

BETTER SUGARCANE VARIETIES FOR JAGGERY MAKING

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ABSTRACT

Studies were conducted to test the improved sugarcane varieties of different maturity groups for quality jaggery from 1984-85 to 1986-87. Varieties Co 7508, Co 6907 and CoA 8401 to crush in early part of the season (November-January), CoT 8201, Co 7219 and CoA 7602 to crush in February, CoR 8001, Co 7706 and CoA 8402 to crush in the late part of the season (March) were identified and recommended for better quality jaggery making.

KEY WORDS : Sugarcane, Varieties, Jaggery making.

In India, about 60% of sugarcane produced is reported to be utilized for jaggery production. It is estimated that out of 95.75 lakh tonnes of sugarcane produced in Andhra Pradesh, about 50% is said to be converted into jaggery. The quality and chemical composition of jaggery produced in different regions varied widely due to differences in cane varieties used, cultural practices followed and manufacturing techniques adopted. In Andhra Pradesh, varieties like Co 997 (early), Co 419, Co 62175 (late) were released in the past for serving both sugar factories and jaggery making cultivators. Some varieties with better jaggery quality were identified in the last three seasons at Regional Agricultural Research Station, Anakapalle. The quality and composition of jaggery of these varieties are presented.

MATERIALS AND METHODS

Varieties of early (79A 28, Co 7508, Co 6907 and CoA 8401), mid season (CoT 8201, Co 7219 and CoA 7602) and late (CoR 8001, Co 7706, CoA 8402, Co 419 and Co 62175) maturity groups were planted in the months of January, February and March respectively and jaggery was prepared in next December, February and March for the three maturity groups respectively. The representative jaggery samples were

analysed for important physical characteristics like colour, hardness and moisture and chemical characteristics like sucrose, reducing sugar and total non-sugars, besides the estimation of per cent jaggery recovery and jaggery yield per hectare. Sucrose was estimated in N/2 jaggery solution as per the procedure given by Roy (1951). Reducing sugars were estimated by Lane Eynon Volumetric method using methylene blue indicator. Colour was estimated in N/2 jaggery solution with Klett Summerson Calorimeter using green filter. Hardness was tested by using hardness testing machine under 5 kg pressure and expressed in Cm. Moisture and total non-sugars were estimated as per the procedure indicated by Brown and Zerban (1941).

RESULTS AND DISCUSSION

The data on the physico-chemical characteristics of jaggery from different maturity groups are presented in Table.

Early maturing varieties

All the samples of jaggery prepared from early maturing varieties recorded sucrose per cent ranging from 83.96 to 87.76, total non-sugars per cent from 3.53 to 5.62, colour reading from 102 to 132 and hardness under 5 kg pressure from 0.31 to

Table 1. Quality and quality attributes of jaggery from different varieties.

Variety	Sucrose %	Reducing Sugars %	Total nonsugars %	Colour of N/2 gur solution	Hardness under 5 kg pressure (cm)	Moisture %	Jaggery recovery %	Jaggery yield (t/ha)
<u>Early maturing varieties</u>								
Co A 28	87.76	3.63	3.53	102	0.31	2.77	12.20	10.57
Co 7508	87.29	3.85	3.63	115	0.30	2.94	11.64	10.48
Co 6907	84.75	4.66	4.21	120	0.46	3.59	11.05	10.32
Co A 8401	83.96	5.19	5.62	132	0.47	3.39	12.68	10.16
<u>Mid season maturing varieties</u>								
Co T 8201	86.34	4.76	4.62	113	0.34	3.19	12.84	14.08
Co 7219	86.13	4.68	4.81	118	0.39	3.13	12.32	12.72
Co A 7602	84.29	5.15	5.58	122	0.36	3.40	11.56	12.73
<u>Late maturing varieties</u>								
Co R 8001	89.55	3.75	4.88	111	0.34	3.20	11.53	11.51
Co 7706	87.15	4.25	4.39	108	0.34	3.12	10.93	11.17
Co A 8402	84.72	4.18	5.02	114	0.34	3.12	11.66	10.61
Co 419	82.53	5.82	5.69	127	0.44	3.43	12.32	10.09
Co 62175	83.31	5.31	5.21	128	0.50	3.64	10.33	10.09
S.E.	0.26	0.11	0.03	0.84	0.04	0.05	0.15	0.14
C.D.	0.74	0.34	0.08	2.63	0.11	0.17	0.46	0.45

0.47 cm. The jaggery yield per hectare ranged from 10.16 to 10.57 tonnes. According to the work done at Sugarcane Research Station, Anakapalle (Anon., 1970), jaggeries having 81-84% or more sucrose, less than 5% of total non-sugars with colour reading of less than 135 were classified as grade I jaggery. In the present study, all the varieties recorded grade I jaggery. Among these varieties, 79A 28 was found to have an excellent quality jaggery with high sucrose (87.76%), low total non-sugars (3.53%), golden yellow colour (102) and hardness (0.31 cm). This variety gave the highest jaggery yield of 10.57 t/ha. Since this variety is susceptible to leaf scald disease, it has not been released for cultivation to the cane growers. This variety can be used in breeding programme as a genetic stock to develop varieties for better quality jaggery. Next to 79A 28, variety Co 7508 gave better quality jaggery with high sucrose of 87.29%, total non-sugars of

3.63% and colour reading of 115. Varieties Co 6907 and CoA 8401 also gave better quality jaggeries having high sucrose and more jaggery yield with bright colour and hardness.

Jaggery of good quality was found to be characterised by higher purity and lower reducing sugars content (Gopal Aiyer and Krishnamurthy, 1954). High sucrose content coupled with low content of reducing sugars and total non-sugars improved the colour and hardness of jaggery of different varieties in this study. The low moisture content recorded in all the varieties is expected to lead to better keeping quality.

Mid-season maturing varieties

Analysis of jaggery samples from the midseason group showed that all the three varieties, CoT 8201, Co 7219 and CoA 7602 ranked under grade I quality. Sucrose of

jaggery samples prepared under this group ranged from 84.29 to 86.34%, total non-sugars from 4.62 to 5.58% and colour reading from 113 to 122. The jaggery yield ranged from 12.72 to 14.08 t/ha. The best quality jaggery was obtained from CoT 8201 and Co 7219 with sucrose values of 86.34 and 86.13%, total non-sugars values of 4.62 and 4.81% and colour reading of 113 and 118 respectively. Variety CoT 8201 recorded the highest jaggery yield of 14.08 t/ha among all the varieties in different maturity groups. Variety CoA 7602 also gave the quality jaggery similar to Co 7219.

Late maturing varieties

Varieties CoR 8001 and Co 7706 gave an excellent quality jaggery of grade I with high sucrose content (89.55 and 87.15%), low total non-sugar content (4.88 and 4.39%), golden yellow colour (111 and 108) and hardness (0.34 and 0.34 cm). These two varieties recorded the highest jaggery yield

of 11.51 and 11.17 t/ha respectively. Variety CoA 8402 followed by Co 419 and Co 62175 also gave better quality jaggery with bright colour, hardness, high sucrose content and jaggery yield per hectare.

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PAIYUR 1 - A NEW HIGH YIELDING COWPEA VARIETY ✓

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ABSTRACT

A high yielding cowpea culture DPI 1243 has been developed through pure line selection. Under rainfed condition, this culture recorded a mean grain yield of 760 kg/ha, registering 16 and 14 per cent increased yield over Co 3 and C 152 respectively. Maturing in 85-90 days, it retains its greenness till harvest enhancing fodder value. The culture has been released as Paiyur 1 for cultivation in dry tracts of the State.

KEY WORDS : High yield, Cowpea variety, Drought tolerance.

Cowpea (*Vigna unguiculata* (L.) walp.), one of the grain legumes, forms an important component crop in dry land cropping pattern of the State for a long time. About 19 per cent (22,800 ha) of the total area under the crop in the State is grown in Dharmapuri - Salem region. The general productivity of the crop in the region is as low as 200 kg/ha. With a view to identify a

high yielding variety with resistance to drought and major diseases, breeding work was undertaken at the Regional Research Station, Paiyur and the results are reported.

MATERIALS AND METHODS

Sixty five types collected from local places and from other Research Centres at