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Sugarcane yield competitions in Madras State

by

S. V. PARTHASARATHI
Sugarcane Specialist, Palur

Genesis: It is now four years since the first award was given for the highest yield of sugarcane in this State. In 1951, a high-yielding crop of sugarcane was noted in Kuniamuthur near Coimbatore. Sri N. L. Dutt, Director of the Sugarcane Breeding Institute was so much impressed with this crop that he arranged for an estimation of its yield. It recorded an average of 97 tons of cane over six acres. Sri Venu Naidu, the cultivator was honoured at the Coimbatore Agricultural College Day Conference. Subsequent to this, a scheme was suggested to the State Government and this is still in force from 1951–'52. The highest yields recorded in the last four years are 102·4 tons, 107·12 tons, 94 tons and 129 tons respectively.

Objectives: The yield estimates are from small plots and hence are liable for error in estimation. Still the Government-sponsored scheme achieved its objective in rousing the ryots towards increased production. The average yield in development zones has increased from about 25 tons to 35 tons of cane per acre. The average in Nellikuppam factory itself has recorded a definite increase.

The objective before the ryots may be fixed as 50 tons of cane with 12·5% sugar recovery. It is not possible for all to achieve an average of 70 tons of cane per acre. It is more difficult to produce 70 tons of cane with 7·16 tons sugar per acre as in prize plots, than 50 tons with 6·25 tons sugar per acre.

The prize winners are normally resourceful ryots and do not usually look for profit from prize plots. Achievement of high yield may depress quality, if the increased production is not properly planned.

The objectives are therefore to produce good yields of high quality canes for ryots and high efficiency in extraction of sugar from cane by the factory.

Yield potential: When talking of yields, it is often mentioned that the yield in India is low. This is true in regard to subtropical

India. The yield of cane and sugar per acre in different countries are presented below.

TABLE I

Yield of cane and sugar recovery in different countries and in different States.

Country	Average yield of sugarcane per acre	Sugar recovery percent
Australia	21·34	14·33
Cuba	17·12	12·25
Mauritius	19·63	12·08
Louisiana	19·84	8·06
Puerto Rico	24·16	12·23
Java	56·00	11·49
Hawaii	62·05	10·46
India	13·50	9·98
East Punjab	17.80	9·41
Bihar	16·10	10·32
Bombay	40·50	11·08
Madras	33·50	8·62
Uttar Pradesh	18·40	9·27

It is seen that sugarcane yields in Madras compare favourably and it ranks fourth in the world.

In respect of quality, Australia leads the world. Cane per acre there is 21·34 tons with 3·06 tons sugar per acre, while in Madras it is 33·5 tons with 2-89 tons sugar. In a thickly populated country like ours, production per acre and cost are the criteria and not the recovery percent alone. Even in respect of cost cane or sugar, the cost towards land lease in Madras forms 20 to 40% and this is purely non-agricultural. The economics of our country do not permit of aiming at quality alone. It is sugar per acre combined with quality and cost.

Efficiency in field and factory: The yield potential according to agrobiologists is 197 tons, while ryots here have achieved 129 tons; i. e. 65·5%; the average yield in this State is 35 tons; i. e. 17.7% of the potential. The sugar factories achieve an over-all efficiency of about 83–85 per cent. Therefore, the cane grower is far behind the potential and he definitely requires more help in reaching the maximum potential.

The Coimbatore canes are potential of high yield and the best yield out of them is yet to be achieved. The average ryot lacks timely help for manuring his field or irrigating it. Research on pests and diseases have not progressed beyond the doubtful uses of chemicals in respect of sugarcane. The high-yielding new varieties take larger quantities of nutrients from the soil both from surface and from depths. The soil therefore requires to be replenished progressively to a greater extent. Prevention of deterioraton of varieties due to ill-balanced nutrition and diseases is an important aspect. It is not known to what extent the natural fertility of soil is impaired by the production of high yields as in prize plots.

Our Needs: There is an urgent need to expand the sugar industry in the state. The total requirement of sugar for Madras is estimated at about 1,30,000 tons in the next few years. Our present production is only about 40,000 tons. With one more factory coming up in Tanjore, our production may go up to 55,000 tons. It is not possible to forecast as to how many of the projected factories wil come into production in the near future.

The per capita consumption of sugar in Madras is 4½ lb. plus 12 lb. of *gur*. Compare this with the per capita consumption of sugar in other parts of the world. It is reported to be 143 lb. in Australia.

Out of about 1·20 lakh acres under sugarcane only about 20,000 acres are crushed by sugar factories. The balance of cane is converted to *gur*. The loss of sugar in baggase etc. in *gur* making is about 35%, while it is only 20% in a sugar factory.

TABLE II

	Gur manufacture	Sugar manufacture
Sugar percent on cane	12·0	12·0
Juice extraction percent on cane	60	...
Sugar extraction percent (i. e. overall efficiency)	...	80
Jaggery recovery percent	11	...
Sugar percent in *gur*	70	...
Recovery of sugar percent cane	7·7	9.6
Loss in extraction percent cane	4·3	2·0
Percent loss of sugar	35·8	20·0

Cane is therefore better utilised in a sugar factory than by a ryot in making *gur*. Increased production of cane in a *gur* area is faced with the technological problem of converting it to *gur*, as the latter does not set well. The increased production also cannot be efficiently utilised. It is for such reasons that the Agricultural Department has not proposed yield competitions in *gur* areas.

The economics of *gur* are different from those of sugar. The ryots in *gur* areas are advised to take active steps for erecting sugar factories; as otherwise, they cannot step up their yields and achieve a high standard of efficiency.

Payment for quality: The sugar industry in India did not progress much in the field of research during the period of protection from 1932 – '1950. When payment on weight of cane was made the ryots achieved high yields, even though it was at the sacrifice of quality. He is not to be blamed for this.

Madras, particularly the ryots and the sugar factory at Nellikuppam led the way in exploring the means of improving quality of cane. In the early stages, payment was made on the basis of *gur* recovery and later premia for varieties and *adsali* were paid. The latest in the field here is the SISMA formula and some preliminary tests conducted at Samalkot have proved the possibilities of payment on quality basis. The Government of India have appointed an expert Committee under the chairmanship of Sri P. A. Gopalakrishnan, I. C. S. Madras should be in a position to suggest a suitable formula, if not on an all-India basis, at least on a regional basis.

While awards of prizes may indicate the general direction towards our goal, it will not lead us there. The ryots of Pugalur, may get about Rs. 4 - 5 lakhs as reward for 10·52% in the last season. The factory authorities have paid several lakhs in the past as premia for quality. The award of Rs. 20,000 as prizes in yield competitions at Nellikuppam is probably the biggest award in India. The sugar factory authorities and the ryots deserve all praise for the progressive policy they have adopted so far.

The small ryot: The small ryot is alert to profit and can ill afford to look for publicity. The cost of cane from prize plots may be more than that from a small ryot. But the production per acre is small and it is not tuned to the needs of the State. He needs help for manuring irrigating and harvesting the crop. Given these

aids, he can increase the average production. The small ryot cannot compete on equal terms with the prize-winners here and his potentials are placed on a different level. He can benefit only from development aids and payment of price on quality basis. The average yield which has now increased to about 35 tons, may soon increase to 50 tons in the next few years.

Research Notes

A Note on the occurrence of the 'Phyllody' Disease in Certain Sesame *(Sesamum orientale L.)* Types and their Behaviour

One of the common diseases of the cultivated gingelly (*til*) crop is a virus disease called 'phyllody' which transforms the flowers on the main-axis and branches of the plant into cup-like, leafy growths. The capsules also when set, are either malformed or not formed at all. Odell (1925) and Kashi Ram (1931) reported this transformation of the vegetative parts as the sepaloid condition and found that this phenomenon though not heritable, was influenced by seasonal conditions. Rhind (1935) met with such sepaloid plants in both the late and early Burmese types when sown earlier than the normal season and attributed that a longer light period for the late types caused this abnormality. Rhind and Thein (1932) found variation in the incidence of the disease between different types and also with the season. They also observed that sepaloidy was more prevalent in the unbranched types than branched ones. Pal and Pushkarnath (1935) reported that it was possible to transmit the disease by grafting. In Sind a black-seeded variety was found to be fairly resistant to phyllody (Vacchani, 1945).

Gingelly is generally cultivated in the Madras State during two seasons viz., the cold weather season (November–December to February–March) and the Summer season (February–April to May–July). It is sometimes raised in certain tracts during the monsoon season (June–July