

# ANNUAL SUMMARY OF CHEMICAL LABORATORY REPORTS FROM NATAL SUGAR FACTORIES, SEASON, 1937-38

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The season 1937/38 was more normal in weather and other external conditions than we have had for several seasons.

This year we did not have the abnormal late rains characteristic of 1932, 1935 and 1936, or such severe drought conditions as prevailed in 1933, or the disastrous effects of the locust plague that marked 1934; also there was not sufficient frost to affect the cane appreciably.

The rainfall was below the average for the greater part of the crushing season, but fairly well distributed throughout, and it was only during August that any considerable proportion of drought-affected cane was received at the mills.

## Unusual Length of Season.

The season began unusually early so that 100,000 tons of cane were crushed before the end of May, and continued abnormally late, nearly 100,000 tons of cane being crushed during January, with consequent unusually heavy losses in recoverable sugar owing to a large proportion of cane being crushed while immature.

The 821,690 tons of cane that were crushed before the end of June yielded only 82,603 tons of sugar instead of the 96,780 tons it would have presumably yielded if cut proportionately during the months of July to December inclusive, when 3,308,808 tons of cane yielded 389,609 tons of sugar, or 8.49 tons of cane per ton of sugar. Similarly the 90,595 tons of cane milled during January yielded only 8,969 tons of sugar instead of the 10,670 tons a like quantity of cane would have yielded between July and December. If it is claimed that some at least of this cane represented only a year's growth and would not have been fit to cut at all then, that is all the more reason why the harvesting should have been deferred until the following season. It was of course harvested for reasons apart from considerations of getting the best yield of recoverable sugar per acre. The sacrifice of 15,878 tons of sugar through early and late harvesting should be kept in mind however, and more efforts made to reduce this loss in future seasons.

## Quality of Cane.

The average quality of cane for the season is on the whole better than in any previous year. The sucrose content, 13.92 per cent, is the highest ever recorded for any season, including such drought-stricken years as 1931 and 1933. The fibre content

of the cane, 15.14 per cent, also is usually low for this country, although it is slightly higher than for 1936 (15.01 per cent) when weather conditions were generally more conducive to a lower fibre content. The purity of mixed juice, 85.60, is higher than for most years, though surpassed in 1929, 1930 and 1935. The reducing sugar ratio, 3.23, though not so low as in the two preceding seasons, is one of the lowest recorded in our industry.

This improved quality of cane is of course associated with the progressive change from Uba to the new varieties, mainly P.O.J.2725, Co.281, and Co.290, of which very considerable quantities were milled during the past season. Unfortunately no figures are yet available to show what was the proportion of new variety canes harvested.

As in previous years there was a marked peak of quality of cane during the months August to November inclusive, resulting of course in much better all-round factory performance during those months, and a ratio of cane to sugar of only 8.33. This ratio compares favourably with that of many of the more highly advanced sugar growing countries such as Hawaii and Java, who are unable for climatic reasons to attain our sucrose content of cane. It is to be regretted that our crushing season as a whole does not conform more closely to this peak period, when quality of cane and consequently factory efficiency and profit are at a maximum.

## General Factory Performance.

The recovery of sugar, whether calculated on juice (boiling house recovery) or on cane (overall recovery) shows a well-marked peak during the same four months, August to November, when the quality of cane was at its maximum.

The extraction was over 91 for all except the first and last two months of the season, and over 92 for the first time in this country during the August and September periods.

Both the extraction for the season, 91.53, and the boiling house recovery, 87.85, and consequently the overall recovery, 80.41, are considerably higher than for any previous season in this country. The reduced extraction, calculated to a standard fibre content of cane of 12.5 per cent, is 93.22, and the reduced overall recovery based on 12.5 per cent fibre and 85 purity of mixed juice is 81.33. The ratio of cane to sugar for the season was 8.80, which is much lower than for any previous season.

Although these figures give cause for satisfaction when compared with those of past years, when we turn to the recovery figures of other countries such as Hawaii, Java, Formosa, and Queensland, it will be seen that we are still a long way behind the standard of those countries. Thus Formosa, using P.O.J. canes of high sucrose and low fibre in up-to-date milling plant, gained in 1936 an extraction as high as 97.92 and an overall recovery of 91.59. Two respects in which there is much room for improvement here are (1) the moisture content of the bagasse which has shown a tendency to rise in recent years and was again over 52 per cent last season and (2) the purity of final molasses which was still as high as 43.69. A material improvement in these figures would considerably benefit extraction and boiling house recovery respectively.

As in recent years 17 out of the 23 factories in operation are included in our returns, representing 96.4 per cent of the total output of sugar and all the factories believed to have complete chemical control.

#### Individual Factory Records.

As usual the Inanda district (area between Durban and the Tongaat River) leads in sucrose content of cane, factory No. 20 recording no less than 14.83 per cent, the mean sucrose content of the two Inanda factories being 14.47 per cent.

The lowest fibre content of cane, 14.10 per cent, is again recorded at factory No. 4, and the highest purity of mixed juice, 87.2, at factory No. 15, while No. 16 now records the lowest reducing sugar ratio, 1.93. The highest Java ratio, 78.59 is again shown by factory No. 20.

A new South African record for extraction, 94.80, corresponding to 95.93 reduced extraction based on 12.5 per cent fibre, is again shown by factory No. 1. The same factory has the lowest extraction ratio and the lowest primary juice loss; No. 20 factory shows the lowest milling loss of 4.19 and the second highest extraction of 94.20. The lowest moisture content of bagasse, 48.70 per cent is gained by factory No. 9. The highest boiling house recovery (sucrose in sugar per cent of sucrose in mixed juice), 91.17, is gained yet again by factory No. 16, also the highest reduced boiling house recovery, 89.67, based on 85 purity of mixed juice, and the lowest purity of final molasses, 37.63. This corresponds to a recovery efficiency, based on a final molasses purity of 45, of 103.03, which is however surpassed by factory No. 12 with 103.54.

The highest overall recovery, 84.69 (another South African record) is again won by factory No. 1. This corresponds to a reduced overall recovery of 84.79.

The lowest actual ratio of cane to sugar, 7.92, is gained by factory No. 20, as well as the lowest ratio

based on sugar of 96° polarization, 7.73. This is the first occasion on which any South African factory has gained a ratio of cane to sugar of less than 8 for the whole season.

The largest quantity of cane crushed, 485,156 short tons (440,133 metric tons) and the largest output of sugar, 59,254 short tons (53,755 metric tons) is again recorded at factory No. 5. This is the highest output of sugar ever gained by any South African factory.

This factory has attained an average crushing rate of 125.38 short tons of cane per hour for the season which is another South African record.

The only other factories with an output of more than 40,000 tons of sugar per season are No. 1 with 55,349 short tons and No. 12 with 48,035 short tons.

No. 1 factory has increased the average crushing rate of its single train of mills to no less than 119.61 tons of cane per hour while dealing with a cane of 15.43 per cent fibre and applying 44.26 imbibition per cent cane.

#### Crop Statistics.

The South African sugar output for the past season, 507,219 short tons (460,149 metric tons) represents a considerable increase over any previous year.

The total world crop of sugar for 1937/38 according to Licht's estimates is 29,691,544 metric tons, of which cane sugar forms 18,598,500 tons or 62.2 per cent of the total.

The South African production thus represents 1.55 per cent of the world total of sugar and 2.47 per cent of the cane sugar total.

The British Empire production is estimated as follows:—

	Metric tons 1937-38	Per cent of total
India . . . . .	3,375,000*	53.9
Australia . . . . .	757,000	12.1
U.K. and Irish Free State**	494,000	7.9
British West Indies . . . . .	471,000	7.5
South Africa . . . . .	460,000	7.4
Mauritius . . . . .	315,000	5.0
British Guiana . . . . .	180,000	2.9
Fiji . . . . .	155,000	2.5
Canada . . . . .	50,000	0.8
<b>Total . . . . .</b>	<b>6,257,000</b>	<b>100.0</b>

\*Including 4,200,000 tons of gur calculated at half its weight in sugar.

\*\*Willet and Gray's estimates.

Following are the figures for sugar production in South Africa since 1891, and for sugar cane since 1924:—

**Sugar Production in South Africa (Short Tons)  
from 1891-92 to 1937-38.**

Season	Rain-fall	Sugar Produced
1891-92	42.33	12,235
1892-93	35.49	29,043
1893-94	67.62	18,334
1894-95	32.29	21,070
1895-96	53.15	22,708
1896-97	40.91	6,025
1897-98	34.04	20,254
1898-99	40.83	32,493
1900-01	27.93	17,996
1901-02	52.02	40,054
1902-03	47.32	19,460
1903-04	33.53	33,767
1904-05	37.03	19,238
1905-06	49.85	29,795
1906-07	37.32	23,497
1907-08	47.57	27,130
1809-09	41.05	35,832
1909-10	43.56	86,790
1910-11	41.79	82,000
1911-12	52.43	92,000
1912-13	39.91	96,000
1913-14	50.00	92,153
1914-15	33.25	102,653
1915-16	39.64	113,358
1916-17	27.50	114,709

Season	Rain-fall	Sugar Produced
1917-18	78.67	104,921
1918-19	37.75	150,214
1919-20	32.08	189,183
1920-21	51.99	143,730
1921-22	34.32	151,500
1922-23	34.32	158,000
1923-24	26.36	203,300

Season	Cane Crushed	Rain-fall	Sugar Produced	Ratio Cane/Sugar
1924-25	1,729,344	29.93	161,500	10.71
1925-26	2,638,000	43.80	239,463	11.02
1926-27	2,335,406	25.42	242,662	9.62
1927-28	2,482,931	42.46	247,300	10.04
1928-29	2,885,252	27.56	295,934	9.75
1929-30	3,005,663	43.83	298,635	10.06
1930-31	3,803,883	30.03	393,205	9.67
1931-32	3,130,783	28.01	325,899	9.61
1932-33	3,489,960	41.36	358,905	9.72
1933-34	3,673,375	27.14	391,173	9.39
1934-35	3,874,215	39.42	358,738	10.80
1935-36	3,867,536	53.25	417,289	9.27
1936-37	4,180,973	45.36	446,409	9.37
1937-38	4,489,022	33.21	507,219	8.85

These record nearly half a century of steady progress, but the improvement in quantity and quality of output has never been so marked as in the past few years during which the only serious set-back was the locust-ridden season of 1934-35. This improvement seems likely to continue in quality of product at least, if not in quantity.

South African Sugar Association,  
Experiment Station,  
Mount Edgecombe,  
March, 1938.

## APPENDIX

FIELD RETURNS 1936-37 CROP—COMPILED FROM THE UNION DEPARTMENT OF  
CENSUS STATISTICS FOR SUGAR CANE OWNED BY EUROPEAN PLANTERS.

These figures do not refer to the crop under review in the preceding section, but to the previous crop.

**Changes in proportion of Uba Cane in cultivation, and results in yield.**

The proportion of the crop under canes other than Uba continues to increase steadily at the rate of about 16 per cent of the total crop per annum.

This shows that very little Uba is now being planted, the total proportion of the plant crop for the 1936-37 season consisting of less than 11 per cent of Uba, and the first ratoon crop of less than 45 per cent. At the present rate of replacement of Uba, therefore, the 1940/41 crop should see this variety virtually eliminated.

The yield of cane per acre for the 1936-37 season was 19 tons from Uba and 26.8 tons from other varieties, an increase of over 40 per cent for the latter. But it must be remembered that the new varieties still consist mainly of plant cane and first ratoon crops, while the Uba is now mainly first, second and third ratoons. On the other hand, non-Uba canes are usually harvested after a shorter time for growth than Uba.

In the Lower Umfolozi division, where the superiority of the new varieties is most marked, replacement is furthest advanced so that in April, 1937, 97 per cent of plant cane crops and 61.6 per cent of all crops consisted of varieties other than Uba.

Port Shepstone shows the least proportion of non-Uba canes under all cultivation, 36.3 per cent, but this is solely due to the somewhat belated beginning in that district, since the proportion of non-Uba in the plant cane crop at the same time was no less than 98.9 per cent, the highest for any district.

**Areas of Cane Harvested.**

The area of cane harvested, 178,988 acres was a new high level, as was the tonnage of cane harvested, 3,807,911 tons. This corresponds fairly well with the output of cane, also from European planters only, recorded from entirely different data, that is, from the factories, which was 3,809,973 tons. This is of course much less than for the season just closed when the total output of cane from all sources was 4,489,022 tons.

The area of cane harvested was the highest on record for the South Coast, and for each individual district of that area except the Durban and Pine-town district which includes the coast between the

Umgeni and Umkomaas rivers. It was also the highest for the North Coast south of the Tugela by virtue of a further large increase in the area harvested of the Lower Tugela district, which more than made up for a slight falling off in Inanda.

There was a slight decrease in area of cane harvested in Zululand due to a slight falling off in the Eshowe and Lower Umfolozi districts, Mtunzini and Hlabisa (district north of the Umfolozi river) showing small increases, Mtunzini with 21,958 acres recording the highest area ever harvested in that district.

The final result is a further slight increase in the proportion of area harvested in the older part of Natal, both North and South Coasts, and of course a further corresponding slight decrease in area harvested in Zululand. This may possibly be accounted by the practice of cutting one year old cane (fairly common in Zululand) spreading to some extent further south.

These comparisons in crops and yields can never be entirely satisfactory until the average age of cane at time of harvesting is recorded.

**Yield of Cane Harvested.**

When we come to actual tonnage of cane harvested we find greater relative increases in Zululand than in the rest of Natal. Port Shepstone and Inanda divisions (the slowest to plant up the new variety canes, incidentally) show an actual falling-off in tonnage harvested, but the other divisions, Umzinto, Durban and Lower Tugela, all show substantial increases, Lower Tugela with 1,184,839 tons of cane harvesting as usual a much larger crop than any other district. Inanda is second with 629,945 tons, and Lower Umfolozi third with 616,326 tons.

Each district in Zululand, except Eshowe, shows a substantial increase in cane crop, consequently that part of the sugar belt contributes an increased share of the crop. This is in spite of the fact that the excess rainfall of 1936 was on the whole much more marked to the south of Zululand.

**Yields of Cane per Acre.**

The yield of cane per acre shows a further decrease from last season on the South Coast except for a very slight increase for the Umzinto district. The Inanda division of the North Coast area shows a decrease in yield of cane per acre which is however more than made up for by Lower Tugela, so that Natal as a whole shows a slight increase of yield per acre on the preceding year, from 21.19 to 21.65 tons.

Zululand shows a increase in yield per acre from 20.10 to 21.27 tons, well-marked in every district, except for Eshowe which shows a slight fall, and especially in Lower Umfolozi and Hlabisa which record increases of 4.76 tons and 5.88 tons per acre respectively.

Incidentally the relative slight falling off in the Eshowe records is probably due to the fact that in 1936 the rainfall for that centre (66.61 ins.) though as usual higher than at any other, did not show its usual degree of excess over all other rainfall stations in the sugar belt.

Zululand which from 1931 has recorded a considerably lower yield of cane per acre than the rest of Natal, is now only 1.13 tons less, and looks like establishing its former superiority in yields, as anticipated by us in last season's report.

The highest yield of cane per acre for any district is again shown by Inanda, 25.95 tons (non-Uba canes 29.52 tons per acre) but its superiority over all other districts is by no means so marked as for the previous season. Lower Umfolozi is now second in this respect with 23.04 tons (non-Uba 29.88 tons) and Lower Tugela third with 22.61 tons per acre.

**FINAL MANUFACTURING RESULTS, NATAL SUGAR FACTORIES, SEASON 1937—38.**

FACTORY NUMBER	1	2	4	5	6	8	9	10	11	12	14	15	16	18	19	20	21	SEASON.
Tons of 2,000 lbs. Cane crushed	448,920	322,397	202,737	485,156	336,916	180,451	95,758	350,341	349,660	441,756	264,116	151,332	88,612	140,341	104,500	139,886	198,189	4,301,068
Cane crushed—metric tons	407,260	292,478	183,923	440,133	305,650	163,705	86,872	317,829	317,211	400,761	239,606	137,288	80,389	127,317	94,802	126,904	179,797	3,901,925
Tons of 2,000 lbs. Sugar bagged and estimated	55,349	32,225	22,542	59,254	38,430	21,270	11,036	39,085	36,777	48,035	30,780	16,241	10,223	16,121	11,173	17,661	22,615	488,767
Sugar bagged and estimated—metric tons	50,213	29,234	20,450	53,755	34,864	19,296	10,012	35,458	33,364	43,577	27,878	14,734	9,274	14,625	10,136	16,022	20,516	443,409
Tons Cane per ton of Sugar	8.11	10.00	8.99	8.19	8.77	8.48	8.67	8.96	9.51	9.20	8.59	9.32	8.67	8.71	9.35	7.92	8.76	8.80
Tons Cane per ton of Sugar calculated as Sugar of 96° Pol.	7.89	9.79	8.75	7.97	8.56	8.48	8.37	8.69	9.21	8.96	8.37	9.06	8.45	8.48	9.14	7.73	8.51	8.58
Time Crushing per cent. Available Time	98.55	86.31	94.94	92.96	94.78	94.17	96.70	95.70	90.77	93.43	96.47	96.61	96.63	98.28	92.78	98.39	92.90	94.28
Tons of 2,000 lbs. of Cane per hour Actual Crushing	119.61	69.33	57.14	125.38	89.85	52.64	24.90	74.42	90.96	91.60	68.85	42.10	24.13	33.39	28.23	35.34	48.73	78.64
Tons of 2,000 lbs. White Sugar made	29,663	—	11,070	—	—	—	9,442	—	12,852	—	—	1,440	—	11	4,098	—	4,105	72,681
Tons of 2,000 lbs. Raw Sugar made	25,686	32,225	11,457	58,953	38,430	21,270	1,594	39,085	23,925	48,035	30,780	14,801	10,223	16,110	7,074	17,661	18,510	415,769
Sucrose per cent. Cane	14.36	12.54	13.96	14.51	13.73	14.09	14.55	13.43	13.68	13.56	14.08	13.98	14.22	14.09	14.01	14.83	14.47	13.92
Fibre per cent. Cane	15.43	15.38	14.10	15.01	14.66	14.62	15.50	14.64	15.54	15.18	15.33	15.93	15.07	15.44	16.51	14.80	15.19	15.14
Java Ratio	78.00	78.31	76.56	78.14	76.98	77.78	77.20	77.59	77.26	75.90	77.00	76.98	78.52	77.08	76.18	78.59	78.39	77.43
Milling Loss	4.83	8.63	9.80	7.47	6.71	8.97	7.93	7.04	8.00	9.30	7.01	8.07	11.71	8.42	9.61	4.19	9.25	7.80
Extraction Ratio	0.34	0.69	0.70	0.51	0.49	0.64	0.55	0.52	0.59	0.69	0.50	0.58	0.82	0.60	0.69	0.39	0.64	0.56
Primary Juice Loss	28.50	58.27	60.31	43.66	41.68	54.43	46.12	44.72	49.46	58.17	42.09	48.61	69.88	50.60	57.24	33.39	54.16	47.47
Imbibition per cent. Cane	44.26	23.06	31.14	31.48	27.75	37.02	31.50	30.68	32.29	30.54	30.12	33.28	29.49	28.21	23.44	29.06	29.40	31.84
Extraction (Sucrose in Mixed Juice % Sucrose in Cane)	94.80	89.41	90.10	92.29	92.84	90.68	91.54	92.33	90.90	89.59	92.38	90.79	87.60	90.76	88.68	94.20	90.30	91.53
Reduced Extraction (based on Fibre of 12.5% and Mixed Juice Purity of 85.0°)	95.93	91.67	91.38	93.76	94.05	92.22	93.41	93.61	92.93	91.69	93.99	93.06	90.02	92.77	91.82	95.23	92.26	93.22
Sucrose per cent. Bagasse	2.11	3.69	4.14	3.37	2.86	3.74	3.72	2.97	3.66	4.00	3.00	3.69	5.14	3.62	4.10	2.65	4.04	3.40
Moisture per cent. Bagasse	53.48	52.57	52.01	50.54	53.48	53.57	48.70	53.74	49.59	51.75	53.38	49.73	49.84	53.00	52.21	51.01	51.20	52.01
Sucrose per cent. Cane lost in manufacture	2.20	2.74	3.00	2.47	2.52	2.77	3.09	2.39	3.25	2.84	2.62	3.38	2.86	2.77	3.51	2.41	3.19	2.73
Overall Recovery (Sucrose in Sugar % Sucrose in Cane)	84.69	78.15	78.54	82.96	81.62	80.33	78.77	82.22	76.22	79.09	81.37	75.78	79.87	80.33	74.92	83.77	77.96	80.41
Reduced Overall Recovery (based on Fibre of 12.5% and Mixed Juice Purity of 85.0°)	84.79	80.50	78.58	82.95	82.22	81.22	78.16	83.02	78.57	81.69	82.80	74.56	80.69	81.39	75.71	83.30	78.54	81.33
Recovery on Mixed Juice (Sucrose in Sugar % Sucrose in Mixed Juice)	89.33	87.40	87.18	89.89	87.01	88.58	86.05	89.04	83.84	88.28	88.08	83.47	91.17	88.51	84.48	88.92	86.33	87.85
Reduced Boiling-House Recovery (based on Mixed Juice Purity of 85.0°)	88.39	87.81	85.99	88.47	87.42	88.07	83.67	88.69	84.55	89.09	88.09	80.12	89.64	87.73	82.45	87.47	85.13	87.25
Available Sucrose % Sucrose in Mixed Juice	87.39	85.90	87.39	89.19	86.99	88.42	87.63	86.58	85.53	85.26	86.31	88.92	88.49	87.02	88.24	—	86.85	87.08
Recovery Efficiency (Sucrose in Sugar % Available Sucrose in Mixed Juice)	102.22	101.75	99.76	100.78	101.06	100.18	98.20	102.84	98.02	103.54	102.05	93.87	103.03	101.71	95.74	—	99.40	100.88
Sucrose in Bagasse per cent. Sucrose in Cane (A)	5.20	10.59	9.90	7.71	7.16	9.32	8.46	7.67	9.10	10.41	7.62	9.21	12.40	9.24	11.32	5.80	9.70	8.47
Sucrose in Filter Cake per cent. Sucrose in Cane (B)	0.43	1.54	1.32	0.98	1.26	1.82	1.69	1.18	—	1.37	1.39	1.05	0.90	—	—	1.20	0.61	1.15
Sucrose in Molasses per cent. Sucrose in Cane (C)	7.36	8.01	8.30	—	8.54	8.24	8.29	—	—	8.77	9.26	10.00	—	—	8.61	—	8.83	—
Undetermined Sucrose per cent. Sucrose in Cane (D)	2.32	1.71	1.94	8.35	1.42	0.29	2.79	8.93	14.68	0.36	0.36	3.96	6.83	10.43	5.15	9.23	2.90	9.97
Sucrose lost in Boiling House per cent. Sucrose in Cane (B)+(C)+(D)	10.11	11.26	11.56	9.33	11.22	10.35	12.77	10.11	14.68	10.50	11.01	15.01	7.73	10.43	13.76	10.43	12.34	11.12
Sucrose in total Losses per cent. Sucrose in Cane (A)+(B)+(C)+(D)	15.31	21.85	21.46	17.04	18.38	19.67	21.23	17.78	23.78	20.91	18.63	24.22	20.13	19.67	25.08	16.23	22.04	19.59
<b>FIRST EXPRESSED JUICE—</b>																		
Brix	20.70	18.51	20.53	20.87	20.22	20.58	21.00	19.64	20.35	20.33	20.62	20.48	20.20	20.71	20.68	21.40	21.01	20.39
Purity (apparent)	88.98	86.53	88.80	89.00	88.20	87.99	89.70	88.10	86.98	87.00	88.70	88.70	89.65	88.27	88.90	88.20	87.87	88.15
<b>LAST EXPRESSED JUICE—</b>																		
Brix	1.07	5.23	3.86	3.39	4.70	3.81	4.40	3.28	6.25	5.15	3.65	5.34	6.48	1.96	5.88	2.60	6.33	4.22
Purity (apparent)	74.42	79.16	72.50	77.90	73.60	79.26	81.20	71.80	78.14	76.48	78.20	81.30	81.98	74.60	80.60	79.20	78.83	76.81
Purity drop from First Expressed Juice	14.56	7.37	16.30	11.10	14.60	8.73	8.50	16.30	8.84	10.52	10.50	7.40	7.67	13.67	8.30	9.00	9.04	11.34

MIXED JUICE—

Brix	14.53	15.23	14.94	15.75	15.97	14.52	14.89	15.14	14.98	15.15	16.23	14.79	15.06	14.57	16.94	16.56	16.04	15.33
Purity (Clerget)	86.05	84.57	86.10	86.60	85.50	85.55	86.10A	85.40	84.42	84.99	84.99	87.20	86.92	85.82	86.50	86.50A	86.04	85.60
Reducing Sugar Ratio	2.33	3.82	3.03	—	2.87	2.40	3.86	3.58	3.53	4.26	3.32	2.76	1.93	2.82	3.18	2.93	3.79	3.23
Purity drop from First Expressed Juice	2.93	1.96	2.70	2.40	2.70	2.44	2.80	2.70	2.56	2.94	3.71	1.50	2.73	2.45	2.40	1.70	1.83	2.55

CLARIFIED JUICE—

Brix	12.55	14.58	15.38	—	15.54	13.93	15.70	12.73	14.87	13.69	13.69	14.29	13.27	14.71	17.90	16.56	15.09	14.31
Purity (apparent)	91.04	87.11	87.30	—	86.50	88.22	88.50	87.40	86.03	86.70	86.90	87.50	88.19	86.71	87.90	88.30	87.15	87.58
Reducing Sugar Ratio	1.09	3.20	—	—	2.74	2.24	—	3.21	—	3.24	3.16	2.35	1.81	—	3.72	2.56	3.11	2.68
pH	6.98	7.37	7.11	—	7.41	—	—	7.60	7.07	7.40	7.30	—	7.41	—	—	7.50	7.11	7.28
Ash per cent. Brix	2.38	—	—	—	—	—	—	—	—	—	2.83	3.21	—	—	—	—	—	—
Parts SO <sub>2</sub> per million of Brix	866	—	—	—	676	—	—	775	—	1124	783	—	—	—	—	—	—	—

FILTER CAKE—

Per cent. Sucrose	0.56	5.92	4.25	3.88	5.25	4.44	6.42	3.51	3.27	4.16	4.34	4.11	3.56	3.89	7.68	4.26	2.54	3.37
Weight per cent. Cane	11.01	3.26	4.35	3.64	3.29	5.79	3.83	4.56	—	4.47	4.51	3.58	3.48	—	—	4.18	3.45	4.75

SYRUP—

Brix	53.80	50.37	57.20	55.40	51.94	55.63	52.90	56.24	55.10	52.51	56.70	54.47	49.56	57.08	55.87	53.71	53.57	54.21
Purity (apparent)	91.13	87.10	87.30	88.60	86.20	87.67	89.00	87.40	86.36	86.90	87.00	87.60	88.60	86.32	88.00	88.40	87.21	87.70
Reducing Sugar Ratio	1.02	3.11	2.90	—	2.54	2.12	—	2.96	3.28	3.12	2.47	2.21	1.61	—	2.58	2.53	2.05	2.51
pH	6.83	7.30	6.99	7.60	6.98	—	—	7.40	7.02	7.30	7.38	—	7.42	—	—	7.40	7.00	7.21
Purity drop from First Expressed Juice	-2.15	-0.57	1.50	0.40	2.00	0.32	0.70	0.70	0.62	0.10	1.70	1.10	1.05	1.95	0.90	-0.20	0.66	0.45
Purity increase from Mixed Juice	5.08	2.53	1.20	2.00	0.70	2.12	2.10	2.00	1.94	2.84	2.01	0.40	1.68	0.50	1.50	1.90	1.17	2.10
Parts SO <sub>2</sub> per million of Brix	—	—	—	—	535	—	—	—	—	—	—	—	—	—	—	—	—	—

FIRST MASSECUITE—

Brix	92.06	93.16	93.07	92.28	93.17	92.05	90.70	94.21	93.64	93.12	92.20	91.22	92.41	91.58	91.22	92.30	93.51	92.69
Purity (apparent)	91.22	77.13	84.30	84.30	80.30	84.30	87.60	82.30	85.37	80.20	81.70	80.50	86.37	81.99	86.10	81.20	82.10	83.39
Purity of Run-off	76.67	56.90	64.90	68.50	57.50	64.87	70.80	59.40	64.09	57.60	63.00	61.40	65.11	63.01	68.00	60.80	60.14	63.72
Cubic feet per ton of Sugar (all Masseccutes and Jelly)	48.67	54.47	—	—	49.73	—	58.85	55.23	—	55.10	59.51	—	47.23	55.54	—	—	—	53.43

SECOND MASSECUITE—

Brix	95.39	93.41	96.58	94.21	96.42	92.60	93.20	96.48	94.74	96.66	93.00	93.64	97.78	93.92	93.84	95.60	94.29	94.96
Purity (apparent)	81.29	66.10	69.20	69.30	69.70	71.36	77.00	66.70	73.06	66.10	75.60	68.80	66.28	72.03	68.80	67.80	72.03	70.97
Purity of Run-off	58.63	41.63	47.10	49.90	47.60	52.43	55.10	43.50	48.23	46.00	55.80	50.20	41.78	52.87	50.10	44.60	50.40	49.39

THIRD MASSECUITE—

Brix	97.19	—	96.86	—	97.52	—	94.90	—	95.04	—	93.70	92.96	98.66	—	—	—	95.63	95.97
Purity (apparent)	68.75	—	59.60	—	63.90	—	64.10	—	62.59	—	66.80	64.20	55.80	—	—	—	64.33	64.49
Purity of Run-off	49.04	—	41.70	—	42.80	—	43.20	—	40.95	—	48.30	48.00	37.63	—	—	—	44.80	44.86

JELLY—

Brix	—	—	93.75	92.89	94.55	91.39	—	95.99	93.73	92.38	90.00	90.43	—	91.03	91.90	93.70	—	92.96
Purity (apparent)	—	—	50.20	50.10	44.20	53.22	—	43.80	46.94	46.40	50.90	50.50	—	54.09	50.00	44.60	—	48.13

FINAL MOLLASSES—

Brix	84.51	89.87	86.80	88.16	87.50	89.03	91.50	89.18	88.31	87.60	85.70	86.31	91.58	84.83	84.78	89.80	79.70	87.27
Purity (Clerget)	47.61	41.68	43.10	44.90A	42.10	47.19	43.20A	40.60	40.05	43.90	44.70	48.00A	37.63	45.97A	45.00A	40.80A	44.80	43.69
Weight per cent. Cane at 85.6° Brix	2.63	2.67	3.16	—	3.28	2.89	3.27	—	—	3.18	3.18	3.42	—	—	—	—	3.36	3.05

POLARISATION OF SUGARS—

White	99.85	—	99.60	—	—	—	—	—	99.70	—	—	99.55	—	—	99.58	—	99.60	99.74
Raw	97.33	98.09	97.63	98.57	98.27	96.00	—	98.95	98.78	98.51	98.47	98.62	98.48	98.54	97.32	98.39	98.61	98.28
Average of all Sugars	98.68	98.09	98.62	98.57	98.27	96.00	99.47	98.95	99.10	98.51	98.47	98.74	98.48	98.54	98.22	98.39	98.83	98.50
SO <sub>2</sub> in parts per million	20.20	28.70	49.00	63.00	56.00	—	—	57.00	57.38	86.00	58.00	—	80.80	—	—	61.00	—	54.31

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

**COMPARATIVE RESULTS FOR RECENT YEARS.**

COUNTRY .. .. .		NATAL									
YEAR .. .. .	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	
<b>CANE—</b>											
Per cent. Sucrose .. .. .	13.75	12.95	13.66	13.84	13.48	13.88	11.88	13.65	13.30	13.92	
Per cent. Fibre .. .. .	15.88	15.52	15.82	15.75	15.65	15.78	15.24	15.92	15.01	15.14	
<b>JUICES—</b>											
Purity of First Crusher .. .. .	87.80	88.81	88.66	87.92	87.89	87.46	86.03	89.35	88.18	88.15	
Purity of Mixed Juice .. .. .	84.90	86.04	85.88	85.27	85.30	84.92	84.02	86.49	85.43	85.60	
Purity of last Roller Juice .. .. .	78.50	80.72	80.79	79.99	79.20	78.26	76.71	78.05	76.87	76.81	
Purity of Syrup .. .. .	86.60	87.44	87.60	86.82	86.84	86.57	85.53	88.28	87.53	87.70	
Drop in purity Crusher to Mixed Juice..	2.90	2.77	2.78	2.65	2.59	2.54	2.01	2.86	2.75	2.55	
Drop in purity Crusher to last Roller ..	9.30	8.09	7.87	7.93	8.69	9.20	9.32	11.30	11.31	11.34	
Drop in purity Crusher to Syrup .. .. .	1.20	1.37	1.06	1.10	1.05	0.89	0.50	1.07	0.65	0.45	
Increase in purity Mixed Juice to Syrup ..	1.70	1.40	1.72	1.65	1.54	1.65	1.51	1.79	2.10	2.10	
Reducing Sugar Ratio of Mixed Juice ..	3.86	3.35	3.33	3.35	3.09	4.01	4.21	2.65	3.04	3.23	
<b>JAVA RATIO .. .. .</b>	<b>76.78</b>	<b>77.01</b>	<b>76.36</b>	<b>76.92</b>	<b>76.99</b>	<b>77.27</b>	<b>78.66</b>	<b>76.24</b>	<b>77.44</b>	<b>77.43</b>	
<b>BAGASSE—</b>											
Per cent. Sucrose .. .. .	4.10	4.07	4.20	4.22	3.83	3.71	3.05	3.48	3.40	3.40	
Per cent. Moisture .. .. .	50.01	50.69	50.66	50.09	51.89	51.62	52.11	51.93	52.76	52.01	
<b>EXTRACTION—</b>											
Imbibition % Cane.. .. .	26.34	25.54	26.62	27.86	29.66	30.45	30.25	33.04	32.40	31.84	
Sucrose in Mixed Juice % Sucrose in Cane ..	89.47	89.02	89.78	89.40	89.86	90.28	91.07	90.64	91.08	91.53	
Reduced Extraction (based on 12.5% Fibre) ..	92.03	91.46	92.23	91.90	92.19	92.59	92.90	92.94	92.78	93.22	
Primary Juice loss .. .. .	55.78	59.77	54.38	56.70	54.65	51.88	49.67	49.43	50.71	47.47	
<b>FILTER CAKE—</b>											
Per cent. Sucrose .. .. .	5.15	6.15	4.97	4.79	4.50	4.04	3.65	3.69	3.20	3.37	
Weight % Cane .. .. .	4.77	4.33	4.97	5.01	5.41	5.18	5.07	5.01	4.71	4.75	
<b>FINAL MOLASSES—</b>											
Purity .. .. .	45.30	45.11	45.90	45.04	45.06	44.92	42.58	46.00	43.89	43.69	
<b>RECOVERY—</b>											
Sucrose % Cane lost in manufacture .. .. .	3.43	3.38	3.58	3.53	3.36	3.27	2.52	2.94	2.71	2.73	
Sucrose in Sugar % Sucrose in Cane .. .. .	75.06	75.13	74.77	74.39	75.73	76.63	77.59	78.40	79.64	80.41	
Reduced Overall Recovery (12.5% Fibre, 85° pur. Mixed Juice)	77.36	75.93	76.19	76.18	77.34	78.67	80.14	78.76	80.73	81.33	
Sucrose in Sugar % Sucrose in Mixed Juice ..	83.90	84.39	83.80	83.27	84.27	84.88	85.20	86.52	87.44	87.85	
Reduced Boiling House Recovery (based on 85° pur. Mxd. Juice)	84.06	83.02	82.61	82.90	83.89	84.97	86.27	84.74	87.01	87.25	
<b>YIELD—</b>											
Tons Cane per ton Sugar .. .. .	9.49	10.06	9.59	9.53	9.61	9.28	10.67	9.19	9.29	8.80	
Tons Cane per ton Sugar of 96° Pol. .. .. .	9.30	9.87	9.40	9.33	9.40	9.03	10.40	8.96	9.06	8.58	
<b>LOSSES—</b>											
Sucrose in Bagasse % Sucrose in Cane (A) ..	10.53	10.99	11.08	10.86	10.14	9.72	8.93	9.36	8.92	8.47	
Sucrose in Filter Cake % Sucrose in Cane (B) ..	—	—	—	—	—	—	—	1.37	1.14	1.15	
Sucrose in Molasses % Sucrose in Cane (C) ..	—	—	—	—	—	—	—	—	—	—	
Undetermined Sucrose % Sucrose in Cane (D) ..	—	—	—	—	—	—	—	10.87	10.30	9.97	
Sucrose lost in Boiling House % Sucrose in Cane (B) + (C) + (D)	14.41	13.88	14.15	14.56	14.13	13.65	13.48	12.24	11.44	11.12	
Sucrose in Total Losses % Sucrose in Cane (A) + (B) + (C) + (D)	24.94	24.87	25.23	25.42	24.27	23.37	22.41	21.60	20.36	19.59	
<b>SUGAR—</b>											
Average Polarization of all Sugars .. .. .	98.00	97.87	97.96	98.08	98.14	98.68	98.45	98.42	98.43	98.50	

COUNTRY .. .. .	QUEENSLAND. <sup>1</sup>			HAWAII. <sup>2</sup>		FORMOSA. <sup>3</sup>			MAURITIUS <sup>4</sup>	INDIA. <sup>5</sup>	
	YEAR .. .. .	1934.	1935.	1936.	1934.	1935.	1934.	1935.	1936.	1936.	1936 37.
<b>CANE—</b>											
Per cent. Sucrose .. .. .	15.57	15.84	15.66	12.80	12.29	14.20	13.73	14.20	13.71	11.76	
Per cent. Fibre .. .. .	12.23	12.39	11.63	12.62	12.54	11.55	11.45	11.77	12.60	16.24	
<b>JUICES—</b>											
Purity of First Crusher .. .. .	89.95	89.83	89.36	86.98	86.21	87.72	86.90	87.28	87.80	—	
Purity of Mixed Juice .. .. .	—	—	—	84.29	83.41	85.79	84.77	86.79	85.00	80.17	
Purity of last Roller Juice .. .. .	78.94	79.80	79.11	68.59	67.77	74.14	73.48	72.55	74.60	71.08	
Purity of Syrup .. .. .	89.48	89.57	89.27	85.64	84.62	86.67	86.25	86.36	85.60	—	
Drop in purity Crusher to Mixed Juice..	—	—	—	2.69	2.80	1.93	2.13	0.49	2.80	—	
Drop in purity Crusher to last Roller ..	11.01	10.03	10.25	18.39	18.44	13.58	13.42	14.73	13.20	—	
Drop in purity Crusher to Syrup .. .. .	0.47	0.26	0.09	1.34	1.59	1.05	0.65	0.92	2.20	—	
Increase in purity Mixed Juice to Syrup ..	—	—	—	1.35	1.21	0.88	1.48	-0.43	0.60	—	
Reducing Sugar Ratio of Mixed Juice ..	—	—	—	—	—	4.55	5.06	4.72	3.90	—	
JAVA RATIO .. .. .	82.78	82.59	83.37	81.33	81.77	83.74	83.57	83.91	80.08	—	
<b>BAGASSE—</b>											
Per cent. Sucrose .. .. .	3.19	3.21	3.07	1.41	1.36	1.73	1.76	1.50	2.76	2.53	
Per cent. Moisture .. .. .	50.75	50.92	49.51	41.47	40.92	38.89	38.91	38.12	44.60	—	
<b>EXTRACTION—</b>											
Imbibition % Cane.. .. .	—	—	—	35.07	31.83	25.74	25.45	27.71	25.90	18.65	
Sucrose in Mixed Juice % Sucrose in Cane ..	94.46	94.43	95.01	97.53	97.57	97.53	97.46	97.92	95.10	91.18	
Reduced Extraction (based on 12.5% Fibre) ..	94.32	94.37	94.58	97.56	97.58	97.30	97.19	97.77	95.10	93.60	
Primary Juice loss .. .. .	39.76	39.39	37.92	17.10	16.95	18.92	19.64	15.59	33.99	45.81	
<b>FILTER CAKE—</b>											
Per cent. Sucrose .. .. .	—	—	—	0.83	1.08	2.65	2.14	2.16	7.70	3.60	
Weight % Cane .. .. .	—	—	—	3.68	3.68	1.46	1.46	1.57	1.60	3.11	
<b>FINAL MOLASSES—</b>											
Purity .. .. .	39.20	38.33	35.54	34.64	34.24	29.63	29.42	30.00	40.30	33.22	
<b>RECOVERY—</b>											
Sucrose % Cane lost in manufacture .. .. .	1.97	1.93	1.89	1.29	1.30	1.17	1.19	1.19	2.11	2.39	
Sucrose in Sugar % Sucrose in Cane .. .. .	87.37	87.80	87.90	89.92	89.43	91.78	91.34	91.59	84.60	79.69	
Reduced Overall Recovery (12.5% Fibre, 85° pur. Mixed Juice)	—	—	—	90.32	90.32	91.18	91.20	90.44	84.60	84.90	
Sucrose in Sugar % Sucrose in Mixed Juice ..	92.49	92.98	92.52	92.17	91.62	94.10	93.72	93.53	88.90	87.21	
Reduced Boiling House Recovery (based on 85° pur. Mxd. Juice)	—	—	—	92.58	92.56	93.71	93.84	92.50	88.90	90.82	
<b>YIELD—</b>											
Tons Cane per ton Sugar .. .. .	7.26	7.10	7.17	8.40	8.81	7.67	7.93	7.68	8.50	10.81	
Tons Cane per ton Sugar of 96° Pol. .. .. .	7.06	6.90	6.98	8.27	8.68	7.59	7.86	7.59	8.28	10.45	
<b>LOSSES—</b>											
Sucrose in Bagasse % Sucrose in Cane (A) ..	5.54	5.57	4.99	2.44	2.39	2.47	2.53	2.07	4.90	8.80	
Sucrose in Filter Cake % Sucrose in Cane (B)..	0.50	0.60	0.47	0.24	0.31	0.27	0.23	0.25	0.90	0.73	
Sucrose in Molasses % Sucrose in Cane (C) ..	5.17	5.33	5.04	6.75	7.07	5.24	5.44	5.47	—	9.51	
Undetermined Sucrose % Sucrose in Cane (D)..	1.42	0.70	1.60	0.65	0.80	0.36	0.66	0.62	9.60	1.34	
Sucrose lost in Boiling House % Sucrose in Cane (B)+(C)+(D)	7.09	6.63	7.11	7.64	8.18	5.87	6.33	6.34	10.50	11.58	
Sucrose in Total Losses % Sucrose in Cane (A)+(B)+(C)+(D)	12.63	12.20	12.10	10.08	10.57	8.22	8.66	8.41	15.40	20.38	
<b>SUGAR—</b>											
Average Polarization of all Sugars .. .. .	98.74	98.72	98.67	97.46	97.44	97.04	96.84	97.11	98.60	99.31	

<sup>1</sup> From the Annual Reports of the Bureau of Sugar Experiment Stations, Queensland.

<sup>2</sup> From Association of Sugar Technologists, Formosa, 21st Annual Statement.

<sup>3</sup> From the Hawaiian Sugar Planters' Association Experiment Station.

<sup>4</sup> Compiled by the Sugar Technology Service of the Dept. of Agriculture, Mauritius.

<sup>5</sup> From Year Book, 1936/1937, Sugar Technologists' Association of India.

**Average Manufacturing Results by periods for Natal Sugar Factories Reporting to the Experiment Station, Season 1937-38.**

Period ending	MAY 29 1937	JULY 3 1937	JULY 31 1937	AUG. 28 1937	OCT. 2 1937	OCT. 30 1937	NOV. 27 1937	JAN. 1 1938	JAN. 29 1938	SEASON.
Tons of 2,000 lbs. Cane crushed .. .. . This period To date	93,051	715,010 821,690	590,559 1,412,247	598,900 2,011,147	742,675 2,753,824	580,574 3,334,404	556,274 3,906,745	195,118 4,130,498	90,595 4,281,800	<b>4,301,068</b> short tons. <i>3,901,925 metric tons.</i>
Tons of 2,000 lbs. Sugar bagged and estimated.. This period To date	8,288	72,851 82,603	65,515 148,118	70,248 218,365	90,832 309,198	70,206 379,404	65,951 447,428	21,284 472,212	8,969 487,165	<b>488,767</b> short tons. <i>443,409 metric tons.</i>
Tons Cane per ton Sugar .. .. . This period To date	11.23	9.81 9.95	9.01 9.53	8.53 9.21	8.18 8.91	8.27 8.79	8.44 8.73	9.17 8.75	10.10 8.79	<b>8.80</b>
Tons Cane per ton of Sugar calculated as sugar of } This period 96° Pol .. .. . } To date	10.98	9.56 9.70	8.78 9.29	8.31 8.98	7.97 8.68	8.06 8.57	8.22 8.51	8.94 8.53	9.86 8.57	<b>8.58</b>
Sucrose per cent. Cane .. .. . This period To date	11.75	12.86 12.74	13.62 13.11	14.20 13.44	14.73 13.79	14.62 13.93	14.42 14.01	13.39 13.98	12.30 13.94	<b>13.92</b>
Fibre per cent. Cane .. .. . This period To date	15.83	15.28 15.35	15.17 15.28	14.95 15.18	14.81 15.08	14.87 15.05	15.30 15.10	15.42 15.12	15.38 15.14	<b>15.14</b>
Java Ratio .. .. . This period To date	76.13	77.82 77.62	77.79 77.71	77.68 77.69	77.43 77.63	77.49 77.61	76.51 77.47	76.97 77.45	76.51 77.43	<b>77.43</b>
Sucrose per cent. Bagasse .. .. . This period To date	3.44	3.19 3.21	3.27 3.23	3.31 3.26	3.42 3.30	3.52 3.34	3.51 3.39	3.30 3.39	3.50 3.40	<b>3.40</b>
Moisture per cent. Bagasse .. .. . This period To date	52.72	52.05 52.12	51.85 52.01	51.76 51.93	51.85 51.91	52.03 51.93	52.00 51.95	52.91 51.99	53.10 52.00	<b>52.01</b>
Imbibition per cent. Cane .. .. . This period To date	30.70	33.17 32.88	32.29 32.64	32.05 32.46	31.81 32.29	31.55 32.15	31.87 32.15	28.89 31.97	26.45 31.88	<b>31.84</b>
Extraction .. .. . This period To date	89.15	91.33 91.14	91.71 91.39	92.04 91.59	92.14 91.75	91.76 91.75	91.44 91.62	91.13 91.60	89.65 91.54	<b>91.53</b>
Recovery on Mixed Juice .. .. . This period To date	83.50	85.44 85.26	87.50 86.24	88.39 86.92	88.71 87.45	88.78 87.69	88.61 87.89	87.99 87.89	88.22 87.85	<b>87.85</b>
Overall Recovery .. .. . This period To date	74.44	78.03 77.71	80.25 78.81	81.35 79.61	81.77 80.24	81.46 80.46	81.02 80.52	80.19 80.50	79.09 80.42	<b>80.41</b>
Purity of Mixed Juice .. .. . This period To date	82.24	83.25 83.18	85.13 84.01	86.01 84.64	86.61 85.20	86.79 85.49	86.58 85.63	85.50 85.63	84.48 85.61	<b>85.60</b>
Reducing Sugar Ratio .. .. . This period To date	4.95	4.91 4.90	3.42 4.27	2.98 3.86	2.57 3.51	2.46 3.37	2.61 3.19	3.22 3.19	4.10 3.22	<b>3.23</b>
Purity of Syrup .. .. . This period To date	84.54	85.33 85.25	87.34 86.13	88.20 86.78	88.74 87.32	88.85 87.61	88.59 87.75	87.33 87.73	86.92 87.70	<b>87.70</b>
Sucrose in Filter Cake .. .. . This period To date	4.01	4.09 4.03	4.33 4.16	4.31 4.17	4.47 4.27	4.33 4.28	3.95 4.24	3.96 4.23	4.24 4.21	<b>3.37A</b>
Purity of Final Molasses .. .. . This period To date	43.74	41.98 41.91	42.78 42.47	43.62 42.82	44.80 43.36	45.39 43.70	45.24 43.94	43.48 43.94	42.60 43.92	<b>43.69</b>
Average Polarization of Sugar .. .. . This period To date	98.23	98.51 98.48	98.55 98.51	98.51 98.51	98.50 98.51	98.51 98.51	98.57 98.51	98.42 98.50	98.29 98.50	<b>98.50</b>
SO <sub>2</sub> in Sugar p.p.m... .. . This period To date	62.62	50.54 51.86	50.71 51.84	48.84 51.60	50.88 50.89	54.54 51.72	53.60 52.06	58.79 52.61	65.40 53.01	<b>54.31</b>

A.—Weighted average. Monthly and to date figures are arithmetic averages.



**AREA OF CANE HARVESTED AND YIELDS BY DISTRICTS (EUROPEAN PLANTERS ONLY).—(Continued).**

**COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.**

DISTRICT.	YIELD OF CANE IN TONS.									
	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.
PORT SHEPSTONE.. . . . .	34,891	48,662	54,068	68,770	60,231	81,823	64,018	67,974	59,259	56,685
UMZINTO .. . . . .	319,105	470,723	498,795	449,410	486,803	638,701	598,308	611,231	553,401	564,427
DURBAN AND PINETOWN .. . . . .	102,218	123,231	135,604	164,849	136,979	159,020	138,096	185,118	137,805	146,676
<b>Total South of Umgeni River .. . . . .</b>	<b>456,214</b>	<b>642,616</b>	<b>688,467</b>	<b>683,029</b>	<b>684,013</b>	<b>879,544</b>	<b>800,422</b>	<b>864,323</b>	<b>750,465</b>	<b>767,788</b>
Ratio to 1926 (= 100).. . . . .	102.3	144.1	154.4	153.2	153.4	197.3	179.54	193.9	168.3	172.2
INANDA .. . . . .	340,501	351,677	415,176	414,466	375,763	455,816	504,540	618,853	672,954	629,945
LOWER TUGELA .. . . . .	468,315	654,828	684,601	873,467	648,693	754,022	829,067	1,012,784	1,033,633	1,184,839
<b>Total for North Coast between Umgeni and Tugela Rivers .. . . . .</b>	<b>808,816</b>	<b>1,006,505</b>	<b>1,099,777</b>	<b>1,287,933</b>	<b>1,024,456</b>	<b>1,209,838</b>	<b>1,333,607</b>	<b>1,631,637</b>	<b>1,706,587</b>	<b>1,814,784</b>
Ratio to 1926 (= 100).. . . . .	17.6	121.5	132.8	155.5	123.7	146.1	161.00	197.0	206.1	219.1
<b>Total for Natal South of the Tugela (excluding Zululand) .. . . . .</b>	<b>1,265,030</b>	<b>1,649,121</b>	<b>1,788,244</b>	<b>1,970,962</b>	<b>1,708,469</b>	<b>2,089,382</b>	<b>2,134,029</b>	<b>2,495,960</b>	<b>2,457,052</b>	<b>2,582,572</b>
Ratio to 1926 (= 100).. . . . .	99.3	129.4	139.3	154.7	134.1	164.0	167.51	195.9	192.9	202.7
MTUNZINI .. . . . .	326,502	354,523	349,925	434,124	331,561	360,130	353,287	414,821	403,121	413,802
ESHOWE .. . . . .	57,882	91,866	74,203	146,256	109,525	105,836	120,099	130,104	128,191	120,935
LOWER UMFOLOZI .. . . . .	456,517	484,622	519,332	580,925	426,516	525,498	582,636	489,547	496,591	616,326
HLABISA .. . . . .	51,470	64,768	66,184	110,840	59,657	74,379	80,552	63,866	50,529	74,276
<b>Total North of the Tugela (Zululand) .</b>	<b>892,371</b>	<b>995,779</b>	<b>1,009,644</b>	<b>1,272,145</b>	<b>927,259</b>	<b>1,065,813</b>	<b>1,136,574</b>	<b>1,098,338</b>	<b>1,078,432</b>	<b>1,225,339</b>
Ratio to 1926 (= 100).. . . . .	98.2	109.6	111.1	140.0	102.0	117.3	125.08	120.9	118.7	134.8
<b>GRAND TOTAL FOR NATAL (including Zululand) .. . . . .</b>	<b>2,157,401</b>	<b>2,644,900</b>	<b>2,797,888</b>	<b>3,243,107</b>	<b>2,635,728</b>	<b>3,155,195</b>	<b>3,270,603</b>	<b>3,594,298</b>	<b>3,535,484</b>	<b>3,807,911</b>
Ratio to 1926 (= 100).. . . . .	98.8	121.1	128.2	148.6	120.8	144.6	149.85	164.7	162.0	174.5

**AREA OF CANE HARVESTED AND YIELDS BY DISTRICTS (EUROPEAN PLANTERS ONLY).—(Continued).**  
**COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.**

DISTRICT.	PER CENT. OF TOTAL TONNAGE.										
	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.
PORT SHEPSTONE .. .. .	1.7	1.6	1.8	1.9	2.1	2.3	2.6	2.0	1.9	1.7	1.5
UMZINTO .. .. .	14.1	14.8	17.8	17.8	13.9	18.5	20.2	18.3	17.0	15.6	14.8
DURBAN AND PINETOWN .. .. .	4.6	4.7	4.7	4.8	5.1	5.2	5.0	4.2	5.1	3.9	3.9
<b>Total South of Umgeni River.. .. .</b>	<b>20.4</b>	<b>21.1</b>	<b>24.3</b>	<b>24.6</b>	<b>21.1</b>	<b>26.0</b>	<b>27.9</b>	<b>24.5</b>	<b>24.0</b>	<b>21.2</b>	<b>20.2</b>
INANDA .. .. .	15.1	15.8	13.3	14.8	12.8	14.3	14.4	15.4	17.2	19.0	16.5
LOWER TUGELA .. .. .	22.8	21.7	24.8	24.5	26.9	24.6	23.9	25.3	28.2	29.2	31.1
<b>Total for North Coast between Umgeni and Tugela Rivers ..</b>	<b>37.9</b>	<b>37.5</b>	<b>38.1</b>	<b>39.3</b>	<b>39.7</b>	<b>38.9</b>	<b>38.3</b>	<b>40.8</b>	<b>45.4</b>	<b>48.3</b>	<b>47.6</b>
<b>Total for Natal South of the Tugela (excluding Zululand) .. ..</b>	<b>58.3</b>	<b>58.6</b>	<b>62.4</b>	<b>63.9</b>	<b>60.8</b>	<b>64.8</b>	<b>66.2</b>	<b>65.2</b>	<b>69.4</b>	<b>69.5</b>	<b>67.8</b>
MTUNZINI .. .. .	15.1	15.1	13.4	12.5	13.4	12.6	11.4	10.8	11.6	11.4	10.9
ESHOWE .. .. .	2.4	2.7	3.5	2.7	4.5	4.2	3.4	3.7	3.6	3.6	3.2
LOWER UMFOLOZI .. .. .	24.0	21.2	18.3	18.6	17.9	16.2	16.7	17.8	13.6	14.1	16.2
HLABISA .. .. .	—	2.4	2.5	2.4	3.4	2.3	2.4	2.5	1.8	1.4	1.9
<b>Total North of the Tugela (Zululand) .. .. .</b>	<b>41.6</b>	<b>41.4</b>	<b>37.6</b>	<b>36.1</b>	<b>39.2</b>	<b>35.2</b>	<b>33.8</b>	<b>34.8</b>	<b>30.6</b>	<b>30.5</b>	<b>32.2</b>
<b>GRAND TOTAL FOR NATAL (including Zululand) .. .. .</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

AREA OF CANE HARVESTED AND YIELDS BY DISTRICTS (EUROPEAN PLANTERS ONLY).—(Continued).

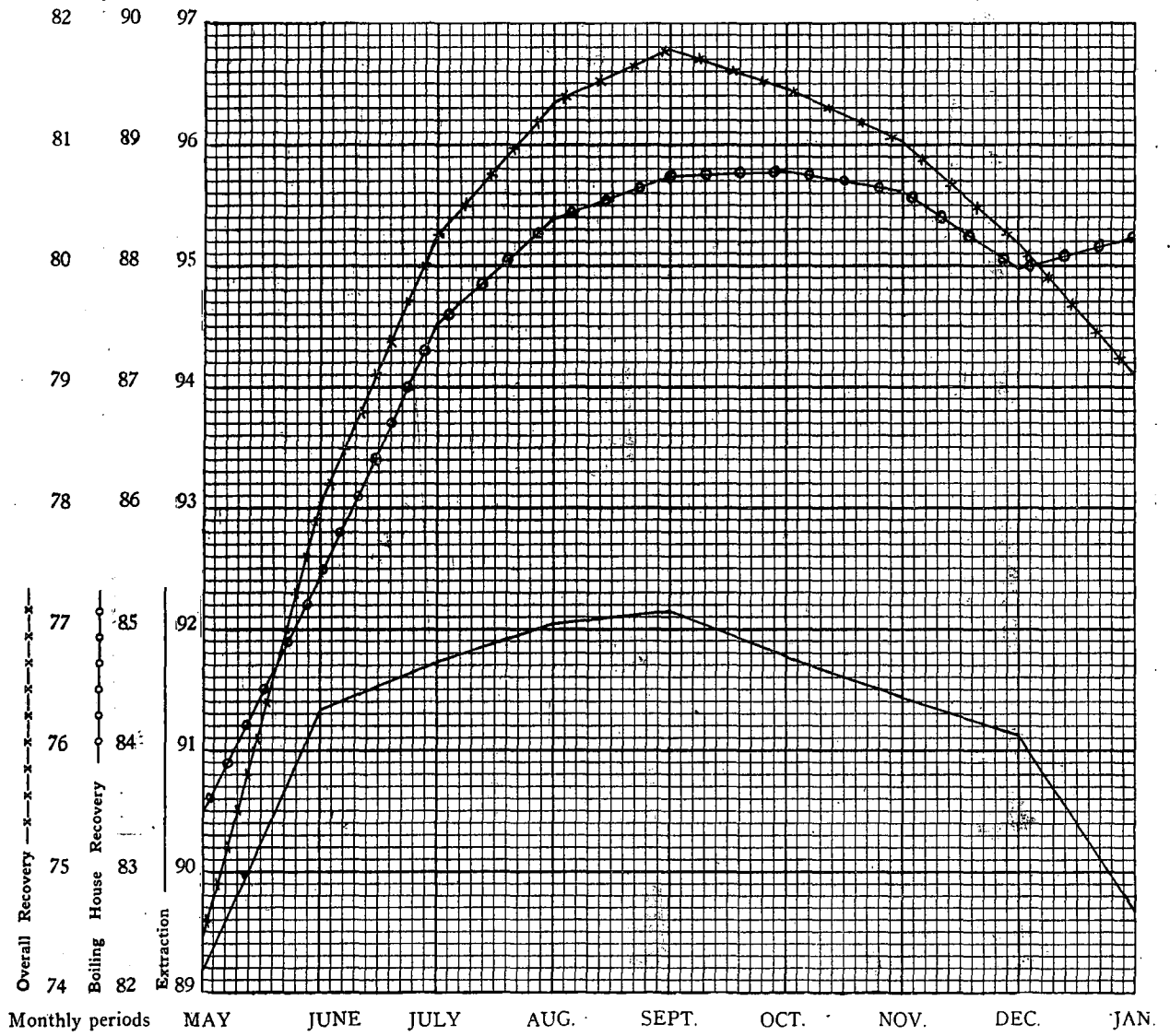
COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.

DISTRICT.	TONS CANE PER ACRE.										
	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.
PORT SHEPSTONE.. . . . .	17.68	16.72	19.98	17.40	18.60	18.80	19.57	20.47	16.34	14.78	13.51
UMZINTO .. . . . .	17.74	17.57	19.33	20.10	22.30	20.80	22.24	21.68	20.69	18.20	18.22
DURBAN AND PINETOWN .. . . . .	21.39	19.49	22.64	24.80	26.77	22.90	21.75	23.00	23.34	20.27	19.77
<b>Total South of Umgeni River</b> .. . . . .	18.44	17.89	19.77	20.60	22.76	21.00	21.87	21.79	20.76	18.21	18.02
Ratio to 1926 (= 100) .. . . . .	100.0	97.00	107.20	111.70	123.40	114.10	118.60	118.17	112.58	98.75	97.72
INANDA .. . . . .	16.72	16.79	18.45	20.50	22.01	19.20	20.14	22.80	25.90	26.76	25.95
LOWER TUGELA .. . . . .	20.10	19.02	20.08	20.80	22.12	18.20	18.36	19.45	21.62	20.83	22.61
<b>Total for North Coast between Umgeni and Tugela Rivers</b> .. . . . .	18.61	18.01	19.48	20.68	22.08	18.60	18.99	20.59	23.07	22.83	23.67
Ratio to 1926 (= 100) .. . . . .	100.00	96.80	104.70	111.10	118.10	100.00	102.00	110.64	123.97	122.68	127.19
<b>Total for Natal South of the Tugela (excluding Zululand)</b> .. . . . .	18.55	17.97	19.59	20.65	22.31	19.40	20.11	21.03	22.21	21.19	21.65
Ratio to 1926 (= 100) .. . . . .	100.00	96.90	105.60	111.30	120.30	104.60	108.40	113.37	119.73	114.23	116.71
MTUNZINI .. . . . .	22.39	21.16	20.84	20.70	22.53	18.10	17.55	18.40	19.56	18.75	18.85
ESHOWE .. . . . .	22.55	20.88	22.76	20.60	20.22	18.90	16.69	17.47	17.95	17.64	17.26
LOWER UMFOLOZI .. . . . .	25.00	22.57	22.99	21.60	23.83	18.00	18.63	19.84	17.93	18.28	23.04
HLABISA .. . . . .	—	16.93	18.58	17.80	19.55	14.60	16.17	17.31	14.79	12.72	18.60
<b>Total North of the Tugela (Zululand)</b> .. . . . .	23.83	21.50	21.83	20.92	22.50	17.90	17.86	18.91	18.28	18.00	20.52
Ratio to 1926 (= 100) .. . . . .	100.00	90.20	91.60	87.80	94.40	75.20	74.95	79.35	76.71	75.54	86.11
<b>GRAND TOTAL FOR NATAL (including Zululand)</b> .. . . . .	20.44	19.28	20.38	20.75	22.39	18.90	19.29	20.24	20.84	20.10	21.27
Ratio to 1926 (= 100) .. . . . .	100.00	94.30	99.70	101.50	109.50	92.60	94.40	99.02	101.96	98.34	104.06
Average Rainfall of all Districts (inches)	—	—	—	48.94	38.74	29.86	51.07	31.89	46.62	43.40	50.81

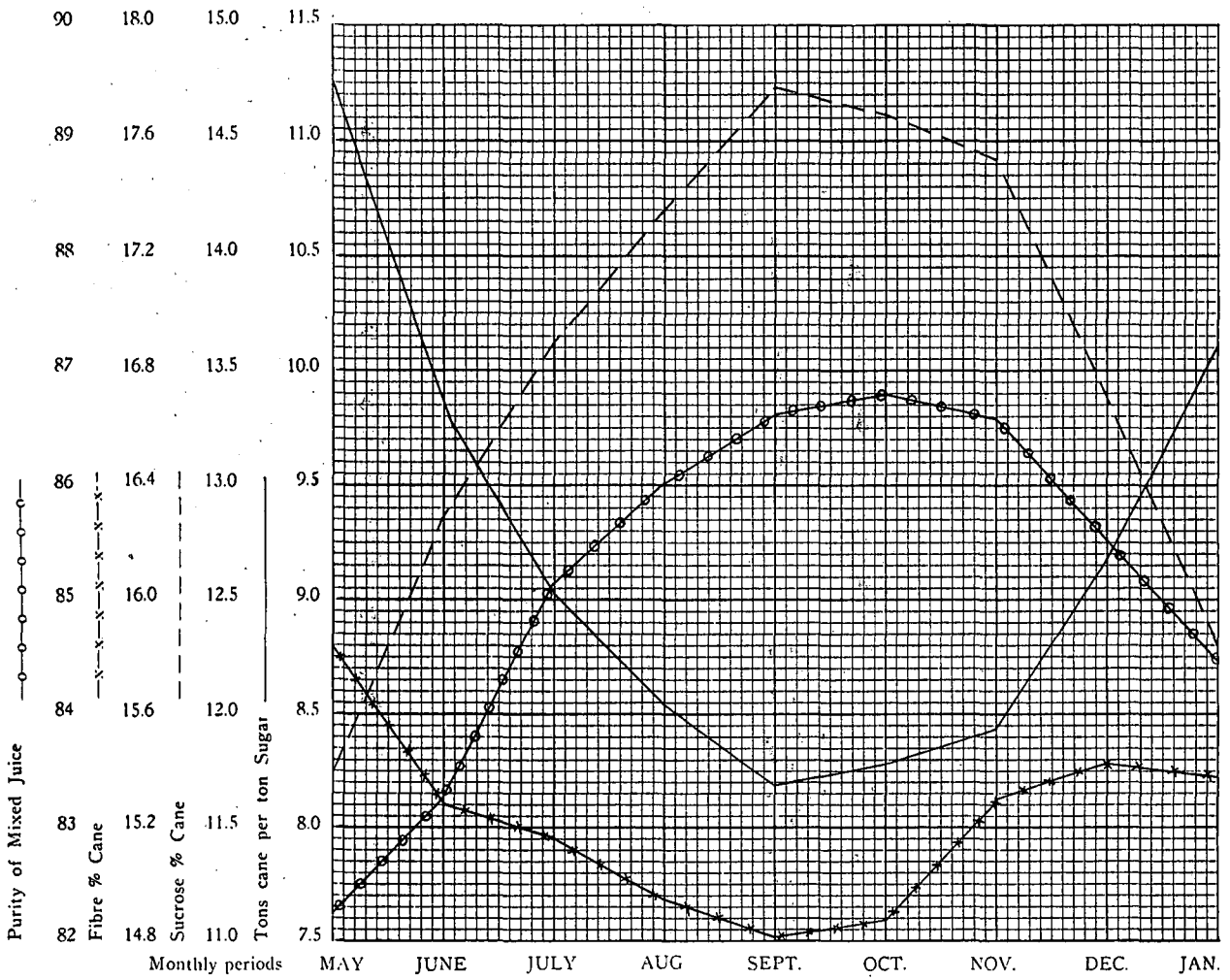
**AREA OF CANE HARVESTED AND YIELDS BY DISTRICTS (EUROPEAN PLANTERS ONLY).—(Continued).**  
**COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.**

DISTRICT.	TONS CANE PER ACRE, 1936/37.		PERCENTAGE (AREA) OF NON-UBA CANES UNDER CULTIVATION.				ACREAGE UNDER CULTIVATION 1936/37.					
	Uba.	Non-Uba.	1933/4.	1934/5.	1935/6.	1936/7.	PLANT CANE.			FIRST RATOON.		
							Uba.	Non-Uba.	Non-Uba % of Total	Uba.	Non-Uba.	Non-Uba % of Total
PORT SHEPSTONE .. .. .	12.35	21.53	0.3	4.4	19.5	36.3	33	2,841	98.9	2,073	472	18.5
UMZINTO .. .. .	16.78	23.75	2.4	10.3	23.4	40.8	2,184	18,484	89.4	6,942	6,156	47.0
DURBAN AND PINETOWN .. .. .	17.90	25.77	2.1	12.1	30.2	48.9	490	4,994	91.1	1,329	1,496	53.0
<b>Total South of Umgeni River..</b>	<b>16.49</b>	<b>24.02</b>	<b>2.2</b>	<b>10.0</b>	<b>24.0</b>	<b>41.4</b>	<b>2,707</b>	<b>26,319</b>	<b>90.7</b>	<b>10,344</b>	<b>8,124</b>	<b>44.0</b>
Ratio to 1926 (= 100) .. .. .	89.43	130.26	—	—	—	—	—	—	—	—	—	—
INANDA .. .. .	24.80	29.52	5.1	14.3	24.6	36.4	3,127	9,534	75.3	7,115	6,549	47.9
LOWER TUGELA .. .. .	20.06	27.98	4.2	16.5	32.3	45.5	3,139	25,624	89.1	13,557	16,631	55.1
<b>Total for North Coast between Umgeni and Tugela Rivers..</b>	<b>21.68</b>	<b>28.38</b>	<b>4.5</b>	<b>15.8</b>	<b>29.9</b>	<b>42.5</b>	<b>6,266</b>	<b>35,158</b>	<b>84.9</b>	<b>20,672</b>	<b>23,180</b>	<b>52.9</b>
Ratio to 1926 (= 100) .. .. .	116.50	152.50	—	—	—	—	—	—	—	—	—	—
<b>Total for Natal South of the Tugela (excluding Zululand) .. .. .</b>	<b>19.68</b>	<b>27.18</b>	<b>3.6</b>	<b>13.6</b>	<b>27.8</b>	<b>42.1</b>	<b>8,973</b>	<b>61,477</b>	<b>87.3</b>	<b>31,016</b>	<b>31,304</b>	<b>50.2</b>
Ratio to 1926 (= 100) .. .. .	106.09	146.52	—	—	—	—	—	—	—	—	—	—
MTUNZINI .. .. .	16.91	22.33	3.4	16.4	31.0	50.0	2,151	12,395	85.2	5,309	8,294	61.0
ESHOWE .. .. .	14.94	25.28	2.1	8.7	22.1	49.6	434	5,479	92.7	1,832	1,542	54.3
LOWER UMFOLOZI .. .. .	19.31	29.88	7.2	20.0	40.6	61.1	678	21,986	97.0	4,238	9,177	68.4
HLABISA .. .. .	16.03	24.98	4.4	17.2	34.5	52.2	425	2,619	86.0	726	1,282	63.8
<b>Total North of the Tugela (Zululand) .. .. .</b>	<b>17.62</b>	<b>26.27</b>	<b>5.1</b>	<b>17.2</b>	<b>34.5</b>	<b>55.1</b>	<b>3,688</b>	<b>42,479</b>	<b>92.0</b>	<b>12,105</b>	<b>20,295</b>	<b>62.6</b>
Ratio to 1926 (= 100) .. .. .	67.27	110.24	—	—	—	—	—	—	—	—	—	—
<b>GRAND TOTAL FOR NATAL (including Zululand) .. .. .</b>	<b>19.04</b>	<b>26.83</b>	<b>4.2</b>	<b>14.9</b>	<b>30.1</b>	<b>46.5</b>	<b>12,661</b>	<b>103,956</b>	<b>89.1</b>	<b>43,121</b>	<b>51,599</b>	<b>54.5</b>
Ratio to 1926 (= 100) .. .. .	93.15	131.26	—	—	—	—	—	—	—	—	—	—
Average Rainfall of all Districts (inches)	50.81	50.81	—	—	—	—	—	—	—	—	—	—

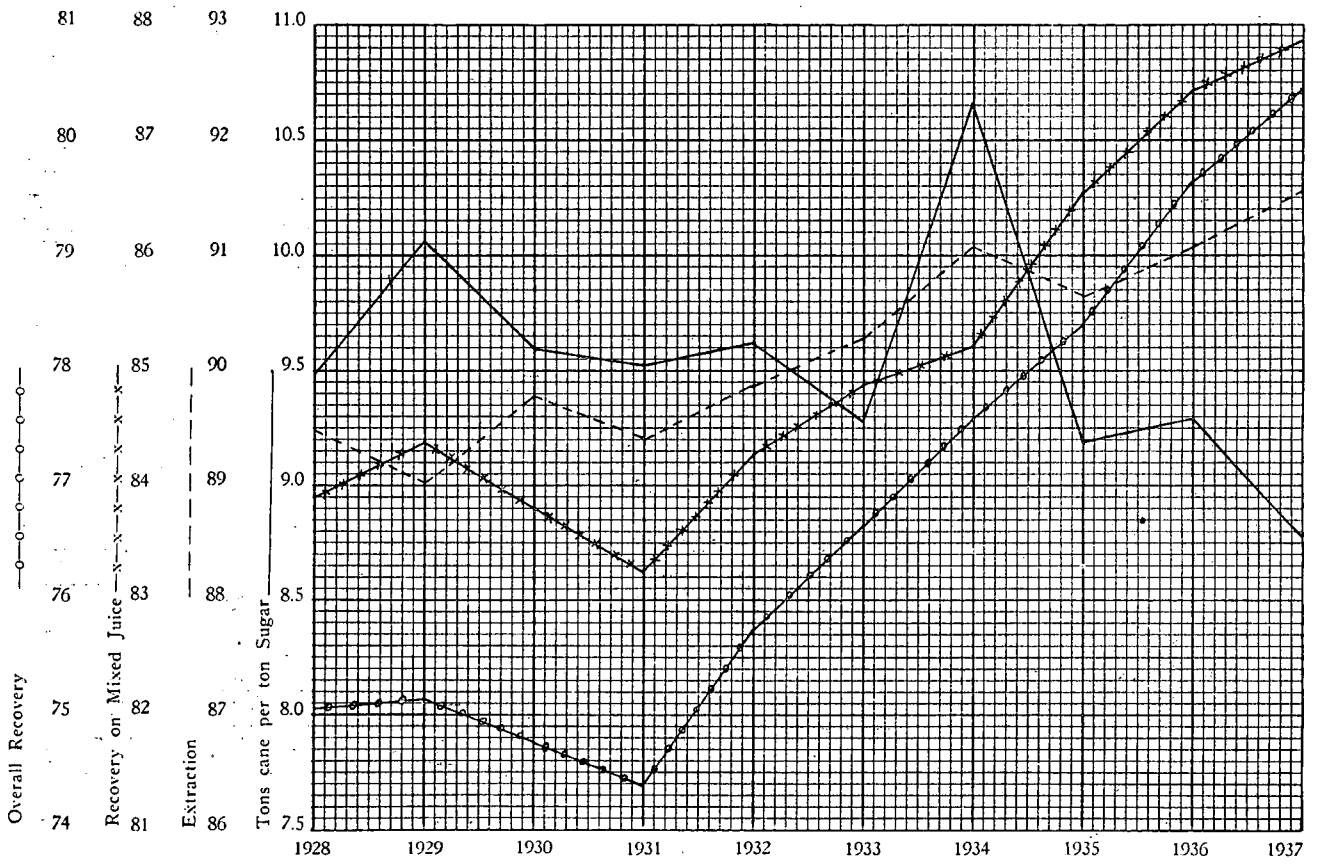
Monthly Averages for Natal Sugar Factories.  
Season 1937/38.



Monthly Averages for Natal Sugar Factories.  
Season 1937/38.

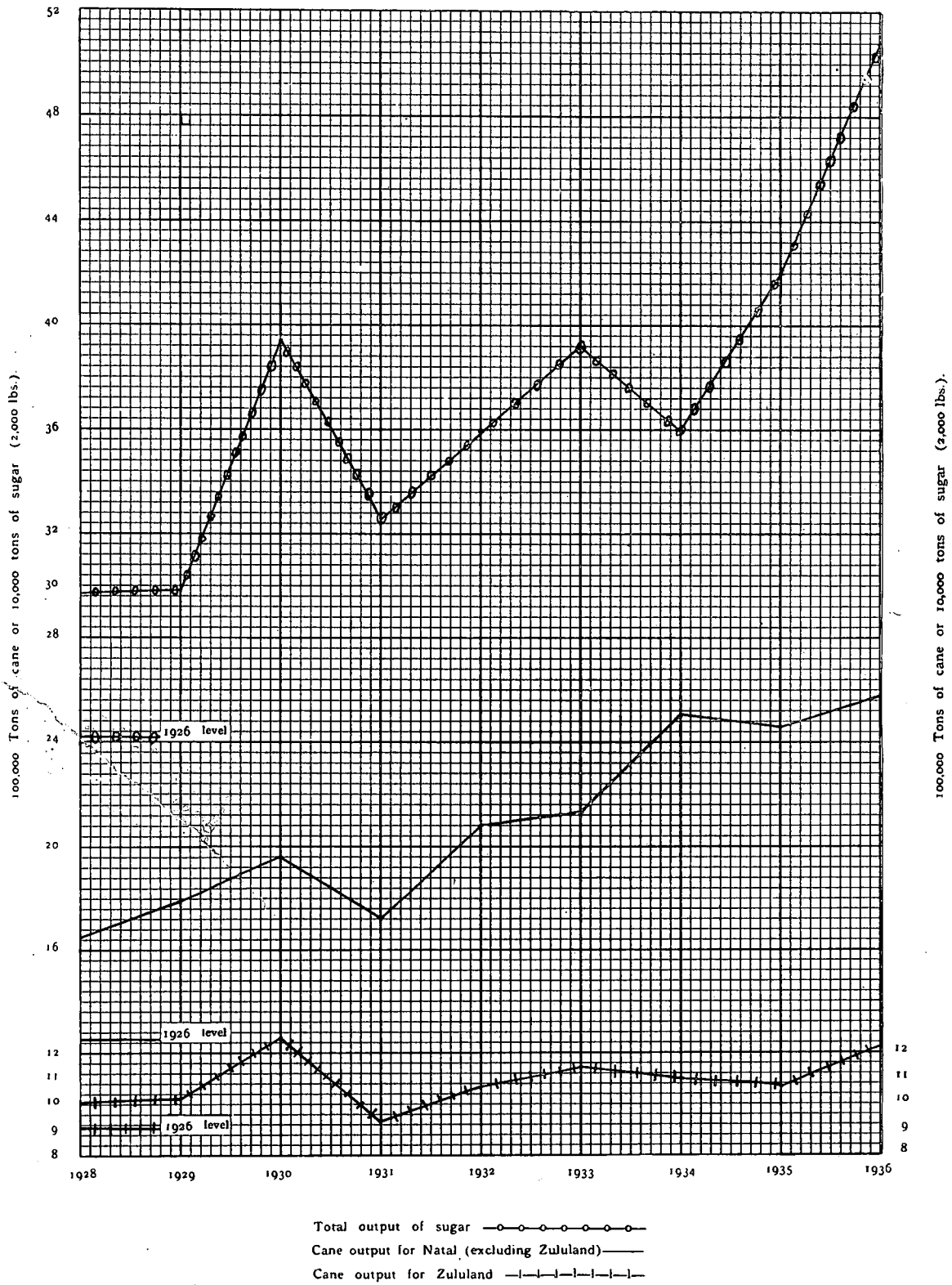


Extraction and Recovery Figures, 1928-37.

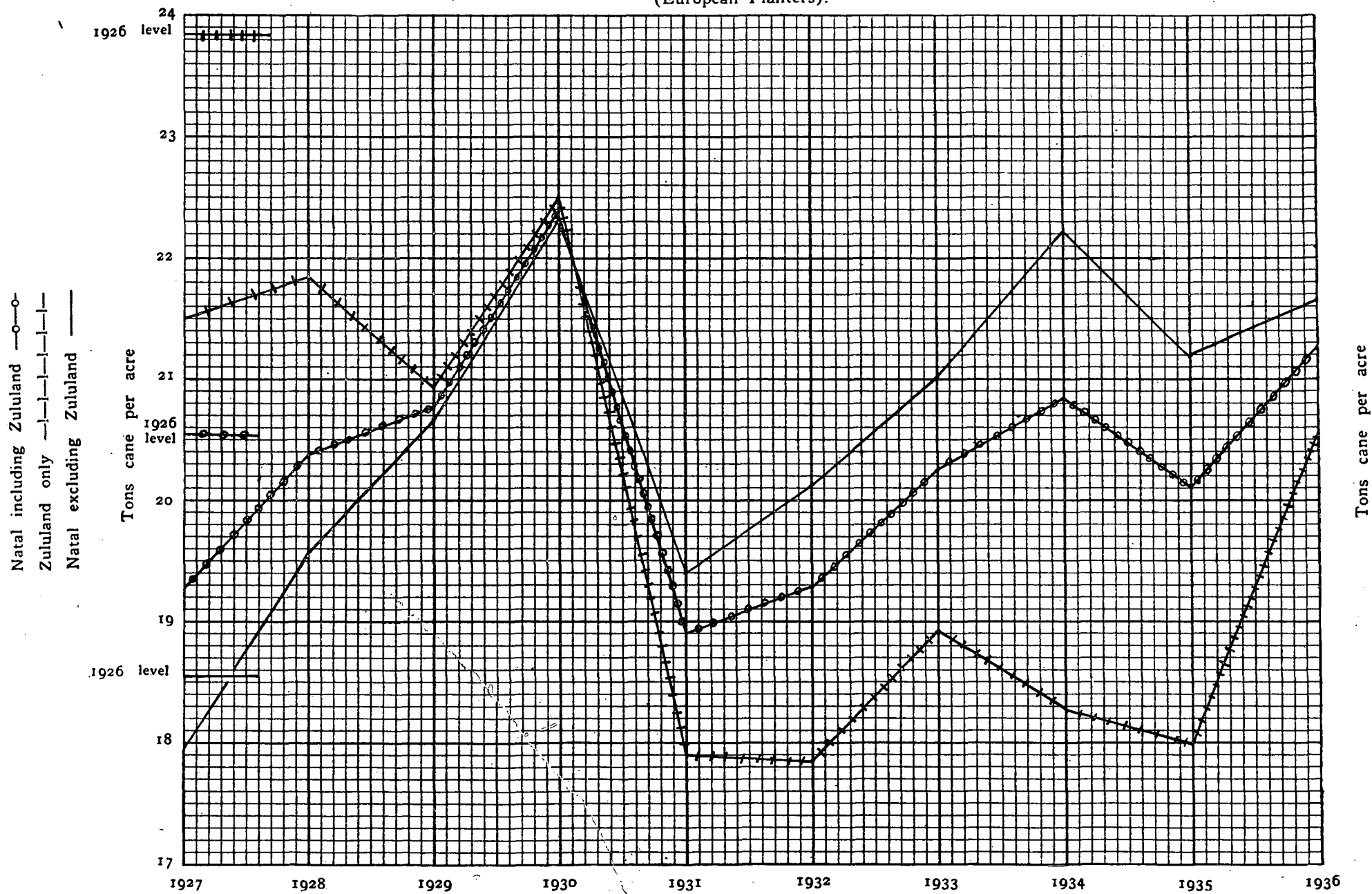


TOTAL OUTPUT OF SUGAR FROM NATAL, 1928—1936.

Also Cane output from Zululand and from the rest of Natal respectively.



YIELD OF CANE IN TONS PER ACRE OVER RECENT YEARS.  
(European Planters).



TOTAL SUGAR PRODUCED IN NATAL, 1891—1937.

Also Total Cane Crushed 1924—1937.

