

NINETEENTH ANNUAL SUMMARY OF CHEMICAL LABORATORY REPORTS

SOUTH AFRICAN FACTORIES. SEASON 1943-44

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The 1943/44 season has not fulfilled its early prospect of promoting a record sugar crop for this country. The crop was actually 5,278,914 tons of 2,000 lbs. of cane and 585,392 tons of 2,000 lbs. (536,904 metric tons) of sugar, the ratio of cane to sugar being 9.02, the second highest over the past seven seasons, notwithstanding new record recovery figures this season.

The reason for this, of course, is the very low sucrose content of cane, 13.14 per cent., the lowest since 1929, except for the abnormal locust-ridden year of 1934.

This low sucrose content of cane is in turn due to abundant rains prolonged very late into the year. In fact, there was hardly any dry season in 1943, only June having the usual light rains, while May, July and August each had over 3 inches of rain. Thus the rainfall at the Experiment Station for the year up to the end of August was 34.08 inches, or 58 per cent. above the average total at that date. The total rainfall for the year at the Experiment Station was 51.32 inches, which was exceeded previously in 1935, but the average for 44 representative rainfall stations in the sugar belt was 53.31 inches, the highest on record since these records were first collated in 1929.

On looking through the sucrose records of the last 16 years (the years during which from 85 to 98 per cent. of the crop became included in our figures), and excluding 1934 for reasons already mentioned, we find four years, 1929, 1936, 1940 and 1943, with low sucrose contents of cane of 13.30 per cent. or less. Each of these years had late rains, delaying the maturity of the cane.

The years 1930, 1932, 1935, 1938, 1939 and 1942 had medium sucrose contents of cane between 13.30 and 13.70 per cent. These were years of medium or well-distributed rainfall, except 1935, when there were abnormally heavy rains in most districts in May and June.

The years 1928, 1931, 1933, 1937 and 1941 had high sucrose contents of cane of over 13.70 per cent. and were each associated with an early cessation of the rainy season, or with deficient rainfall throughout the growing season.

Owing largely to transport difficulties arising out of the unseasonable rains, the crushing season was an exceedingly long one, beginning as early as 15th April at two factories and continuing as late as 25th March at Umfolozi, with the result that the largest proportion of the crop on record, 36.34 per cent., was harvested earlier or later than the optimum manufacturing period, from July to November inclusive.

Consequently the low sucrose content of cane due to unfavourable rains is accentuated by early and late harvesting.

Comparison of results from cane harvested during the July—November period, compared with those of earlier and later months of the harvesting season.

		Per cent. total Cane.	Ratio Cane/Sugar.	Sucrose per cent.	Fibre per cent.	Purity Mixed Juice.
1928	Optimum period	75.74	9.20	14.07	15.75	85.07
	Balance of crop	24.26	10.17	12.97	16.31	84.31
1929	Optimum period	73.06	9.74	13.28	15.44	86.34
	Balance of crop	26.94	11.04	12.29	15.82	84.35
1930	Optimum period	70.95	9.20	14.08	15.60	86.27
	Balance of crop	29.05	10.07	13.09	15.91	85.16
1931	Optimum period	77.86	9.29	14.13	15.57	85.33
	Balance of crop	22.14	10.20	12.75	16.23	84.32

		Per cent. total Cane.	Ratio Cane/Sugar.	Sucrose per cent.	Fibre per cent.	Purity Mixed Juice.
1932	Optimum period	81.10	9.32	13.79	15.44	85.01
	Balance of crop	18.90	10.82	12.28	16.25	84.76
1933	Optimum period	73.97	8.93	14.17	15.68	85.51
	Balance of crop	26.03	10.27	13.03	15.74	83.47
1934	Optimum period	81.35	10.54	11.95	15.12	84.09
	Balance of crop	18.65	11.16	11.52	15.57	83.83
1935	Optimum period	78.80	9.03	13.83	15.81	86.62
	Balance of crop	21.20	9.78	13.06	15.94	85.74
1936	Optimum period	75.71	9.02	13.62	14.85	85.73
	Balance of crop	24.29	10.27	12.27	15.46	84.12
1937	Optimum period	71.73	8.46	14.32	15.02	86.22
	Balance of crop	28.27	9.81	12.67	15.51	83.66
1938	Optimum period	73.90	8.57	14.04	14.37	86.84
	Balance of crop	26.10	9.95	12.50	14.77	84.43
1939	Optimum period	66.56	8.55	13.89	14.65	87.10
	Balance of crop	33.44	9.85	12.46	15.11	85.06
1940	Optimum period	66.83	8.86	13.63	15.54	86.02
	Balance of crop	33.17	10.07	12.27	15.63	83.85
1941	Optimum period	76.55	8.42	14.28	15.69	85.91
	Balance of crop	23.45	9.35	13.09	15.56	84.89
1942	Optimum period	74.83	8.62	13.78	15.23	86.44
	Balance of crop	25.17	9.99	12.27	15.26	84.53
1943	Optimum period	63.66	8.67	13.52	15.19	87.16
	Balance of crop	36.34	9.59	12.47	15.38	85.51
Mean, 1928/1943—						
	Optimum period	73.91	9.03	13.77	15.31	85.88
	Balance of crop	26.09	10.15	12.56	15.65	84.50

The changes in the cane varieties harvested continue the same trends as in recent years. Thus Co.281 formed no less than 64.4 per cent. of the crop, while Uba has dwindled to 6.5 per cent. The proportions of Co.290 and of the P.O.J. varieties are also rapidly diminishing, while Co.301 is increasing at a rate which bids fair to make it a close competitor with Co.281 in a few years' time.

Only one factory has crushed less than 53 per cent. of Co.281 and one factory over 90 per cent. One has crushed over 31 per cent. of Co.301.

The usual cane analyses over the season were done by the Central Board at 13 factories, representing 61.65 per cent. of the total cane crop. As before, there are slight differences between the proportions of different varieties crushed at these factories and the proportions over the whole industry, but the analyses are quoted to show that the relative sucrose contents are much the same as last year.

A small quantity of Co.331 was harvested and tested, but not sufficient to affect factory records appreciably, or to furnish representative results for this variety.

Variety.	Per cent. total cane.	Per cent. total sucrose.	Sucrose per cent. cane.	Purity of crusher juice.	Java Ratio.
Uba... ..	5.68	5.37	12.47	87.16	77.16
Co.281	67.18	67.87	13.34	89.41	77.10
Co.290	11.76	11.38	12.78	87.49	79.15
Co.301	13.29	13.24	13.15	88.47	77.15
P.O.J.	2.09	2.14	13.63	88.41	81.07
Totals	100.00	100.00	13.20	88.37	77.41

Notwithstanding the low sucrose content of cane the purity of mixed juice for the season, 86.56 over the whole crop, is the highest on record for this country. This has no doubt partly contributed to the high boiling-house recovery of 89.84 for the season.

The fibre content of cane, 15.26 per cent., is almost the same as for the 1942/43 season and is about the mean of recent years. The extraction is, however, appreciably the highest yet recorded for this country and the primary juice loss the lowest.

The peak month for sucrose content, 13.87 per cent. of cane, was as usual September; this was also the case with the mixed juice purity, 87.55, although when Uba was the prevailing variety the highest juice purity was usually attained in October. In May the sucrose content of cane was only 11.69 per cent.

The fibre content of the cane did not follow any regular monthly sequence; it was at its lowest in August, when it was 14.97 per cent., and highest in November, 15.60 per cent.

The reducing sugar ratio for the season, 3.18, was again well below the average of recent years, and was as low as 2.65 for September.

GENERAL FACTORY PERFORMANCE.

Recovery figures continue to improve year after year, so that our results no longer compare so unfavourably with those of certain other countries, though we still have a good way to go to equal such countries as Hawaii and Puerto Rico.

The extraction, 92.97, reduced extraction, 94.22, boiling-house recovery, 89.84, reduced boiling-house recovery, 88.45, overall recovery, 83.52, and reduced overall recovery, 83.51, again reach new levels for this country.

The ratio of cane to sugar, 8.98, corresponding to a yield of 11.14 per cent. of sugar on weight of cane, or 8.74 and 11.44 respectively calculated on a polarization of 96° for sugar, has been bettered in a few recent seasons when the sucrose content of cane was much higher, but is much above the standards of a few years ago.

The purity of final molasses is still high compared with that of most countries, but shows a steady improvement over recent years and is, in fact, the lowest on record for this country.

In this, as in the moisture content of bagasse, where also there is still much scope generally for further improvement in this country, certain factories get much better figures than the rest and approach high international standards.

In recovery figures, however, there has been a general improvement at all sugar factories in this country within recent years, so that none now has an overall recovery of less than 80; although only seven years ago the average was under 80.

The reduction in sugar content of the bagasse, notwithstanding its high moisture content, and the wide use of continuous filters, have largely reduced sucrose losses in recent years; but there is evidently still considerable loss of sucrose in molasses, a loss that cannot be recorded for the whole crop, since several factories still do not report this separately from undetermined losses.

INDIVIDUAL FACTORY RECORDS.

As in recent years, the same 19 factories are reported under the same code numbers, omitting only three small factories producing 1.41 per cent. of the total crop, which have not complete chemical control; incidentally, we include in our manufacturing data a small amount of sugar made into table syrup at a certain factory.

The highest sucrose content of cane for the season, 14.31 per cent., is yet again recorded at factory No. 21. The only other factory approaching 14 per cent. also draws its main supply of cane at a considerable elevation and distance from the sea. No. 21 shares also with No. 3 the highest purity of mixed juice, 89.6 per cent.

Experiment Station,
South African Sugar Association,
Mount Edgecombe.

March, 1944.

The lowest fibre content of cane is shown by factory No. 2, drawing its bulk supply of cane from alluvial coastal flats and crushing a large proportion of P.O.J. canes, but No. 3 factory has a fibre content of cane very nearly as low.

Of factories recording reducing sugar ratio, No. 20 is the lowest, with 2.42 for the season.

Factory No. 1 regains the highest extraction with 94.88 for the season, but is closely followed by No. 3, while three other factories also have extractions of over 94.

No. 1 factory gains also the lowest milling loss, 4.22, the lowest extraction ratio, 0.32, and the lowest primary juice loss, 27.20.

Factory No. 20 gains the highest boiling-house recovery, 92.54, and the highest overall recovery, 87.33, closely followed in both respects by No. 16.

The following factories have raised their overall recovery from that of last year by a whole unit or more: Nos. 2, 6, 8, 11, 14, 15, 16, 17, 19, 20 and 21—Nos. 8, 21 and 19 by as much as 2.87, 2.73 and 2.51 units, respectively.

The lowest ratio of cane to sugar was gained by factory No. 21 with 8.00, or 7.7 based on an assumed polarization of 96°. No. 20 came second in this respect with 8.38 and 8.14 respectively.

The bagasse moisture contents of 44.47 and 44.54 respectively were gained by factories Nos. 3 and 17.

Factory No. 16 gained a purity of final molasses of 36.22.

No. 5 factory crushed 591,501 tons of cane during the season to make 67,266 tons of sugar at a crushing rate of 138.65 tons per hour.

No. 1 factory crushed 587,417 tons of cane in a single train of mills to make 66,237 tons of sugar at a crushing rate of 143.34 tons per hour.

No. 12 factory crushed 561,670 tons of cane to make 60,630 tons of sugar at a rate of 117.92 tons per hour; Nos. 5 and 12 are double-tandem factories.

We are again unable, through lack of authoritative information, to estimate world production of sugar for the past year.

However, we have fortunately been able to continue to obtain manufacturing results from certain other countries, and wish to express our thanks to the Sugar Industry Reserve Fund of Mauritius, the Sugar Producers' Association of Puerto Rico, the Experiment Station of the Hawaiian Sugar Planters' Association, the Sugar Manufacturers' Association of Trinidad, the Bureau of Sugar Experiment Stations of the Queensland Department of Agriculture, the British Guiana Sugar Producers' Association, and Gilmore's "Louisiana Sugar Manual," for their courtesy in continuing to furnish their records at the present difficult times.

We are also indebted to the management of the 19 South African factories who are able to supply us with the necessary data for this compilation, also to the Sugar Industry Central Board.

SUGAR PRODUCTION IN SOUTH AFRICA IN RECENT YEARS.

As last year, output of cane and sugar of South Africa since 1929 is tabulated. Production figures are in tons of 2,000 lbs. according to South African usage.

Season.	Cane crushed.	Inches of rainfall.	Sugar produced.	Ratio Cane/Sugar.
1929/30	3,005,663	48.30	298,635	10.06
1930/31	3,803,883	37.20	393,205	9.67
1931/32	3,130,783	39.39	325,899	9.61
1932/33	3,489,960	48.20	358,905	9.72
1933/34	3,673,375	31.12	391,173	9.39
1934/35	3,874,215	44.60	358,738	10.80
1935/36	3,867,536	46.12	417,289	9.27
1936/37	4,180,973	50.10	446,409	9.37
1937/38	4,489,022	39.48	507,219	8.85
1938/39	4,658,962	40.38	522,732	8.91
1939/40	5,346,006	47.63	595,556	8.98
1940/41	5,309,227	43.37	572,880	9.72
1941/42	3,921,436	26.18	452,119	8.67
1942/43	4,704,430	49.41	524,975	8.96
1943/44	5,278,914	53.31	585,392	9.02

Average Manufacturing Results by periods for Natal Sugar Factories Reporting to the Experiment Station, Season 1943/44.

Period ending	MAY 29, 1943.	JULY 3, 1943.	JULY 31, 1943.	AUG. 28, 1943.	OCT. 2, 1943.	OCT. 30, 1943.	NOV. 27, 1943.	JAN. 1, 1944.	JAN. 29, 1944.	SEASON 1943-44.
Tons of 2,000 lbs. Cane crushed ... This period To date	352,936	736,795 1,089,732	635,600 1,725,333	644,817 2,370,151	831,137 3,201,290	587,354 3,788,648	608,504 4,397,151	518,237 4,965,369	123,322 5,139,743	5,195,294
Tons of 2,000 lbs. Sugar bagged and estimated ... This period To date	34,057	77,766 111,822	69,483 181,290	74,374 255,665	98,744 354,408	68,695 423,375	70,084 493,458	56,793 555,618	12,775 573,667	578,544
Tons Cane per ton Sugar ... This period To date	10.36	9.47 9.75	9.15 9.52	8.67 9.27	8.42 9.03	8.52 8.95	8.68 8.91	9.13 8.94	9.65 8.96	8.98
Tons Cane per ton of Sugar, calculated as sugar of } This period 96° Pol. ... } To date	10.07	9.20 9.47	8.90 9.25	8.44 9.01	8.20 8.78	8.30 8.71	8.46 8.67	8.91 8.70	9.44 8.73	8.74
Sucrose per cent. Cane ... This period To date	11.69	12.56 12.28	12.91 12.51	13.50 12.78	13.87 13.06	13.71 13.16	13.51 13.21	13.05 13.19	12.58 13.16	13.14
Fibre per cent. Cane ... This period To date	15.27	15.29 15.29	15.09 15.21	14.97 15.15	15.08 15.13	15.29 15.15	15.60 15.22	15.50 15.26	15.37 15.27	15.26
Java Ratio ... This period To date	78.88	78.14 78.37	78.21 78.29	78.13 78.25	78.04 78.15	77.99 78.09	77.24 77.96	77.01 77.83	77.50 77.80	77.78
Sucrose per cent. Bagasse ... This period To date	2.47	2.67 2.61	2.75 2.66	2.81 2.70	2.82 2.73	2.75 2.74	2.73 2.73	2.86 2.74	2.87 2.75	2.76
Moisture per cent. Bagasse ... This period To date	52.00	51.03 51.34	50.83 51.14	50.69 51.02	50.49 50.88	50.45 50.82	50.53 50.78	50.99 50.81	51.63 50.84	50.80
Imbibition per cent. Cane ... This period To date	33.53	32.03 32.52	31.10 31.99	30.58 31.61	31.39 31.55	31.84 31.59	31.93 31.63	31.68 31.63	30.69 31.65	31.62
Extraction ... This period To date	92.78	92.85 92.82	92.94 92.87	93.16 92.96	93.31 93.05	93.33 93.10	93.15 93.11	92.49 93.04	92.11 93.00	92.97
Recovery on Mixed Juice ... This period To date	87.82	89.48 88.97	89.93 89.34	90.45 89.66	90.54 89.90	90.40 89.98	90.19 90.02	89.34 89.95	87.73 89.89	89.84
Overall Recovery ... This period To date	81.48	83.08 82.58	83.58 82.97	84.26 83.35	84.48 83.65	84.37 83.77	84.01 83.82	82.63 83.69	80.81 83.60	83.52
Purity of Mixed Juice ... This period To date	84.62	86.20 85.70	86.63 86.06	87.21 86.39	87.55 86.71	87.42 86.82	86.80 86.82	85.92 86.71	84.05 86.62	86.56
Reducing Sugar Ratio ... This period To date	4.43	3.44 3.74	3.10 3.52	2.85 3.33	2.65 3.14	2.78 3.08	2.90 3.06	3.45 3.11	3.89 3.14	3.18
Purity of Syrup ... This period To date	86.14	87.74 87.19	88.25 87.53	88.77 87.83	88.94 88.14	89.21 88.33	88.70 88.41	87.11 88.27	84.97 88.14	88.12
Sucrose in Filter Cake (A) ... This period To date	1.71	1.43 1.40	1.61 1.58	1.66 1.60	1.63 1.60	1.66 1.61	1.70 1.63	1.51 1.63	0.54 1.63	1.63
Purity of Final Molasses ... This period To date	39.97	40.84 40.63	41.09 40.77	41.58 41.02	42.08 41.33	43.10 41.61	42.90 41.81	41.97 41.76	40.96 41.78	41.81
Average Polarization of Sugar ... This period To date	98.73	98.86 98.82	98.69 98.78	98.62 98.73	98.63 98.70	98.52 98.67	98.51 98.66	98.39 98.62	98.16 98.56	98.59
SO ₂ in Sugar p.p.m. ... This period To date	60.13	53.11 56.64	56.55 56.09	55.93 55.02	59.10 57.55	56.80 57.23	53.26 55.53	51.29 56.41	70.27 56.91	57.14

(A) Arithmetic averages.

CLARIFIED JUICE.

Brix ...	12.04	13.23	14.90	15.70	15.01	15.45	14.33	15.30	13.36	13.58	14.02	14.74	15.06	14.26	—	13.38	15.63	14.32	13.62	14.14
Purity (apparent) ...	91.68	86.16	91.07	87.80	88.30	86.99	87.92	89.50	86.30	88.39	87.10	87.70	88.40	87.30	—	87.02	87.70	89.40	90.17	88.16
Reducing Sugar Ratio ...	1.33	2.81	3.25	—	—	2.44	2.33	—	3.67	—	2.99	3.35	—	2.98	—	—	2.50	—	2.01	2.61
pH ...	7.10	7.40	—	7.07	7.80	7.71	—	—	7.20	7.49	7.30	7.40	—	7.52	7.50	—	—	7.74	7.09	7.40
Ash per cent. Brix ...	2.35	3.93	—	—	—	—	—	—	—	—	3.30	2.88	—	—	—	—	—	—	—	3.03

FILTER CAKE.

Per cent. Sucrose ...	0.63	0.66	—	0.65	0.76	0.73	4.34	0.99	0.43	0.36	0.62	0.63	0.73	0.49	4.90	4.58	7.29	0.43	0.19	1.11
Weight per cent. Cane ...	9.31	4.53	—	5.19	4.37	4.57	5.64	4.97	4.40	—	4.30	5.10	4.40	5.00	2.94	3.47	—	5.85	2.70	5.11

SYRUP.

Brix ...	52.94	49.19	54.14	55.31	48.74	50.26	54.37	52.50	53.08	52.29	55.16	56.27	54.18	50.06	50.00	49.35	55.97	48.37	58.02	52.54
Purity (apparent) ...	91.72	85.81	91.52	88.00	87.90	86.49	87.80	89.50	86.30	88.94	87.40	87.70	88.10	87.67	—	87.00	86.70	90.00	90.16	88.12
Reducing Sugar Ratio ...	1.33	2.63	2.62	2.80	—	2.49	2.11	—	3.52	—	2.84	3.22	—	2.87	—	—	2.30	—	1.88	2.53
pH ...	7.15	7.20	—	6.86	—	7.15	—	—	—	7.16	7.00	7.30	—	7.44	—	—	—	7.37	7.00	7.13
Purity drop from First Expressed Juice ...	-3.27	0.83	1.05	0.90	0.50	1.61	0.80	1.70	0.80	1.30	0.69	1.50	2.50	1.08	—	1.21	1.80	0.10	1.52	0.57
Purity increase from Mixed Juice ...	5.35	1.36	1.91	0.90	1.00	0.00	1.61	0.70	2.10	1.68	1.55	0.96	0.00	1.27	—	0.29	0.80	1.40	0.56	1.57

FIRST MASSECUITE.

Brix ...	91.33	92.54	91.82	92.89	91.11	91.41	91.53	91.20	94.29	92.15	93.33	92.90	92.98	91.85	92.40	90.83	94.51	90.70	91.29	92.19
Purity (apparent) ...	91.72	83.36	86.40	86.40	86.70	83.30	86.76	85.60	82.10	88.45	82.50	81.60	84.60	87.36	82.10	78.15	78.00	89.10	86.82	85.12
Purity of Run-off ...	76.80	63.05	65.60	64.80	69.40	62.70	68.76	67.80	59.40	71.41	59.40	—	66.40	65.63	63.10	55.69	57.80	74.10	69.82	66.14
Cubic feet per ton of Sugar (all Masseccutes) ...	50.40	52.90	—	50.95	—	50.53	—	55.00	49.22	50.21	45.01	55.37	—	45.13	—	—	—	—	—	50.17

SECOND MASSECUITE.

Brix ...	95.01	95.04	92.47	97.61	92.92	95.41	93.02	94.10	97.09	94.51	97.31	94.50	95.98	97.20	95.10	91.98	95.66	94.60	95.88	95.18
Purity (apparent) ...	80.54	73.46	70.97	67.70	78.20	72.80	80.44	75.10	68.00	74.76	67.30	71.70	71.00	67.57	68.40	68.83	66.00	77.00	72.48	73.00
Purity of Run-off ...	57.85	54.16	50.40	43.70	59.00	50.30	61.38	49.90	43.50	50.95	44.60	40.40	48.80	40.98	48.80	48.33	45.40	51.30	48.81	50.76

THIRD MASSECUITE.

Brix ...	99.51	96.80	—	97.56	94.58	96.78	92.74	97.70	—	95.80	—	96.50	97.67	98.40	96.60	—	—	97.80	97.65	96.83
Purity (apparent) ...	67.33	62.13	—	56.60	67.00	64.10	72.21	60.00	—	63.26	—	61.70	61.70	55.69	58.60	—	—	61.40	65.18	63.75
Purity of Run-off ...	44.59	39.91	—	38.50	44.90	43.20	52.13	37.84	—	41.81	—	42.00	41.20	35.61	39.68	—	—	38.40	40.97	42.37

JELLY.

Brix ...	—	—	—	—	94.48	93.28	92.15	—	96.95	94.32	93.89	91.20	—	—	—	89.91	95.61	—	92.07	93.64
Purity (apparent) ...	—	—	—	—	45.80	49.80	52.64	—	44.20	46.41	45.30	44.10	—	—	—	49.71	45.50	—	45.74	46.48

FINAL MOLLASSES.

Brix ...	87.53	91.68	80.87	84.06	89.07	89.89	89.29	91.00	89.25	89.85	86.92	87.33	92.27	89.26	90.55	84.16	87.82	91.60	85.63	88.41
Purity (Clarget) ...	45.58	39.91	42.38	39.20	41.50	42.80	46.72	37.84*	42.10	41.81*	42.87	40.98	41.30*	36.22	39.68*	40.23*	41.60*	38.40*	40.97*	41.81
Weight per cent. Cane at 85.0° Brix ...	2.19	3.11	2.34	2.79	—	2.96	2.98	2.68	—	—	3.23	2.80	—	—	—	2.69	—	—	2.50	2.79

POLARIZATION OF SUGARS.

White ...	99.90	—	99.68	99.85	—	—	—	99.65	99.55	99.80	—	—	99.80	—	99.80	99.80	—	—	99.81	99.80
Government Grade ...	97.76	98.02	98.30	98.29	98.04	98.02	—	98.70	98.71	98.85	98.80	98.71	98.37	—	98.43	98.48	98.29	—	98.81	98.28
Raw ...	97.76	98.02	98.21	98.29	98.04	97.93	96.00	98.70	98.72	98.68	98.84	98.90	98.78	98.11	98.20	98.43	98.29	98.81	98.69	98.30
Average of all Sugars ...	98.99	98.02	99.08	99.34	98.04	97.99	96.00	99.28	99.04	99.26	98.84	98.83	98.94	98.11	98.33	98.48	98.29	98.81	99.19	98.59
SO ₂ in parts per million ...	—	91.00	—	48.19	—	52.00	—	—	—	45.42	47.00	64.00	—	90.00	38.00	—	—	75.00	39.92	57.14

VARIETIES CRUSHED.

Uba per cent. ...	8.00	0.39	0.00	6.91	7.57	1.30	5.60	8.07	1.64	11.98	6.21	2.27	18.60	5.90	1.59	6.74	24.53	15.09	3.15	6.50
Co.281 per cent. ...	53.50	56.59	85.92	61.08	56.01	81.32	57.69	64.05	66.82	62.01	72.18	71.83	66.78	56.68	90.72	58.57	41.30	74.51	69.26	64.40
Co.290 per cent. ...	17.40	2.40	11.47	8.58	11.99	6.52	19.27	13.05	15.66	12.52	6.55	11.28	9.34	5.98	6.95	20.51	8.46	1.67	22.90	11.28
Co.301 per cent. ...	19.90	5.34	1.32	21.97	24.09	4.93	17.38	14.83	8.67	13.13	14.77	13.20	4.89	31.06	0.60	13.94	25.60	7.95	3.53	14.06
P.O.J.2725 per cent. ...	1.20	35.28	1.39	1.46	0.34	5.93	0.06	0.00	7.21	0.36	0.29	1.42	0.39	0.38	0.14	0.24	0.11	0.78	1.16	3.76

FACTORY NUMBER ...	1	2	3	4	5	6	8	9	10	11	12	14	15	16	17	18	19	20	21	SEASON
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* Apparent purity.

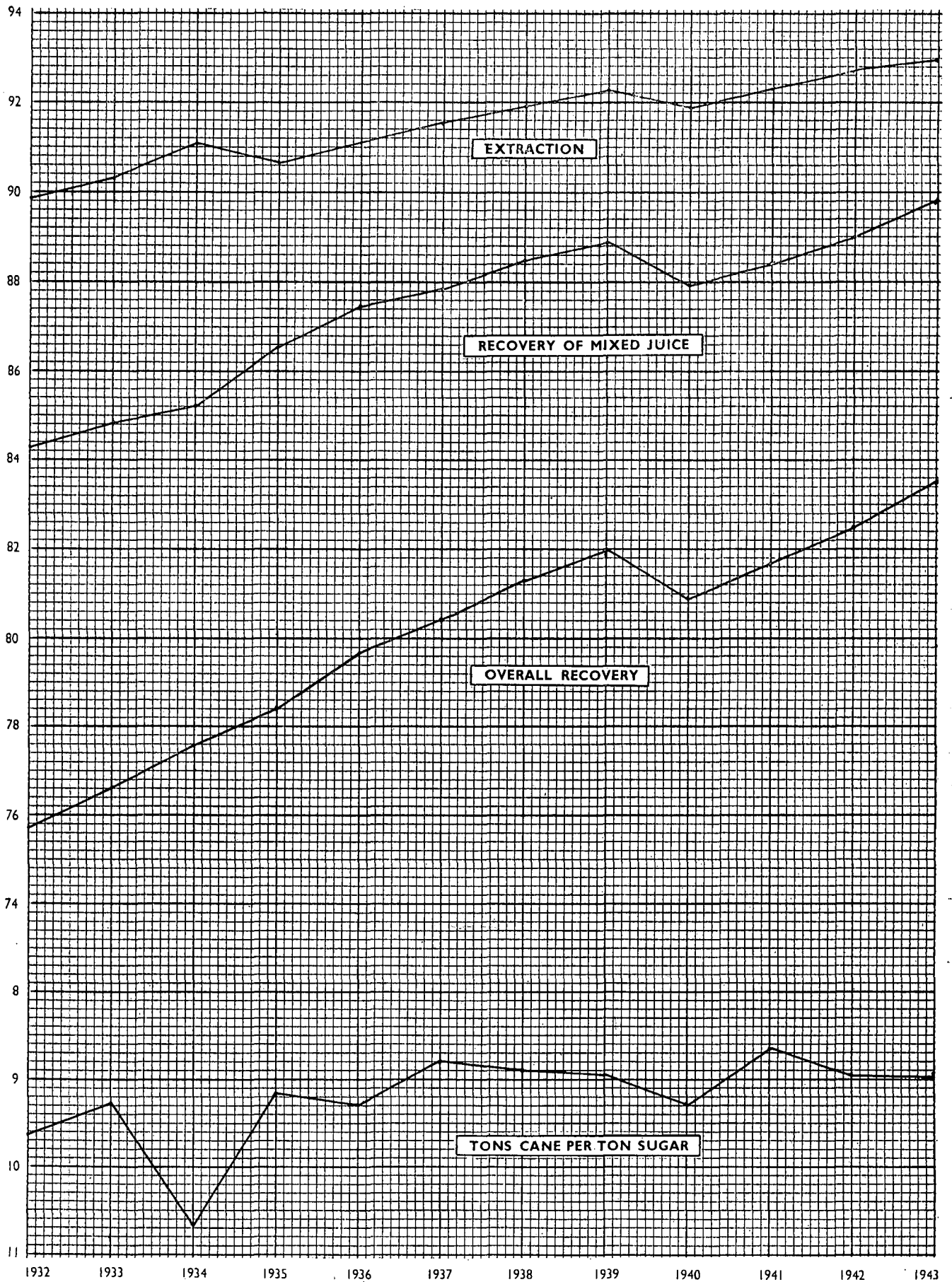
COMPARATIVE RESULTS FOR RECENT YEARS.

COUNTRY	NATAL											
YEAR	1933.	1934.	1935.	1936.	1937.	1938.	1939.	1940.	1941.	1942.	1943.	
CANE—												
Per cent. Sucrose	13.88	11.88	13.65	13.30	13.92	13.64	13.41	13.19	14.00	13.40	13.14	
Per cent. Fibre	15.78	15.24	15.92	15.01	15.14	14.51	14.80	15.56	15.66	15.24	15.26	
JUICES—												
Purity of First Crusher	87.46	86.03	89.35	88.18	88.15	88.37	88.45	87.44	87.94	88.27	88.70	
Purity of Mixed Juice	84.92	84.02	86.49	85.43	85.60	86.36	86.46	85.34	85.67	85.96	86.56	
Purity of last Roller Juice	78.26	76.71	78.05	76.87	76.81	76.86	77.07	76.15	77.46	76.86	76.44	
Purity of Syrup	86.57	85.53	88.28	87.53	87.70	88.22	88.12	87.11	87.69	87.85	88.12	
Drop in purity Crusher to Mixed Juice.. .. .	2.54	2.01	2.86	2.75	2.55	2.01	1.99	2.10	2.27	2.31	2.14	
Drop in purity Crusher to last Roller	9.20	9.32	11.30	11.31	11.34	11.51	11.38	11.29	10.48	11.41	12.26	
Drop in purity Crusher to Syrup	0.89	0.50	1.07	0.65	0.45	0.15	0.33	0.33	0.25	0.42	0.57	
Increase in purity Mixed Juice to Syrup	1.65	1.51	1.79	2.10	2.10	1.86	1.66	1.77	2.02	1.89	1.57	
Reducing Sugar Ratio of Mixed Juice	4.01	4.21	2.65	3.04	3.23	3.08	3.27	3.81	3.35	3.07	3.18	
JAVA RATIO	77.27	78.66	76.24	77.44	77.43	78.87	78.70	77.94	77.74	77.67	77.78	
BAGASSE—												
Per cent. Sucrose	3.71	3.05	3.48	3.40	3.40	3.30	3.11	3.02	3.03	2.88	2.76	
Per cent. Moisture	51.62	52.11	51.93	52.76	52.01	52.17	51.79	51.60	51.50	51.24	50.80	
EXTRACTION—												
Imbibition % Cane.. .. .	30.45	30.25	33.04	32.40	31.84	31.70	31.28	32.59	34.76	32.82	31.62	
Sucrose in Mixed Juice % Sucrose in Cane	90.28	91.07	90.64	91.08	91.53	91.90	92.24	91.91	92.37	92.69	92.97	
Reduced Extraction (based on 12.5% Fibre)	92.59	92.90	92.94	92.78	93.22	93.18	93.62	93.72	94.13	94.19	94.42	
Primary Juice loss	51.88	49.67	49.43	50.71	47.47	47.73	44.67	43.93	41.12	40.66	39.19	
FILTER CAKE—												
Per cent. Sucrose	4.04	3.65	3.69	3.20	3.37	2.63	2.19	2.03	1.71	1.19	1.11	
Weight % Cane	5.18	5.07	5.01	4.71	4.75	4.74	4.78	5.12	5.63	5.38	5.11	
FINAL MOLASSES—												
Purity	44.92	42.58	46.00	43.89	43.69	43.12	42.67	42.91	43.45	43.24	41.81	
RECOVERY—												
Sucrose % Cane lost in manufacture	3.27	2.52	2.94	2.71	2.73	2.55	2.42	2.52	2.57	2.34	2.16	
Sucrose in Sugar % Sucrose in Cane	76.63	77.59	78.40	79.64	80.41	81.31	81.98	80.86	81.66	82.48	83.52	
Reduced Overall Recovery (12.5% Fibre, 85° pur. Mixed Juice)	78.67	80.14	78.76	80.73	81.33	81.16	81.89	82.07	82.61	82.98	83.51	
Sucrose in Sugar % Sucrose in Mixed Juice	84.88	85.20	86.52	87.44	87.85	88.48	88.88	87.98	88.40	88.98	89.84	
Reduced Boiling House Recovery (based on 85° pur. Mxd. Juice)	84.97	86.27	84.74	87.01	87.25	87.10	87.47	87.57	87.76	88.10	88.45	
YIELD—												
Tons Cane per ton Sugar	9.28	10.67	9.19	9.29	8.80	8.89	8.95	9.26	8.62	8.93	8.98	
Tons Cane per ton Sugar of 96° Pol	9.03	10.40	8.96	9.06	8.58	8.66	8.73	9.03	8.39	8.69	8.74	
LOSSES—												
Sucrose in Bagasse % Sucrose in Cane (A)	9.72	8.93	9.36	8.92	8.47	8.10	7.76	8.09	7.63	7.31	7.03	
Sucrose in Filter Cake % Sucrose in Cane (B).. .. .	—	—	1.37	1.14	1.15	0.91	0.78	0.60	0.52	0.41	0.36	
Sucrose in Molasses % Sucrose in Cane (C)	—	—	—	—	—	—	—	—	—	—	—	
Undetermined Sucrose % Sucrose in Cane (D).. .. .	—	—	10.87	10.30	9.97	9.68	9.48	10.43	10.18	9.80	9.09	
Sucrose lost in Boiling House % Sucrose in Cane (B)+(C)+(D)	13.65	13.48	12.24	11.44	11.12	10.59	10.26	11.03	10.70	10.21	9.45	
Sucrose in Total Losses % Sucrose in Cane (A)+(B)+(C)+(D)	23.37	22.41	21.60	20.36	19.59	18.69	18.02	19.12	18.34	17.52	16.48	
SUGAR—												
Average Polarization of all Sugars	98.68	98.45	98.42	98.43	98.50	98.60	98.36	98.44	98.58	98.65	98.59	

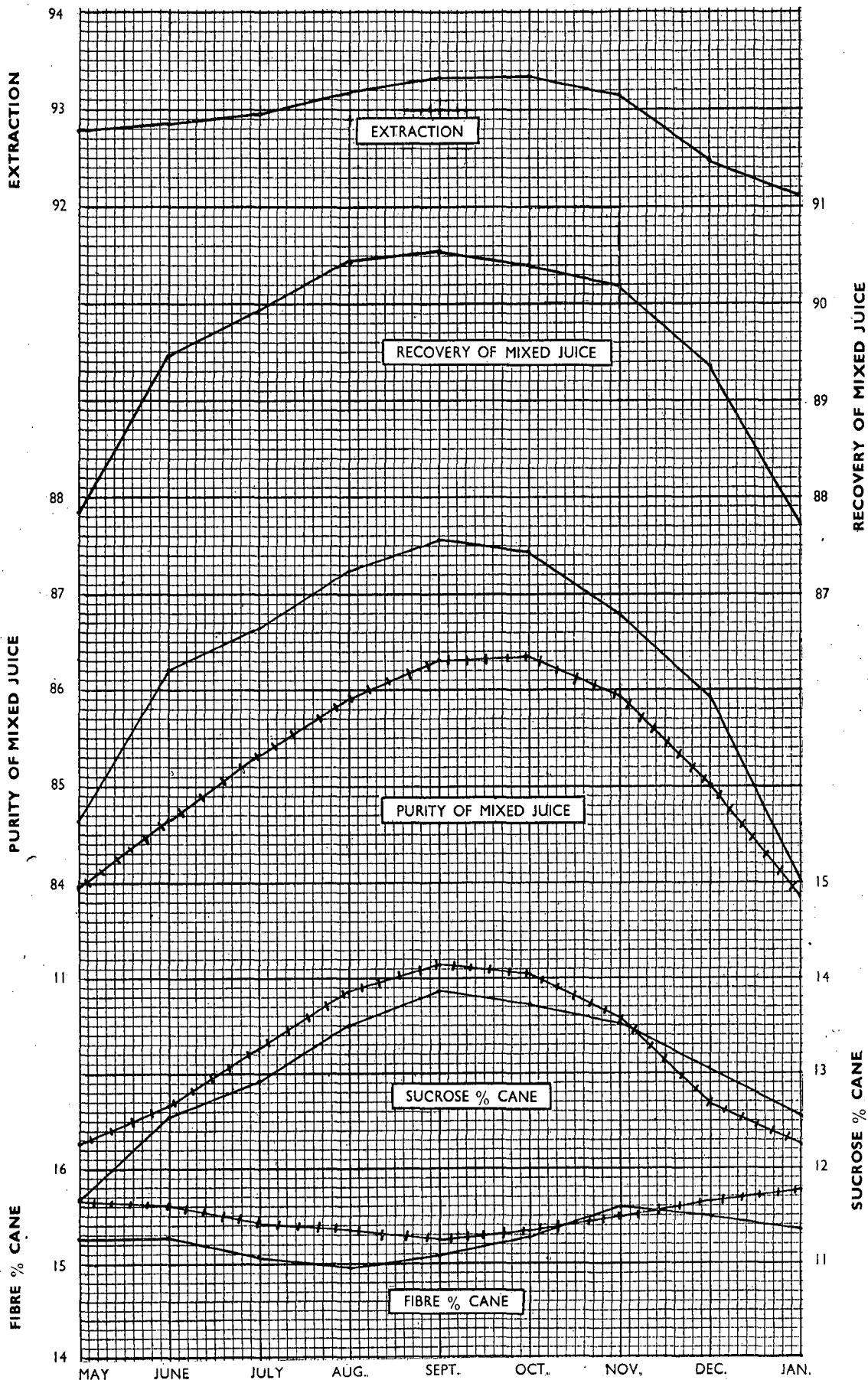
COMPARATIVE RESULTS FOR RECENT YEARS.

COUNTRY	MAURITIUS.		PUERTO RICO.			HAWAII.	TRINI- DAD.	QUEENSLAND.		BRITISH GUIANA.	LOUISIANA.	
	YEAR	1941. 1942.	1941. 1942. 1943.	1941. 1942. 1943.	1941. 1942. 1943.	1941. 1942. 1943.	1941. 1942. 1943.	1941. 1942. 1943.	1941. 1942. 1943.	1941. 1942. 1943.	1941. 1942. 1943.	
CANE—												
Per cent. Sucrose	13.30	13.67	13.27	12.73	13.14	11.95	12.69	15.70	15.44	11.46	9.98	10.37
Per cent. Fibre	12.60	12.91	13.19	13.42	13.62	13.44	14.25	11.29	11.76	13.37	13.38	13.99
JUICES—												
Purity of First Crusher	88.10	88.80	85.35	84.82	86.53	85.36	82.67	89.47	89.76	81.96	78.49	79.38
Purity of Mixed Juice	85.30	85.90	82.70	82.21	83.69	82.38	80.33	—	—	80.02	—	—
Purity of last Roller Juice	74.20	74.80	—	—	—	68.76	73.36	78.24	77.27	75.29	—	—
Purity of Syrup	85.90	86.40	84.28	83.59	84.85	83.51	82.08	88.80	89.23	80.82	—	—
Drop in purity Crusher to Mixed Juice	2.80	2.90	2.65	2.61	2.84	2.98	2.34	—	—	1.94	—	—
Drop in purity Crusher to last Roller	13.90	14.00	—	—	—	16.60	9.31	11.23	12.49	6.67	—	—
Drop in purity Crusher to Syrup	2.20	2.40	1.07	1.23	1.68	1.85	0.59	0.67	0.53	1.14	—	—
Increase in purity Mixed Juice to Syrup	0.60	0.50	1.58	1.38	1.16	1.13	1.75	—	—	0.80	—	—
Reducing Sugar Ratio of Mixed Juice	4.00	3.60	—	—	—	—	10.03	—	—	9.24	—	—
JAVA RATIO	80.12	79.22	79.37	78.92	78.87	86.72	77.38	83.87	83.28	80.82	78.14	77.63
BAGASSE—												
Per cent. Sucrose	2.64	2.69	2.65	2.57	2.62	1.76	3.41	2.78	2.57	3.36	2.93	3.07
Per cent. Moisture	44.50	44.40	48.28	48.41	48.61	43.53	48.27	49.31	49.22	46.31	48.64	49.00
EXTRACTION—												
Imbibition % Cane	20.42	19.88	25.76	24.67	26.42	36.35	22.29	—	—	19.96	15.66	17.71
Sucrose in Mixed Juice % Sucrose in Cane	95.20	95.10	94.30	94.22	94.13	96.32	91.82	95.76	95.88	91.98	91.74	91.14
Reduced Extraction (based on 12.5% Fibre)	95.10	95.30	94.64	94.67	94.68	96.61	92.97	95.24	95.58	92.58	92.36	92.22
Primary Juice loss	33.30	33.06	37.51	37.29	37.23	23.70	49.22	33.32	30.91	51.97	53.47	54.47
FILTER CAKE—												
Per cent. Sucrose	7.60	7.85	2.48	2.74	2.29	0.84	4.38	2.82	2.82	5.42	3.78	4.24
Weight % Cane	1.60	1.71	2.42	2.19	2.62	5.27	1.97	3.29	3.56	1.89	2.06	1.91
FINAL MOLASSES—												
Purity	38.70	39.20	30.67	31.30	30.44	35.46 ³	32.90	47.04	46.88	32.98	—	—
RECOVERY—												
Sucrose % Cane lost in manufacture	1.98	2.06	1.72	1.73	1.64	1.48	2.59	1.94	2.19	2.43	2.05	2.14
Sucrose in Sugar % Sucrose in Cane	85.10	85.00	87.04	86.41	87.48	87.65	79.61	87.66	85.81	78.79	79.50	79.34
Reduced Overall Recovery (12.5% Fibre, 85° pur. Mixed Juice)	84.92	84.43	88.50	88.27	88.63	89.44	84.06	—	—	83.20	—	—
Sucrose in Sugar % Sucrose in Mixed Juice	89.50	89.40	92.31	91.71	92.94	91.00	86.70	91.54	89.50	85.66	86.66	87.05
Reduced Boiling House Recovery (based on 85° pur. Mxd. Juice)	89.30	88.60	93.51	93.24	93.61	92.58	90.42	—	—	89.87	—	—
YIELD—												
Tons Cane per ton Sugar	8.71	8.47	8.40	8.82	8.45	9.31	9.57	7.17	7.45	10.71	—	—
Tons Cane per ton Sugar of 96° Pol.	8.48	8.24	8.31	8.73	8.35	9.17	9.50	6.98	7.25	10.63	12.10	11.67
LOSSES—												
Sucrose in Bagasse % Sucrose in Cane (A)	4.80	4.90	5.50	5.78	5.87	3.68	8.18	4.24	4.12	8.02	8.26	8.86
Sucrose in Filter Cake % Sucrose in Cane (B)	0.91	1.09	0.45	0.47	0.46	0.37	0.68	0.59	0.65	0.87	0.78	0.78
Sucrose in Molasses % Sucrose in Cane (C)	—	—	6.63	6.91	5.86	8.44	10.25	5.40	5.64	9.45	9.63	9.11
Undetermined Sucrose % Sucrose in Cane (D)	9.19	9.01	0.38	0.43	0.33	-0.14	1.28	2.11	3.78	2.87	1.83	1.91
Sucrose lost in Boiling House % Sucrose in Cane (B)+(C)+(D)	10.10	10.10	7.46	7.81	6.65	8.67	12.21	8.10	10.07	13.19	12.24	11.80
Sucrose in Total Losses % Sucrose in Cane (A)+(B)+(C)+(D)	14.90	15.00	12.96	13.59	12.52	12.35	20.39	12.34	14.19	21.21	20.50	20.66
SUGAR—												
Average Polarization of all Sugars	98.60	98.70	97.03	97.03	97.16	97.48	96.69	98.64	98.70	96.73	—	—

EXTRACTION AND RECOVERY FIGURES, 1932/1943



EXTRACTION, RECOVERY, SUCROSE % CANE
 PURITY OF MIXED JUICE AND FIBRE % CANE, BY MONTHS



SEASON 1943

MEAN OF SEASON 1927/1943

