

NOTE ON BURA SUGAR MANUFACTURE IN CHITTOOR & N. ARCOT DISTRICTS

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Introduction. In the Season and Crop Report for 1932—33, it is stated that the area under sugarcane in Chittoor and North Arcot districts was 10,995 and 9,041 acres respectively. The chief cane growing districts in the Presidency arranged in order of rank are, Vizagapatam, with its 33,606 acres topping the list, then Chittoor, South Arcot, North Arcot, Coimbatore, Bellary, East Godavari, Trichinopoly, Salem, Ganjam, South Kanara, Anantapur, Madura and West Godavari. According to the above list, Chittoor holds the second and North Arcot the fourth place in the Presidency. Many varieties of cane are cultivated viz., red and striped Mauritius, Nanal, Fiji B (Badila) J 247, Rasadali and Hebbal varieties. J 247 occupies a small area in both districts, while in North Arcot district in Gudiyattam and Vellore taluks almost the whole area of cane is of this variety. Ryots are just beginning to take to it, in view of its drought resisting quality and indifferent treatment which it can stand, but the main drawback seems to be the hardness of the rind which is very keenly felt by bulls while crushing. This is the chief reason for its low acreage. In 1933, in both districts Co. 213 variety of cane was tried on a small scale and this year the trials are repeated along with two more varieties viz., Co. 281 and Co. 290.

Ratooning is not commonly practised but it is seen being done in isolated patches by very poor cultivators. From December to May every year, there is practically no rain worth mentioning in both districts and the crop has to be maintained by irrigation. Though from May to August the rainfall is slightly better, the crops are not much benefitted by it, owing partly to uneven distribution and partly to excessive evaporation of moisture due to high temperature and strong winds. On account of this difficulty, the extent cultivated by individual ryots is very limited, the average may be about half an acre per head. A good beginning has been made by the introduction of some Coimbatore varieties noted for extreme drought resistance. The average yield of cane in North Arcot district is about 20 tons while in Chittoor district it is about 25 tons per acre. Cattle manure is universally applied in varying quantities, and in some cases depending on the economic condition of the ryot, oil-cakes are applied, though the quantity may not be adequate. Artificial manures may practically be said to be not used at all, though the writer has come across a few cases. Besides the basic dose of cattle manure in Chittoor district, *Pungam* (*Pongamia glabra*) leaves and flowers are universally applied and cases are not rare in that district where 40 tons of cane are easily

obtained per acre. In Chittoor district canes are wrapped and propped up universally while in North Arcot district the practice is unknown.

Methods of Manufacture. Two methods are in vogue viz., (i) the primitive method by the use of water weed *Vallisneria spiralis* and (ii) the modern method with the aid of centrifugal machine.

(i) The old method is confined to Punganur taluk in Chittoor district and there are eleven concerns engaged in manufacturing Bura sugar. The weed grows naturally in tanks where water is found throughout the year. In recent years, owing to dearth of rainfall the tanks get dried up completely in many cases. The manufacturers are finding it very difficult to procure the requisite quantity locally and therefore they are forced to cart the weed from places as far as fifty miles away. The process of manufacture is very simple but laborious. Rab after it is purchased from ryots in mud pots is stored for about a week and then transferred to bamboo baskets (3 feet high and 3 feet in diameter). They are kept in a room over a bamboo platform with special arrangements made underneath to catch molasses that drain out. The top layer of the rab, up to a depth of three inches is well cut with a sharp knife to break lumps formed by crystals adhering together and over it a thin layer of weed is evenly spread and left undisturbed for about a fortnight. The moisture held by the weed is slowly let out, the brown colour of the rab is bleached and it turns white.

The thin layer of weed is removed on the sixteenth day, the bleached rab is taken out of the basket and well dried before storing. The process is repeated every fourth day thereafter till the entire quantity in the basket is bleached. This may take about 30 to 40 days depending on (i) quantity of rab (ii) colour of rab (iii) quantity of weed used daily (iv) moisture content of weed and (v) the depth up to which the rab is well cut with a sharp knife. The bleached rab stored after drying, which will be similar to centrifugal sugar, is boiled, mixed with water, in open pans under a steady fire. Dirt is frequently removed from the boiling solution by sprinkling a few drops of cow's or buffalo's milk, diluted with water. When the solution comes to a thick syrupy stage the pan is removed from the fire and the contents are made to cool rapidly by stirring vigorously with laddles. This process helps in breaking lumps formed by crystals adhering together. The sugar is then removed from the pan and dried. When it is completely dried it is spread evenly on a clean flooring and two or three men tread on it to break the lumps. After this process the stuff is ready for the market to be sold as Bura sugar. The keeping quality is extraordinarily good, the jaggery smell does not appear even if it is kept for one year.

Molasses are converted into jaggery by adding lime if necessary to remove dirt. The "Mollassein" jaggery is sold in the market for about half the price of ordinary jaggery prepared direct from cane juice.

(ii) In the modern method, *rab* purchased from ryots is stored for about a week before it is put into the centrifugal machine. The crystals are well broken either by squeezing them with hand or by cutting them with a sharp knife. After charging the centrifugal with the prescribed quantity of *rab* it is allowed to rotate by mechanical power. When molasses cease to trickle down, white sugar is scraped out of the centrifugal basket and dried well before storing. The further treatment of centrifugal sugar in converting it, into *Bura* is similar to the one already described under the old method.

According to the third method, white crystalline sugar and brown sugar are dissolved in water in definite proportions and boiled, the rest of the process being the same. This method was practised in Pernampet village, Gudiyattam taluk of North Arcot district. Ever since the rise in price of white crystalline sugar, this method of manufacture of *Bura* has been abandoned.

Output of Sugar. In Chittoor and North Arcot districts there are five and eight centrifugals respectively, working since last year. The manufacturers send their agents to help ryots in preparing clean *rab* by addition of lime. They enter into agreement with ryots for the supply of *rab* and advance money. The *rab* is purchased at the prevailing market rate for jaggery. The average output from 100 maunds of *rab* is as shown below :—

according to (i) primitive method— 45 to 48 maunds of *Bura* sugar and 28 maunds of jaggery while the rest goes as waste.

(ii) modern method— 45 to 50 maunds of *Bura* sugar and 28 maunds of jaggery while the rest goes as waste.

Rab prepared from J 247 variety of cane is preferred by Centrifugal factory owners since the size of crystals is big and the sucrose content is higher than in the local variety. In Ambur Co-operative Centrifugal factory, the writer has seen from records maintained that 50 to 55 maunds of *Bura* sugar are obtained from 100 maunds of *rab*. The factors responsible for increased output are (i) clean *rab*, (ii) presence of big sized crystals (iii) *rab* from one and the same variety of cane instead of different varieties (iv) higher sucrose content of cane from which *rab* is prepared (v) steadiness of centrifugal while spinning and (vi) *rab* of good consistency.

Marketing. *Bura* sugar is sent to Gadag, Hubli, Dharwar and Culbargah of the Bombay Presidency where there are good markets for this type of white sugar and to a certain extent to Madras, Vellore and other big towns in the Presidency. The price ranges from Rs. 2-12-0 to 3-2-0 per maund, ex-factory. The "Molassein" jaggery is sent to Madras where there is a good market for it. The *Bura* sugar is sold at Rs. 3-6-0 to 3-8-0 per maund while the crystalline

sugar is sold at Rs. 3-3-0 to 3-4-0 per maund in the open market. An attempt was made to work out the cost of manufacture by the above two methods but the manufacturers were rather reluctant to furnish figures for fear that the existing duty might be enhanced.

Excise Duty and its Effects. According to the Sugar (Excise duty) Act of 1934 a duty of excise at the rate of ten annas per cwt. is levied on sugar produced by Centrifugal factories on or after 1st April 1934. No mention is made in the Act about sugar produced by the use of water weed. Such concerns cannot come under the definition of factory since 'factory' has been defined in the Act as premises in any part of which any manufacturing process connected with the production of sugar is being carried on or ordinarily carried on with the aid of power. It remains to be seen whether the levying of excise duty will interfere with the establishment of further Centrifugal factories. There is no likelihood of increase in the number of concerns following the old method since the supply of water-weed is limited.

THE VELLORE MUNICIPAL SEWAGE FARM

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The Vellore Town Municipality maintains 58 heads of working cattle for conservancy purposes and the annual budget allotment for maintaining these bulls comes to about Rs. 4000 which is spent mainly on the purchase of fodder etc. They were being fed till very lately with the following rations per head per day:—

Paddy straw, 15 lbs.
Rice bran, 3 Madras measures.
Agathi leaves, 1½ lbs.

Contracts were given to dealers to supply the above food materials and it was found that the quality of bran supplied was very poor due to the presence of husk, etc. It was therefore a problem to the authorities how to change the rations given to their working animals omitting bran. The Municipality consulted the Agricultural Department. It was suggested to them, to utilize a small area of their sewage farm for raising fodder crops such as lucerne and elephant grass. The suggestion was taken up immediately.

The Municipality owns about 25 acres of land on the banks of the Palar and this area is irrigated by sewage water, taken through pucca drains, sieved in many places, stored in big wells and finally pumped out by gas engines direct to the fields. This farm is divided into plots of one acre each and leased out to ryots. The average lease amount works at Rs. 100 per acre per year. Sewage water is supplied to the plots, free of cost for 6 hours a week, ryots mostly raise kitchen garden