UP is diverted towards local Jaggery/Gur and Khandsari units. Moreover Jaggery/Gur units are free to purchase sugarcane at much lower prices as compare to sugar mills. The impact of Jaggery/Gur and Khandsari units of not contributing any development on sugarcane is actually impacting the sugar millers which leads to major cane arrears in UP.

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