FIFTIETH ANNUAL REVIEW OF THE MILLING SEASON IN SOUTHERN AFRICA (1974 - 1975)

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Introduction

The main tables of this report (Tables A to J) contain the same basic data which have been published annually since the Sugar Milling Research Institute was founded twenty-five years ago. Some of the parameters can be traced back even further to as far back as 1925. These tables have been broken up into two parts. Tables with a suffix 1 cover the South African sugar industry while Tables, B_2, C_2, D_2 and F_2 list data from mills which are affiliated members of the SMRI in neighbouring countries.

The unsettled political conditions in Mozambique during the past season have affected the performance of mills in that country and interrupted the flow of monthly data for some mills. The table listing "Average Manufacturing Results by Monthly Periods for Mozambique Mills" has therefore had to be dropped from this season's review.

All data listed in these tables have been calculated from figures as supplied by the mills with the exception of sugar weights which were supplied by the South African Sugar Association. Pol, brix and fibre factors as well as variety and transport data for South African mills were obtained from the Sugar Industry Central Board. The list of symbols used to designate each mill has not been changed and a key for the symbols can be found in Table 1 of the 1973/74 Review.

The 1974/75 season

The season opened at UC and SZ on the 22nd April and closed on the 24th February, 1975, when IL stopped grinding. Thirteen of the mills finished before or during the second half of January but the mills which ran on into February included 6 of the largest mills. During this last month 313 046 tons of low quality cane were crushed and contributed to lowering the average pol and purity of cane for the season.

Analysis of figures listed in Table F and plotted in Fig. 1 (Pol, Purity, Fibre) shows that at least for the 1974/75 season, cane quality was better at the beginning of the season than at the end. It would be interesting to run systematic cane quality tests for the months of April to determine whether it would not be advantageous to start future seasons in early April.

The average length of the season was 275 days. The two extremes are reported by South Coast mills. IL ran for 306 days and UK for only 240 days. The cane crop was lower than expected because of the drought from May to October but is still the second best on record. Total cane harvested was 16 895 370 tons which is only about 18 000 tons less than the record 1967/68 season. Sugar production was 1 883 195 tons, 31 000 tons short of the 1971/72 record.

Swaziland had a record season with 195 819 tons of sugar

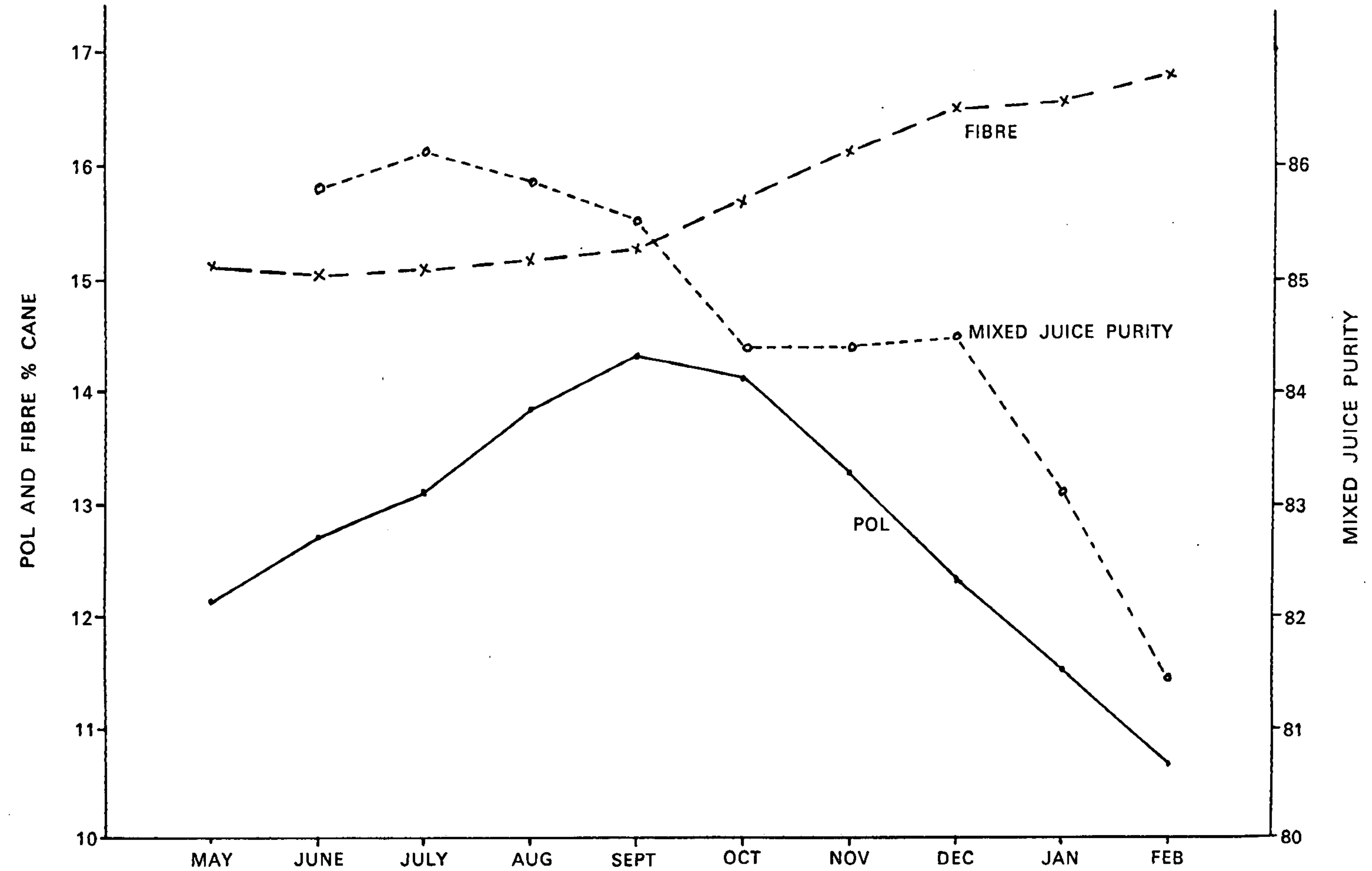

FIGURE 1 Monthly variation in cane quality (South African averages).

from 1 770 354 tons of cane, and Malawi also set a new record for both cane (499 648 tons) and sugar (49 371 tons).

Mozambique harvested 2 884 722 tons of cane, an improvement over the previous season but 52 000 tons short of the 1972/73 record of 2 936 636 tons. Sugar production (285 891 tons) was lower than for the two previous seasons.

The Experiment Station offers the following comments on the effects of the weather on the crop: "Below average rainfall occurred during May and temperatures were above average generally. The crop looked good on the whole and was still growing well. June was dry generally with below average rainfall throughout the industry, except the Tugela region and central Zululand. The crop was becoming severely droughted, this being aggravated by above average temperatures, the cane flowered excessively, and fires were prevalent. From July to October these conditions continued, the crop deteriorated progressively with large areas of cane, especially on the shallower soils, in a critical condition.

Weights and estimates were down and purity suffered, partly due to a large percentage of dead stalks. Strong winds aggravated the fire hazard and one especially bad fire occurred near Gingindhlovu.

Rain started falling in November and the situation improved progressively over the ensuing months. Initially the rainfall was still below average but steadily improved, as did the crop growth and sucrose percent cane. Weeds grew luxuriantly and, coupled to the wet infield conditions, presented problems to many growers. Good rainfall conditions continued through January and February, 1975".

Cane Varieties

Table G lists 18 cane varieties, 17 of which are commercially cultivated in South Africa. The four varieties NCo 376, NCo 310, NCo 293 and N 55/805 add up to 78,7% of all cane harvested with 54,6% to the credit of NCo 376 which has accounted for more than 50% of production since the 1969/70 season. NCo 310 is continuing its decline and this is the first season for which the percentage of this variety has fallen below 10%. N 55/805 has again increased and now stands at 9,6%.

In general the varietal pattern in neighbouring countries is simpler than in South Africa. The extreme is MA in Mozambique which harvested only NCo 310. This same variety accounts for 82% of the cane at NH in Malawi while over 90% of production at AM and BZ is NCo 376.

Cane quality

Although the drought and the cane fires in September and October resulted in some very poor cane being delivered to the mills, especially in Zululand, the industrial average pol %

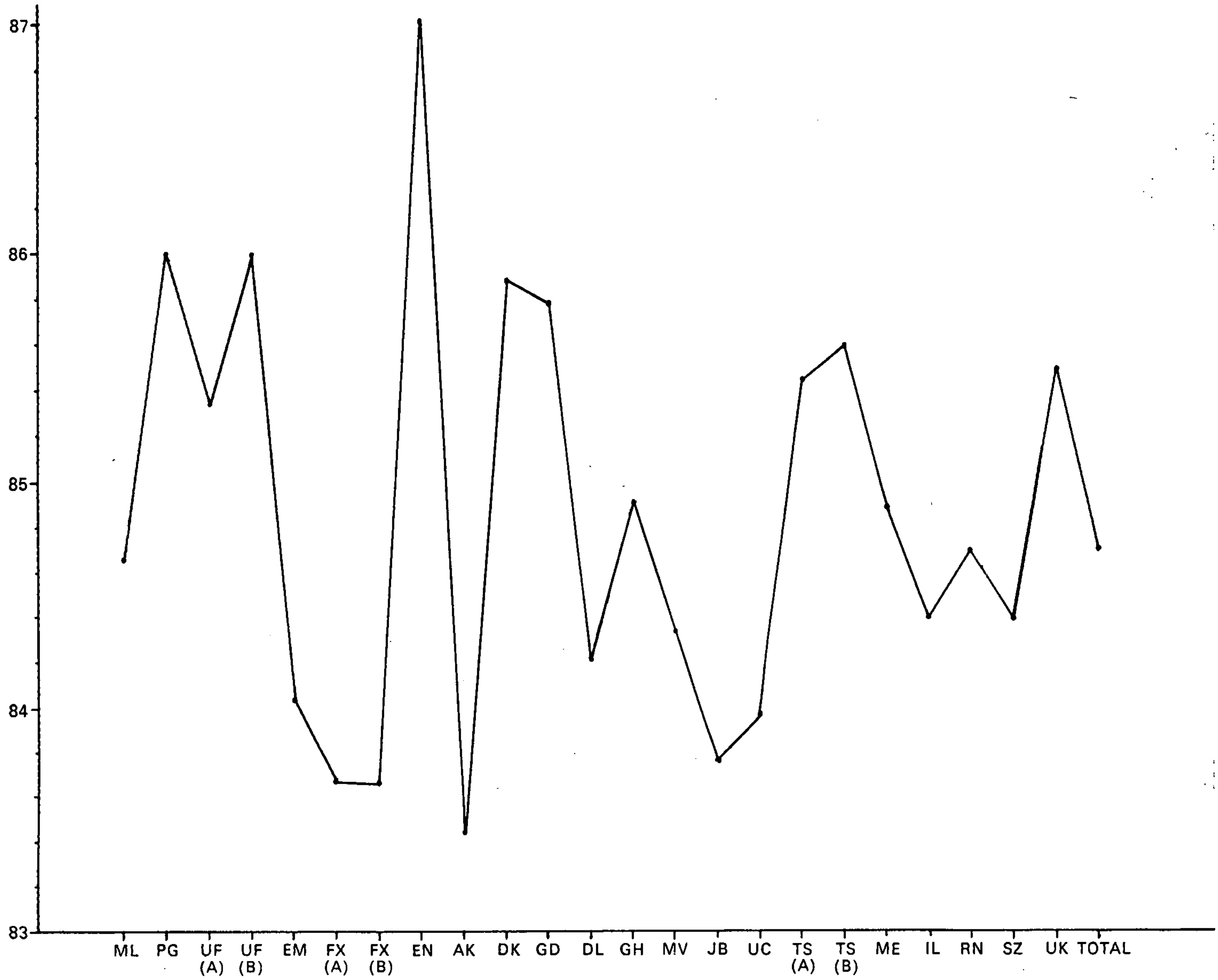

FIGURE 2 ERC % POL (South African Mills).

cane (13,08) was exactly the same as in 1973/74 and fibre (15,59) only slightly lower. Purity of mixed juice was lower by 0,6 points and has affected recovery. The cane to sugar ratio of 8,97 is the highest since 1969.

This was the first season during which the new factor Estimated Recoverable Crystal % Pol in Cane (ERC) was recorded monthly throughout the season. The factors used in calculating this formula are worked out from average industrial data at the end of the season so that monthly values have to be calculated using the previous season's factors. Factors for the past two seasons are listed in Table 1.

TABLE 1
ERC Factors for the past two seasons

	1973/74	1974/75
Factor a	0,987037	0,986288
Factor b	0,466333	0,461679
Factor c	0,037198	0,037831

(Formula: ERC=aS−bN−cF where S=Pol % cane, N=Non pol % cane and F=Fibre % cane).

The differences between the values of the factors for the two seasons are small and justify the use of the previous season's factors to calculate monthly values.

ERC % Pol in cane for the various mills is plotted in Fig. 2. Variations range from 86,9% for EN to 83,4% for AK with an industrial average of 84,6.

By multiplying ERC% pol in cane by pol% cane one obtains ERC% cane which is a direct measure of the amount of recoverable sugar contained in the cane. Season average values of pol % cane and ERC% cane are plotted in Fig. 3. As can be expected, the curves for pol and ERC% cane follow the same pattern but a plot of the difference between pol and ERC% cane in Fig. 4 shows that even at mill average level this difference is not constant. It illustrates the error that can be introduced if a constant "loss factor" is deducted from pol% cane to assess recoverable sugar in cane.

Sand and soil in cane are unfortunately not monitored and this aspect of cane quality can only be gauged from suspended solids in mixed juice which at 0,58 remains unchanged from last season. The two Midlands mills (JB and UC) show concentrations (1,01 and 1,16) which are twice the industrial average. JB has reported damage to mills, conveyors and furnaces by sand in bagasse and interest in cane cleaning has been revived. The level of suspended solids in mixed juice can be modified by changes in extraction equipment. A good example is provided by AK where replacement of the mills by a cane diffuser has resulted in a reduction in suspended solids from 0,47 to 0,37.

Factory work

The XV ISSCT Congress in Durban last June afforded the opportunity of comparing impressions with visiting sugar technologists. Some of our new equipment and the high extraction achieved in our mills have come in for praise while other factors which we have come to accept such as very poor

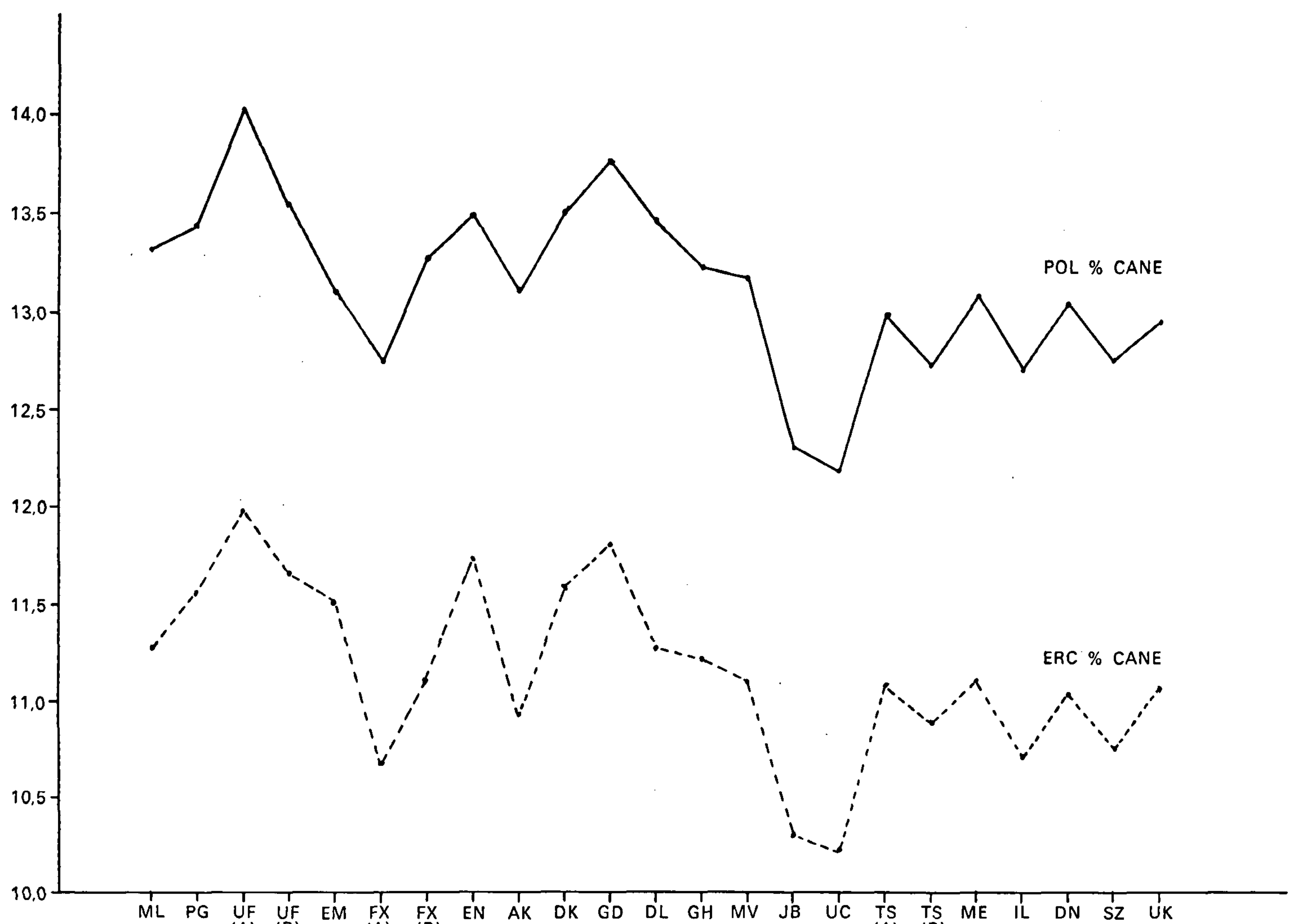

FIGURE 3 Pol % Cane, ERC % Cane (South African Mills).

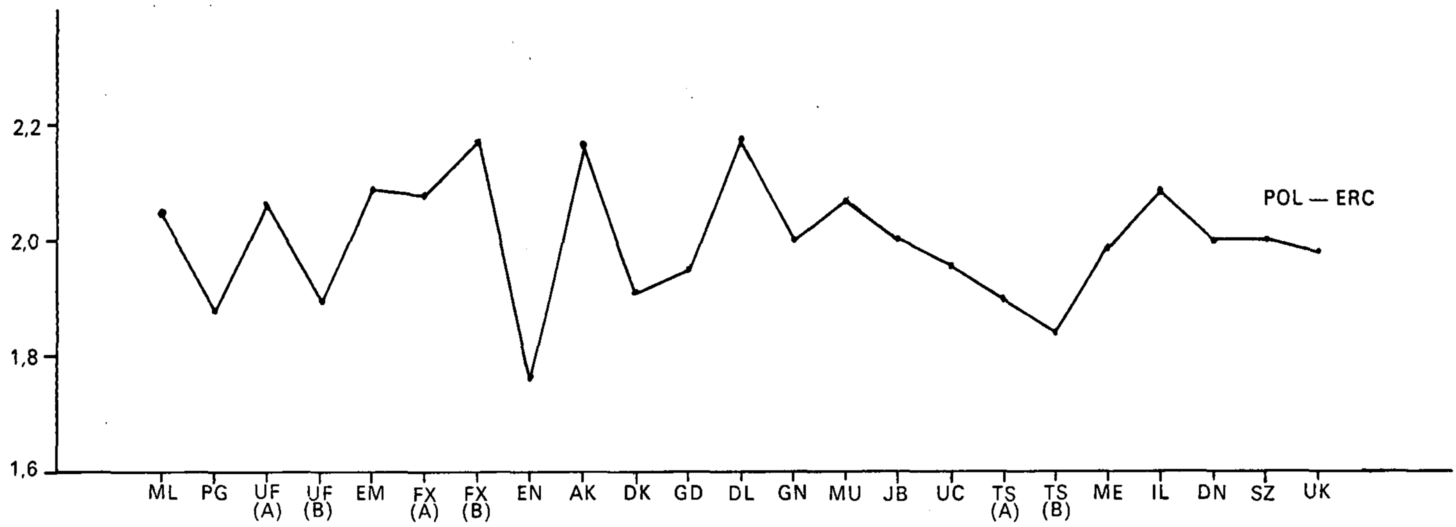

FIGURE 4 Difference between Pol % Cane and ERC % Cane (South African Mills).

quality cane and high massecuite volumes per ton of cane have been criticized. Comments on what our visitors considered to be excessive equipment per unit of capacity of our mills have often been heard.

It is therefore interesting to compare the results which our factories achieve with those reported in some other countries. Unfortunately this information is not always published overseas, but we have at hand data for Queensland, Mauritius, India and Jamaica. Our performance figures are in general superior to those of India and Jamaica and for the sake of simplicity, Table 2 lists only data from Mauritius and Queensland, where factory performance is at a more comparable level to that in South Africa.

TABLE 2
Comparative Laboratory Data
Mauritius — Queensland — South Africa

	1973* Queensland (Excluding CSR mills)	1973† Mauritius	1974 South Africa
Tons cane per hour	232	114	169
Pol % cane	14,4	13,1	13,1
Fibre % cane	13,7	13,3	15,6
Tons cane per ton sugar	7,5	8,7	9,0
Purity first expressed juice	87,9	88,7	87,3
Purity mixed juice	—	87,0	85,0
Pol % bagasse	2,2	2,0	1,7
Moisture % bagasse	47,8	49,0	53,1
Imbibition % fibre	—	218	286
Pol % filter cake	2,7	1,6	1,3
Purity final molasses	38,2	36,8	38,4
Wt. of molasses % cane	2,8	3,0	3,7
Extraction	95,7	95,8	95,5
Boiling House recovery	92,0	90,8	88,8
Overall recovery	88,1	87,0	84,8
Pol (P) or Sucrose (S) balance	P	S	P
Lost in bagasse	4,3	4,1	4,5
Lost in filter cake	0,9	0,4	0,5
Lost in final molasses	6,5	7,1	9,3 (S)
Lost undetermined	0,2	1,3	1,0 (S)

* 74th Annual Report: Bureau of Sugar Experiment Station 1974
† Rev. Agric. at Suc. de l'île Maurice Vol. 53, No. 1 & 2, 1974.

Crushing capacity

The capacity of South African mills expressed in tons of cane per hour is intermediate between those of Queensland and Mauritius. Last season our average grinding rate was 169 tons of cane per hour a figure which has remained unchanged for the past three seasons in spite of all the work carried out in the mills during this time. This situation will certainly change next season with the completion of the expansion programme in several mills and the closing down of two of the smaller factories. In Swaziland and Malawi on the other hand, crushing rate has gone up by 17% at MH, 10% at UR and 58% at NH.

Throughput is also affected by time efficiency which improved from 74,88% in 1973/74 to 76,37 last season. This improvement was due to lower scheduled stops and fewer cane stops. DL, EM and GH reported efficiencies of over 80% as does MH in Swaziland. The obvious way to improve time efficiency is to reduce "scheduled stops" but this very often adversely affects "other-stops" as is shown in Fig. 5, where curves for these two stops and the sum of the two are plotted.

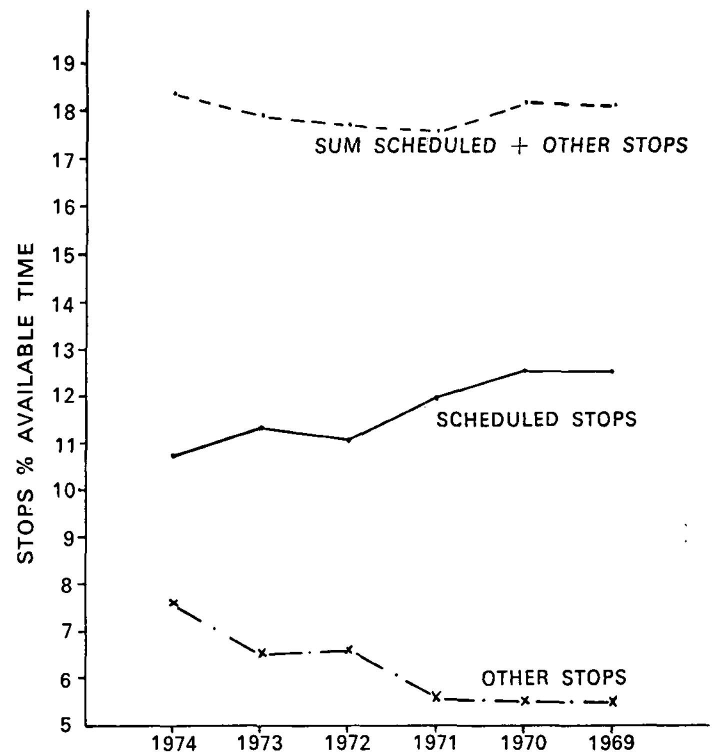

FIGURE 5 Scheduled and other stops 1969–1974 (Average of South African Mills).

Milling work

South Africa has a higher fibre content (15,8) cane than Queensland (13,7) and Mauritius (13,3) and, because of this, reports higher losses in bagasse than these two countries in spite of the fact that the pol of our bagasse (1,7) is lower than that of Mauritius (2,0) and Queensland (2,2). This illustrates the difficulties of comparing milling work between mills or industries processing cane of different quality. From a purely liquid-solid extraction point of view, our lower pol in cane (12,0) should be an advantage in obtaining a lower pol in bagasse but on the other hand the higher pol of Queensland (14,4) cane works to their advantage when milling work is expressed in terms of extraction.

This otherwise bright picture of our milling performance is marred by our very high moisture in bagasse (53,1) while Mauritius reports 49,0 and Queensland 47,8.

Our lower pol in bagasse has obviously been achieved at the price of higher imbibition. Figures for Australia are unfortunately not available but Mauritius report 218 Imbibition % Fibre and South Africa 286.

Analysis of data from individual South African mills for the 1974/75 season shows that at least in the very high imbibition range it is possible to improve extraction through better cane preparation while cutting back on imbibition. A typical example is provided by UK which improved its extraction from 95,56 to 96,08 and its milling loss from 3,88 to 3,58 as a result of an improvement in Preparation Index from 83 to 90. Imbibition during this same period was reduced from 343% to 314% on fibre. A similar improvement is reported by DL. New extraction equipment installed during the season includes the first cane diffuser in South Africa commissioned at AK.

Average milling performance figures for AK published in table B_1 and C_1 should not be used as a measure of the performance of cane diffusers. Because of teething trouble AK started the season at a low extraction (91,29 in June, 1974) but improved it to 96,40 in January, 1975. Although these extractions were achieved at reduced capacity they are an indication of the high level of extraction which can be achieved with cane diffusion even when operating under adverse conditions. A shortage of steam has also prevented this diffuser from operating at its rated capacity (450tch) which should make it the largest diffuser in the world cane sugar industry. Experience acquired at AK during the season has confirmed that, with a diffuser, process steam requirements are about 10% higher than for straight milling.

This is also the first season during which the PG diffuser has operated continuously. Its performance has not come up to expectations and mechanical modifications were necessary to achieve the design retention time and yet another unit was added to cope with larger throughputs. Extractions reported by all the older diffusers except EM have been slightly lower than during the previous season but both EM and EN are among the five factories with the highest extraction listed in Table 3.

TABLE 3
Milling performance data

Factory	Pol % Bagasse	Extraction	Pol % Fibre in Bagasse	Imb. % Fibre	P.I.
JB	1,23	96,74	2,62	294	89
ME	1,30	96,72	2,86	296	91
TS (B)	1,36	96,13	3,16	247	92
EM*	1,40	96,02	3,22	304	86
EN*	1,45	96,55	3,33	281	—

* Diffusion factories

Process work

The South African average Boiling House Recovery of 88,8 is very low when compared with Queensland (92,0) and Mauritius (90,8). The extent to which this difference can be attributed to juice quality is difficult to assess because mixed juice purity is not reported by Queensland. Mauritius however reports a purity which is 2 points higher than ours. If first expressed juice purities are compared, Mauritius is still 1,4 points higher while Queensland is only 0,6 points higher.

A clearer insight into the reasons for the different boiling house recoveries is obtained by taking a look at the losses in the pol balance.

Because of the absence of mixed juice purity no attempt is made to explain Queensland's very low molasses losses (6,5%). In the case of Mauritius a comparison with South Africa is more valid, specially since undetermined losses are of the same order of magnitude (Mauritius: 1,3, South Africa: 1,0). The lower input of non-pol into the boiling house enables Mauritius to better our final molasses losses by 2,1 points, although some credit must be given to their lower molasses purity. This will be commented upon later.

Losses in filter cake are of the same order in Mauritius (0,4) and South Africa (0,5) in spite of the fact that we have a lower pol in cake (1,3). Here again we must look to cane quality for a reasonable explanation of this state of affairs. There is no doubt that our cane is far dirtier than that of Queensland and Mauritius and part of the impurities which we introduce into our mills, specially sand, comes out in the form of filter cake. We therefore have the abnormal situation where in spite of better filter work than in Mauritius we lose more in cake than they do.

A better appreciation of the effect of juice purity and other variables on Boiling House losses can be obtained by comparing the results of individual South African mills. Relevant data and check figures for the five mills with the lowest Boiling House losses are listed in Table 4.

The good filter cake losses of DK (0,20) have helped it achieve first place in boiling house work. With a pol of 0,55 in filter cake there is no doubt that DK is doing excellent filter work. The other mills listed in Table 5 report: MV : 1,11, RN : 1,14, TS : 1,45 and DL : 1,27. Since the equipment is virtually the same in all these mills, there appears to be room for optimisation of filter operation.

Molasses losses are lowest at RN mainly because of the very low weight of molasses per ton of cane. At 3% it is the

TABLE 4
Boiling house data

Factory	B.H. losses % pol in cane	F. cake losses % pol in cane	Final Molasses losses % pol in cane	Undet. losses % pol in cane	B.H. losses % cane	Mol. at 85% Bx % N.S. in M.J.	Mol 85 Bx % cane	Mol. Factor	N. Suc. Ratio	Pty Final Mol.
DK	8,15	0,20	7,79	0,15	1,10	170,0	3,26	54,9	0,92	37,97
MV	8,22	0,31	7,92	−0,02	1,08	161,0	3,44	48,8	0,91	35,74
RN	8,43	0,41	7,19	0,82	1,10	149,4	3,00	46,7	0,85	36,76
TS	9,27	0,60	8,02	0,65	1,19	177,5	3,35	52,5	0,95	36,06
DL	9,43	0,51	9,36	−0,44	1,27	163,9	3,96	52,1	0,89	37,47

lowest in the industry and is 19% lower than the industrial average. Since RN does not have an exceptionally high juice purity the weight of final molasses appears suspect. Using the check parameters listed in Table 4, we find that this suspicion is confirmed by the low non-sucrose ratio and by the low molasses factor (suc. in molasses % non pol in mixed juice). A further check is obtained by comparing weight of molasses % non pol in mixed juice which is lower than normal at RN. The same reasoning can be applied to MV figures which from comparison of the molasses factor figure only (48,8) would appear to be suspiciously low. The weight of molasses per unit of non pol (161,0) however is at an acceptable level and validates the results reported by this mill.

A comparison of molasses exhaustion between factories or between countries is of little value because of the well-known effect of the reducing sugars and ash content on final molasses purity. The difference between target and actual purities would be good indication of the quality of low grade work but results available and set out in Table 5, show such large variations between monthly values that averaging the results is not justified. Inspection of the table does confirm however that in several cases the purity is very close or lower than target and that the low purities reported by most of these mills is the result of good exhaustion rather than a favourable reducing sugars ash ratio.

TABLE 5

Monthly difference between true and target molasses purity

Month	DK	MV	RN	TS	DL
May 1974	2,36	—	—	3,29	1,48
June 1974	1,96	−1,35	1,78	3,05	−1,25
July 1974	3,67	0,49	—	2,77	−0,38
Aug. 1974	2,96	1,49	1,96	0,80	1,16
Sept. 1974	—	0,59	—	−0,33	0,55
Oct. 1974	5,73	0,91	−0,63	3,87	2,87
Nov. 1974	—	—	—	—	3,18
Dec. 1974	—	0,81	2,32	1,39	2,42
Jan. 1975	—	−0,58	—	−0,59	1,39

A further contributing factor to the low boiling house losses of these mills is that their undetermined losses are far lower than the industrial average of 1,01. They include negative losses at MV and DL, the only two in the industry. No satisfactory explanation can be offered for either the variation in these losses or for the presence of negative losses.

In comparing losses as opposed to recoveries one must always guard against any mathematical effect due to the basis used to compare the losses. If losses are expressed in terms of pol in cane, factories processing low pol cane are penalised because their losses are divided by a lower denominator. For this reason in Table 4 Boiling House losses are listed both as % pol in cane and % cane. On this last basis MV has lower losses and RN the same losses as DK.

Interesting innovations carried out in the processing department of South African mills during the past season include:

(*a*) Systematic testing of syrup clarification on a full plant scale at JB. Syrup was clarified by phosphatation and flotation using a special flotation agent for periods of two to three weeks which were alternated with control periods. Results obtained show that syrup clarification reduced final molasses viscosity by about 30%. The influence which this reduction can have on overall recovery will be ascertained by further tests next season.

(*b*) The commissioning at TS of a Werkspoor continuous crystallizer for cooling A massecuite. The most interesting aspect of this crystallizer is the use of a closed circuit cooling water system with cooling of the water by refrigeration. Mechanical difficulties with the refrigeration equipment were only solved late in the season and it is still too early to assess the results obtained with this equipment.

(*c*) The reduction of the amount of filter cake at AK as a result of the change over from milling to cane diffusion. Unfortunately filter cake was not weighed regularly at AK and a figure of 5% on cane was assumed. After a few months of running with the diffuser it became apparent that the weight of filter cake was lower than this. The cake was then weighed and found to be of the order of 2% on cane.

(*d*) The increase in the capacity of continuous centrifugals operating on C massecuite in a number of factories through better attention to preconditioning of the massecuite before feeding to the centrifugals and to better feeding arrangements. In addition, the capacity of BMA K850 continuous centrifugals at DL was almost doubled by drilling holes in the basket. The purity of C sugar and final molasses was not affected.

(*e*) Improvement in clarification at EM as a result of better proportioning of diffuser and first mill juice achieved by means of a surge tank and mixed juice flow control.

Overall recovery and factory performance

The performance of the two main departments of the factory have been reviewed in the preceding paragraphs. Their effect on the amount of sugar produced from the cane and on the overall performance of the factory is now examined.

Inspection of Table 2 shows that Queensland recovers 88,1% of the pol in cane, Mauritius 87,0% and South Africa only 84,8. Fig. 6 shows that this recovery is the lowest since 1970 and that our overall recovery has not changed appreciably during the past five years. Our average pol in bagasse, final molasses purity and undetermined losses indicate that our factory work is at about the same level as Queensland and Mauritius and we must therefore conclude that only improvements in cane quality can enable us to achieve the substantial increase in recovery required to reach their level.

The possibility of an improvement through better performance of our mills is not excluded but it is doubtful whether its contribution could be very substantial. Comparison of the Factory Performance Index figures listed in Table B_1 and B_2 shows that there is scope for improvement in a number of mills.

Factory Performance Index (FPI) is a ratio of sugar actually recovered to that theoretically recoverable and therefore compensates for variations in cane quality. The method used to calculate the FPI ensures that the industrial index for the season will be 100. It can therefore be used to compare relative performance of mills during a season or from one season to the other but not average industrial performance from one season to the next.

FIGURE 6 Overall Recovery. Industrial Average. South African Mills. 1964–1974.

The FPI of above average mills for the 1974/75 season are listed in Table 6 with comparative values for the same mills during the previous season.

TABLE 6
Factory performance index of above average factories

Factory	1974/1975	1973/1974
JB	102,90	100,63
MV	102,74	103,94
DL	102,58	102,64
ME	101,84	98,57
IL	101,05	95,37
RN	100,92	95,19
TS	100,92	101,14
SZ	100,53	100,45
GH	100,28	100,27

JB has moved from fourth to first place in front of ME and DL. The improvement in FPI reported by ME, IL and RN must be mentioned. All three mills have substantially improved their performance since last season, IL and RN having moved from 18th and 19th position to 5th and 6th respectively.

Chemical control

As mentioned earlier, both Estimated Recoverable Crystal percent pol in cane (ERC) and Factory Performance Index have been adopted as routine chemical control parameters during the 1974/75 season.

Lost Absolute Juice % Fibre has been dropped as a measure of extraction performance and is no longer reported in these tables. This follows a multiple linear regression analysis of milling results from five mills over six seasons. The factories chosen were representative of the better mills in South Africa and were known to have had no major changes in either milling or cane preparation equipment during the period under consideration.

This study investigated the relative dependance of the main milling performance yardsticks on sucrose and fibre in cane. It showed that the more complicated parameters, including Lost Absolute Juice % Fibre in cane, generally over-corrected for the effect of pol and fibre in cane and showed little advantage over the more simple ratios such as extraction.

A new corrected reduced extraction formula has been proposed and will be tested during the next season.

Fuel

The additional fuel consumed by mills is listed in Table D_1 and D_2. This data must be interpreted with caution. Several of the mills for example AK, FX and TS supply either pith or fibre as raw material for other industries. Other mills such as AK and EM have supplied whole bagasse which was used for paper making at FX with the pith from this bagasse used as fuel for the FX sugar mill. Moreover under present conditions there is no incentive for saving bagasse in most mills. Disposal of excess bagasse can be costly and most mills try to keep this excess at a minimum. Additional fuel is therefore required by these mills for start-up during periods of low time efficiency.

There have been improvements in the additional fuel requirements of some mills. TS for example used only 9 tons of coal per 1 000 tons cane as against 17,2 tons the previous season. Several raw sugar mills however still burn an excessive amount of additional fuels (UF, DK, UC and IL) while some mills with refineries attached could certainly improve their thermal efficiency. PG and EN for example refined a smaller proportion of their raw sugar than GH and burned over twice as much extra fuel.

Acknowledgements

Thanks are due to Mr. Vanis who has compiled the tables in this report. Data for Tables G and H as well as pol, brix and fibre factors were provided by the Central Board, sugar weights by the S.A. Sugar Association and comments on the weather by the SASA Experiment Station. Their assistance is gratefully acknowledged.

TABLE A
SOUTH AFRICAN SUGAR ASSOCIATION FINAL PRODUCTION 1974/75 SEASON
(Metric tons)

Mill	Local Market			Export Market			Total
	White	Refinery Raws	Brown	Very High Pol	Sugar for H.T. Mol. Prod.	Raws for Refined Export	
Malelane	126 588	—	1 423	—	—	—	128 011
Pongola	57 769	—	14 633	—	—	—	72 402
Umfolozi	—	—	10 969	127 277	—	—	138 246
Empangeni	—	104 562	270	—	7 187	14 446	126 465
Felixton	—	52 628	150	51 900	—	—	104 678
Entumeni	13 084	156	1 874	8 495	—	—	23 609
Amatikulu	—	33 817	223	98 969	—	—	133 009
Doornkop	—	2 799	58	37 533	—	—	40 390
Glendale	—	24 084	24	—	—	—	24 108
Darnall	—	121 179	225	20 614	—	—	142 018
Gledhow	139 103	7 558	30	—	—	—	146 691
Melville	—	18 878	3 466	18 688	—	—	41 032
Jaagbaan	—	183	—	104 171	—	—	104 354
Union Co-Op	—	35 121	138	34	—	—	35 293
Tongaat	—	96 079	331	88 393	—	—	184 803
Mount Edgecombe	—	30 414	72 044	11 204	—	—	113 662
Illovo	—	10 086	22 354	33 626	—	—	66 066
Renishaw	—	52	22 747	13 674	—	—	36 473
Sezela	72 355	1 765	58	52 492	—	13 407	140 077
Umzimkulu	—	424	70	81 314	—	—	81 808
Total	408 899	539 785	151 087	748 384	7 187	27 853	1 883 195

TABLE B₁

CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, SOUTH AFRICAN MILLS

SYMBOLS OF FACTORIES	ML	PG	UF A	UF B	EM	FX A	FX B	EN	AK
Tons sugar made*	**128 011**	**72 402**	**138 246**		**126 465**	**104 678**		**23 609**	**133 009**
Percentage of white sugar made	99	80	—		—	—		55	—
Average pol of all sugars made	99,73	99,67	99,31		99,41	99,44		99,73	99,41
Tons crystal made in raw house	128 281	72 433	136 781		125 251	103 646		23 605	131 555
Tons of cane crushed — Total	**1 154 560**	**652 299**	**1 179 828**		**1 147 349**	**961 715**		**217 173**	**1 221 551**
Tons of cane crushed — Per tandem	—	—	**322 807**	**857 021**	—	**608 357**	**353 358**	—	—
Season started on	24.4.74	2.5.74	19.5.74		25.4.74	25.4.74		3.5.74	17.5.74
Season completed on	15.2.75	15.1.75	19.1.75		16.2.75	16.2.75		8.1.75	23.2.75
Number of crushing days	298	259	246		298	298		251	283
Time account									
Hours crushing % available hours	77,02	67,41	67,68	84,21	81,85	78,91	75,50	79,98	70,57
Hours scheduled stop % available hours	7,72	14,26	1,18	1,41	10,22	10,51	10,70	7,78	8,92
Hours lack of cane % available hours	4,49	8,52	16,28	4,61	3,34	2,67	5,88	2,97	3,09
Hours other stops % available hours	10,77	9,81	14,86	9,77	4,59	7,92	7,92	9,27	17,42
Throughputs per hour actual crushing									
Tons of cane crushed	209,59	157,93	81,07	173,00	196,89	107,91	68,58	45,05	255,89
Tons of fibre milled	29,47	21,38	11,19	22,88	31,92	17,65	11,53	6,30	39,37
Tons of brix processed	31,57	23,38	38,73		29,34	25,71		6,77	37,88
Tons of sugar produced	23,24	17,53	29,78		21,70	19,18		4,90	27,82
Composition of cane crushed									
Pol % cane	**13,32**	**13,44**	**13,68**		**13,11**	**12,94**		**13,50**	**13,11**
Fibre % cane	**14,82**	**14,06**	**14,23**		**16,73**	**17,30**		**14,55**	**15,78**
Brix % cane	16,14	15,98	16,33		15,91	15,74		15,73	16,15
Tons cane per ton of sugar	9,02	9,01	8,53		9,07	9,20		9,20	9,20
Tons cane per ton of 96° sugar	8,68	8,68	8,25		8,76	8,88		8,86	8,88
E.R.C. % pol in cane	84,61	85,94	85,29	85,94	83,97	83,61	83,60	86,94	83,40
Performances									
Imbibition % cane	42,55	36,77	46,61	34,58	49,30	46,14	47,56	39,26	40,91
Imbibition % fibre	303	272	338	261	304	282	283	281	266
Java ratio	82,60	81,18	79,14	79,53	76,32	75,61	76,28	79,34	—
Extraction	95,14	94,07	94,57	95,76	96,02	94,96	95,44	96,55	93,91
Fibre factor	98,96	100,29	—	—	100,10	105,98	107,95	99,85	102,29
Pol factor	101,53	100,18	98,80	100,40	100,55	99,31	99,32	98,48	96,66
Brix factor	102,99	100,25	100,88		102,05	101,47		99,12	99,76
Pol % fibre in bagasse	4,60	5,88	5,52	4,35	3,22	3,93	3,60	3,33	5,19
Preparation index	—	89	—		86	89		—	90
Boiling house recovery	87,27	87,50	89,11		87,02	87,78		83,16	87,75
Overall recovery	83,03	82,32	85,04		83,56	83,52		80,29	82,41
Factory performance index	98,61	96,14	98,79		99,14	99,57		92,58	98,47
Sucrose balance									
Lost in bagasse (*a*)	4,86	5,93	4,58		3,98	4,86		3,45	6,09
Lost in filter cake (*b*)	0,71	0,31	0,51		0,43	0,47		1,12	0,31
Lost in final molasses (*c*)	10,38	9,38	9,54		10,17	10,50		11,19	10,21
Undetermined losses (*d*)	**1,02**	**2,06**	**0,34**		**1,87**	**0,65**		**3,95**	**0,99**
Boiling house losses ($b+c+d$)	12,11	11,76	10,39		12,46	11,63		16,26	11,50
Sum of all losses ($a+b+c+d$)	16,97	17,68	14,96		16,44	16,48		19,71	17,59

* Figures supplied by S.A. Sugar Association

THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES (Season 1974 - 1975)

DK	GD	DL	GH	MV	JB	UC	TS		ME	IL	RN	SZ	UK	Totals and Averages
							A	B						
40 390	**24 108**	**142 018**	**146 691**	**41 032**	**104 354**	**35 293**	**184 803**		**113 662**	**66 066**	**36 473**	**140 077**	**81 808**	**1 883 195**
—	—	—	95	—	—	—	—		—	—	—	61	—	22
99,53	99,44	99,48	99,93	99,28	99,41	99,57	99,49		99,07	99,39	98,98	99,79	99,53	99,50
40 167	23 891	140 776	147 500	40 664	103 389	35 117	183 281		112 090	65 189	35 896	139 896	81 208	1 870 617
346 777	**206 447**	**1 211 824**	**1 310 416**	**356 381**	**975 448**	**351 415**	**1 658 305**		**990 840**	**601 703**	**322 179**	**1 293 480**	**735 682**	**16 895 370**
—	—	—	—	—	—	—	**519 645**	**1 138 660**	—	—	—	—	—	—
24.4.74	30.4.74	2.5.74	29.4.74	10.5.74	2.5.74	22.4.74	25.4.74		1.5.74	25.4.74	24.5.74	22.4.74	3.5.74	22.4.74
25.1.75	21.1.75	12.2.75	23.1.75	25.1.75	20.1.75	31.1.75	23.2.75		30.1.75	24.2.75	19.1.75	31.1.75	28.12.74	24.2.75
277	267	287	270	261	264	285	305		275	306	241	285	240	275
72,33	72,93	81,15	80,92	71,35	76,70	78,34	70,05	81,75	79,63	78,42	73,23	78,12	76,37	76,37
15,92	12,56	9,28	15,97	10,74	7,90	14,06	5,47	6,37	11,07	9,00	15,99	13,27	13,86	10,77
8,00	8,98	4,80	1,03	7,15	6,07	2,77	10,41	0,96	4,94	6,50	5,15	2,79	5,75	5,28
3,75	5,53	4,76	2,08	10,76	9,34	4,83	14,07	10,92	4,36	6,09	5,62	5,82	4,02	7,59
72,48	44,23	217,02	248,38	80,15	207,27	65,74	101,67	190,89	189,33	104,93	76,01	243,15	170,82	168,78
10,59	6,29	32,94	39,44	12,59	31,66	7,97	15,81	29,77	28,45	14,09	12,04	36,16	24,20	25,25
10,61	6,61	33,29	36,61	11,76	29,47	9,12	41,69		28,15	15,19	10,88	34,71	24,65	24,87
8,46	5,16	25,42	27,80	9,25	22,18	6,61	32,61		21,73	11,48	8,61	26,27	19,00	18,82
13,51	**13,78**	**13,46**	**13,23**	**13,18**	**12,31**	**12,18**	**12,81**		**13,09**	**12,71**	**13,05**	**12,76**	**12,95**	**13,08**
15,00	**14,65**	**15,76**	**16,60**	**16,20**	**16,41**	**13,23**	**16,02**		**15,54**	**14,00**	**16,39**	**15,52**	**14,69**	**15,59**
16,03	16,43	16,39	15,82	15,95	14,94	14,97	15,15		15,73	15,50	15,66	15,44	15,46	15,76
8,57	8,56	8,54	8,93	8,66	9,35	9,94	8,97		8,71	9,14	8,83	9,25	8,99	8,97
8,27	8,26	8,24	8,58	8,37	9,03	9,58	8,66		8,44	8,83	8,56	8,90	8,67	8,65
85,81	85,73	84,14	84,85	84,27	83,70	83,93	85,37	85,52	84,83	84,34	84,62	84,32	85,42	84,64
37,68	39,58	49,03	40,31	45,46	44,92	22,52	41,51	38,45	44,45	36,09	40,41	51,21	44,43	42,75
258	278	323	254	289	294	186	267	247	296	269	255	344	314	286
78,65	79,77	78,78	77,21	—	77,67	—	78,00	76,71	78,74	79,82	77,37	—	79,54	78,48
94,11	93,88	96,01	95,47	95,16	96,74	95,32	95,08	96,13	96,72	96,03	94,38	95,51	96,08	95,49
103,70	100,39	100,30	103,07	102,35	111,58	99,88	101,15	101,48	105,95	103,88	103,42	103,21	103,55	102,63
97,56	99,91	99,90	99,61	99,76	98,69	94,60	99,80	98,44	97,58	98,38	97,96	99,29	99,43	99,13
98,49	101,16	100,51	100,95	102,07	100,32	97,60	99,85		98,76	99,82	99,97	101,77	100,67	100.80
5,45	5,94	3,54	3,77	4,06	2,62	4,70	4,11	3,16	2,86	3,76	4,63	3,86	3,58	3,94
86	89	87	85	85	89	74	92		91	83	79	90	90	87
91,34	89,74	90,17	88,57	91,37	89,35	86,32	90,33		89,79	89,09	91,07	88,49	88,93	88,76
85,96	84,24	86,57	84,55	86,95	86,43	82,28	86,53		86,84	85,55	85,95	84,52	85,44	84,76
99,91	97,94	102,58	100,28	102,74	102,90	97,79	100.92		101,84	101,05	100,92	100,53	99,75	100,00
5,89	6,12	3,99	4,53	4,84	3,26	4,68	4,20		3,28	3,97	5,62	4,49	3,92	4,51
0,20	0,26	0,51	0,51	0,31	0,60	0,65	0,60		0,36	0,33	0,41	0,24	0,34	0,46
7,79	8,64	9,36	8,94	7,92	9,46	10,82	8,02		8,63	9,42	7,19	8,88	7,83	9,26
0,15	**0,73**	**−0,44**	**1,47**	**−0,02**	**0,25**	**1,57**	**0,65**		**0,89**	**0,73**	**0,82**	**1,87**	**2,47**	**1,01**
8,15	9,63	9,43	10,92	8,22	10,31	13,04	9,27		9,87	10,48	8,43	10,99	10,64	10,73
14,04	15,76	13,43	15,45	13,05	13,57	17,72	13,47		13,16	14,45	14,05	15,48	14,56	15,24

TABLE C_1

ANALYSIS OF BAGASSE, JUICES, FILTER SOUTH AFRICAN MILLS

SYMBOLS OF FACTORIES	ML	PG	UF A	UF B	EM	FX A	FX B	EN	AK
Final Bagasse									
Pol % bagasse	1,95	2,69	2,26	1,88	1,40	1,73	1,61	1,45	2,22
Moisture % bagasse	54,37	50,26	55,06	53,51	53,76	52,76	52,33	54,42	53,51
Fibre % bagasse	42,39	45,75	40,94	43,22	43,48	44,02	44,72	43,54	42,77
Bagasse % cane	38,14	29,59	33,66	30,67	37,23	37,18	37,66	32,19	35,99
LCV in kJ per kg bagasse	6 785	7 580	6 633	6 961	6 930	7 118	7 209	6 796	6 946
First expressed juice									
Brix	18,92	19,01	20,19	19,32	19,57	19,30	20,06	19,18	—
Apparent purity	85,19	87,07	87,85	88,18	87,80	87,41	86,74	88,71	—
Last expressed juice									
Brix	2,06	—	—	—	1,75	1,63	1,71	1,39	2,65
Apparent purity	76,93	—	75,67	73,93	66,23	71,27	70,95	54,99	66,66
Purity drop	8,26	—	12,18	14,25	21,25	16,14	15,79	33,72	—
Residual juice purity	59,79	67,64	57,40	55,95	52,13	53,18	53,12	66,68	59,35
Purity drop	25,40	19,43	30,45	32,23	35,67	34,23	33,62	22,03	—
Mixed juice									
Mixed juice % cane	109,36	107,18	112,94	103,91	112,07	108,97	109,91	107,07	104,93
Brix	13,77	13,81	13,79	14,53	13,30	13,10	13,67	14,04	14,11
Apparent purity	84,11	85,41	85,27	85,96	84,48	84,79	84,33	86,74	83,20
Purity drop	1,08	1,66	2,58	2,22	3,32	2,62	2,41	1,97	—
Reducing sugars/pol ratio	6,41	4,54	3,06		3,64	4,71		3,91	5,33
Suspended solids % mixed juice	0,69	0,48	0,78	0,79	0,46	0,76	0,65	0,54	0,37
Clarified juice									
Brix	13,55	13,09	14,12		12,84	12,30		14,37	12,63
Apparent purity	83,70	85,12	86,43		84,31	84,54		85,45	84,18
Reducing sugars/pol ratio	7,03	4,40	3,12		3,18	4,44		4,07	4,73
Average pH	7,05	7,31	7,08		7,10	7,20		7,26	7,18
Filter cake									
Pol % filter cake	2,11	1,05	1,41		1,24	1,01		3,03	1,27
Filter cake % cane	4,47	3,94	5,00		4,53	6,00		5,00	3,19
Syrup									
Brix	66,83	67,81	63,55		64,34	62,96		65,33	61,23
Apparent purity	84,26	86,05	86,91		84,91	86,23		86,19	85,15
Reducing sugars/pol ratio	7,76	4,18	3,41		3,19	3,94		4,55	4,00
Average pH	6,13	6,18	6,18		6,20	6,40		6,55	6,36
Final molasses									
Refracto brix	84,57	88,71	87,23		85,20	88,49		85,45	82,84
Pol/refracto brix purity	36,30	36,68	40,64		39,10	40,44		40,14	35,92
Sucrose/refracto brix purity	39,59	38,38	41,45		39,30	41,02		40,37	39,05
Percentage reducing sugars	21,42	16,20	15,23		15,07	16,95		14,07	19,66
Percentage sulphated ash	11,56	—	15,47		13,80	—		9,01	12,91
Reducing sugars/ash ratio	1,85	—	0,98		1,09	—		1,56	1,52
Molasses at 85 refracto brix % cane	4,11	3,87	3,70		3,99	3,90		4,40	4,03

CAKE, SYRUP AND FINAL MOLASSES
(Season 1974 - 1975)

DK	GD	DL	GH	MV	JB	UC	TS A	TS B	ME	IL	RN	SZ	UK	Averages
2,29	2,63	1,54	1,66	1,86	1,23	2,08	1,77	1,36	1,30	1,64	2,03	1,68	1,55	1,73
53,94	51,07	53,39	53,11	50,42	50,81	51,86	53,95	54,65	51,88	52,91	52,46	53,14	53,62	53,10
42,02	44,28	43,50	44,03	45,81	46,94	44,25	43,06	43,04	45,45	43,62	43,84	43,52	43,30	43,91
34,75	32,10	34,83	36,17	34,24	32,51	27,47	36,12	36,21	33,03	30,70	36,15	34,22	32,75	34,18
6 857	7 419	6 999	7 050	7 582	7 530	7 284	6 877	6 753	7 312	7 091	7 165	7 043	6 952	7 049
19,34	19,56	19,84	19,51	—	18,34	—	18,88	18,83	18,91	18,47	19,14	—	18,61	19,16
88,83	88,31	86,13	87,82	—	86,40	—	88,20	88,17	87,96	86,22	88,11	—	87,53	87,31
—	—	2,08	—	—	—	—	1,17	1,20	1,11	—	2,13	—	—	—
—	—	69,02	—	—	—	—	76,96	77,44	65,09	—	73,87	—	—	—
—	—	17,11	—	—	—	—	11,24	10,73	22,87	—	14,24	—	—	—
56,81	57,08	51,08	55,51	50,18	55,66	52,00	59,22	59,83	49,51	49,10	54,70	49,22	49,68	55,43
32,02	31,23	35,05	30,67	—	30,74	—	28,98	28,34	38,45	37,12	33,41	—	37,85	31,88
102,93	107,48	114,21	104,14	111,22	112,41	95,05	105,39	102,24	111,43	105,39	104,26	116,99	111,68	108,57
14,22	13,81	13,43	14,15	13,20	12,65	14,59	13,60	13,90	13,34	13,74	13,73	12,20	12,92	13,57
86,90	86,56	84,24	85,70	85,44	83,72	83,65	86,18	86,13	85,20	84,34	85,98	85,36	86,24	85,01
1,93	1,75	1,89	0,48	—	2,68	—	2,02	2,04	2,76	1,88	2,13	—	1,29	2,30
3,98	5,34	5,71	4,57	5,50	7,76	5,27	5,25		5,39	7,09	3,94	4,45	4,62	5,05
0,38	0,40	0,51	0,70	0,44	1,01	1,16	0,42	0,43	0,46	0,54	0,52	0,55	0,47	0,58
12,95	13,71	12,37	13,34	12,71	12,89	14,67	13,11		12,89	13,56	13,41	11,82	12,64	13,00
87,29	87,30	84,67	85,74	84,97	84,07	83,72	85,80		85,16	85,06	87,18	85,70	86,71	85,22
4,18	5,54	5,62	4,66	4,99	6,98	5,60	4,87		5,31	6,53	3,80	4,28	4,24	4,91
7,20	7,02	7,40	7,25	7,00	7,10	7,20	7,35		7,40	7,15	7,00	7,03	7,14	7,17
0,55	1,20	1,27	1,41	1,11	1,50	2,48	1,45		0,93	1,12	1,14	0,57	1,11	1,28
5,00	3,00	5,42	4,73	3,70	4,91	3,20	5,24		5,03	3,79	4,71	5,40	4,00	4,70
63,59	61,86	66,68	71,59	64,62	57,60	63,39	68,75		65,97	60,66	64,66	67,00	65,80	64,72
87,55	87,82	85,06	86,01	85,73	84,37	84,17	85,84		86,05	84,79	87,07	86,24	86,91	85,82
4,15	4,81	5,32	4,75	5,25	6,71	5,60	4,91		5,37	6,11	3,44	4,09	4,50	4,83
6,50	6,67	6,30	6,49	6,40	6,50	6,50	6,24		6,30	6,56	6,30	6,37	6,59	6,39
89,18	85,00	88,15	84,78	84,37	81,41	81,07	87,44		85,19	82,31	83,37	83,20	80,57	85,60
36,06	35,95	32,75	34,36	32,99	30,06	38,19	35,41		35,17	33,68	34,15	35,45	35,06	35,92
37,97	36,98	37,47	38,13	35,74	36,16	40,23	36,06		37,20	39,20	36,76	38,13	36,77	38,39
16,83	17,49	19,45	17,98	18,59	17,47	22,26	19,94		18,68	17,94	18,08	16,93	13,91	17,89
14,13	15,60	—	—	14,86	12,91	11,38	14,88		—	—	—	14,19	14,49	13.48
1,19	1,12	—	—	1,25	1,35	1,96	1,34		—	—	—	1,19	0,96	1,33
3,26	3,79	3,96	3,65	3,44	3,79	3,85	3,35		3,57	3,59	3,00	3,49	3,24	3,71

TABLE D₁

MASSECUITES, EXHAUSTIONS, CLARIFYING SOUTH AFRICAN MILLS

SYMBOLS OF FACTORIES	ML	PG	UF	EM	FX	EN	AK	DK	GD
Brix in mixed juice % cane	**15,06**	**14,80**	**15,22**	**14,90**	**14,56**	**15,03**	**14,80**	**14,63**	**14,95**
A-Massecuite									
m^3 per ton brix in mixed juice	1,45	1,09	1,01	1,01	0,97	1,36	0,96	0,92	1,01
Brix of massecuite	91,06	92,00	93,07	92,71	92,76	91,90	92,03	93,74	91,22
Purity of massecuite	84,75	87,36	87,08	86,11	85,80	86,75	85,64	89,67	88,02
Purity of A-molasses	72,57	72,55	70,25	69,59	70,70	74,54	67,46	71,78	72.85
Purity drop	12,18	14,81	16,83	16,52	15,10	12,21	18,18	17,89	15,17
Exhaustion*	52,39	61,76	64,96	63,09	60,06	55,28	65,24	70,70	63,48
Purity A mc-purity syrup	**0,49**	**1,31**	**0,17**	**1,20**	**—0,43**	**0,56**	**0,49**	**2,12**	**0,20**
B-Massecuite									
m^3 per ton brix in mixed juice	0,54	0,42	0,35	0,39	0,31	0,66	0,31	0,24	0,39
Brix of massecuite	94,04	92,74	94,43	94,91	93,34	96,07	93,12	94,26	92,98
Purity of massecuite	72,90	73,90	71,95	69,68	72,00	76,35	68,78	73,24	72,18
Purity of B-molasses	49,26	50,48	50,76	51,10	50,80	53,29	47,43	52,57	49,48
Purity drop	23,64	23,42	21,19	18,58	21,20	23,06	21,35	20,67	22,70
Exhaustion*	63,91	64,00	59,81	54,53	59,85	64,66	59,05	59,50	62,25
C-Massecuite									
m^3 per ton brix in mixed juice	0,31	0,32	0,27	0,28	0,32	0,27	0,29	0,30	0,23
Brix of massecuite	97,54	95,09	95,15	97,38	95,60	96,24	95,82	95,82	94,44
Purity of massecuite	57,68	57,05	59,08	55,94	59,90	57,97	57,15	60,56	54,17
Purity of C-molasses	36,30	36,68	40,64	39,10	40,44	40,14	35,92	36,06	35,95
Purity drop	21,38	20,37	18,44	16,84	19,46	17,83	21,23	24,50	18,22
Crystal content**	32,74	30,59	29,56	26,93	31,23	28,67	31,74	36,71	26,86
Exhaustion*	58,19	56,39	52,58	49,43	54,54	51,38	57,97	63,27	52,51
White sugar massecuites									
Kg sugar per m^3	633	619	—	—	—	495	—	—	—
Total volume of all raw massecuites									
m^3 per ton brix in mixed juice	2,30	1,83	1,63	1,68	1,60	2,29	1,56	1,46	1,63
Clarifying agents									
Tons limestone per 1 000 T.C.	—	4,62	—	—	—	—	—	—	—
Tons coke per 1 000 T.C.	—	0,62	—	—	—	—	—	—	—
Tons lime per 1 000 T.C.	2,22	1,69	0,53	0,94	0,67	0,92	0,74	0,35	0,64
Tons sulphur per 1 000 T.C.	0,03	0,01	—	—	—	—	—	—	—
Phosphoric acid ppm mixed juice	—	—	—	—	—	43,00	—	—	—
Flocculents ppm mixed juice	3,09	0,36	3,42	1,88	2,59	4,30	0,82	4,93	4,06
Additional fuels per 1 000 T.C.									
Tons of fuel oil	—	—	—	—	—	—	—	6,31	—
Tons of coal	23,65	30,61	10,18	5,02	36,94	18,52	6,41	—	—
Tons of wood	—	—	—	3,69	—	13,79	—	10,82	2,91
Converted into bagasse***	94,62	122,42	40,70	24,51	147,75	90,63	25,66	50,84	3,49

$$\text{* Exhaustion} = \frac{10\,000\ (\text{Pty massecuite—Pty run off})}{\text{Pty massecuite}\ (100\text{—Pty run off})}$$

$$\text{** Crystal content} = \frac{(\text{Pty massecuite—Pty run off})}{100\text{—Pty run off}} \times \text{Bx. Massecuite}$$

AGENTS AND ADDITIONAL FUELS
(Season 1974 - 1975)

DL	GH	MV	JB	UC	TS	ME	IL	RN	SZ	UK	Averages
15,34	**14,74**	**14,68**	**14,22**	**13,87**	**14,25**	**14,86**	**14,47**	**14,32**	**14,27**	**14,43**	**14,74**
0,94	1,05	0,94	1,04	1,04	1,04	0,98	1,12	1,04	1,08	0,96	1,04
93,18	92,01	91,92	92,65	91,46	93,21	93,25	91,06	91,12	92,40	91,69	92,22
87,07	88,92	86,90	85,02	85,67	86,63	85,58	87,18	87,49	87,68	87,20	86,83
69,47	71,99	68,30	66,66	70,53	69,43	70,19	69,35	71,77	70,34	71,48	70,59
17,60	16,93	18,60	18,36	15,14	17,20	15,39	17,83	15,72	17,34	15,72	16,24
66,21	67,97	67,52	64,77	59,97	64,95	60,33	66,73	63,65	66,68	63,21	63,59
2,01	**2,91**	**1,17**	**0,65**	**1,50**	**0,79**	**−0,47**	**2,39**	**0,42**	**1,44**	**0,29**	**1,01**
0,29	0,34	0,30	0,34	0,46	0,35	0,35	0,40	0,40	0,35	0,30	0,36
93,82	93,56	93,49	93,17	92,19	93,61	94,46	91,45	93,10	93,70	93,89	93,60
69,54	72,76	68,30	66,66	71,82	69,69	69,63	70,20	72,00	71,23	72,17	71,25
45,05	46,30	44,20	43,71	50,34	46,72	48,76	49,75	45,34	46,86	46,74	48,44
24,49	26,46	24,10	22,95	21,48	22,97	20,87	20,45	26,66	24,37	25,43	22,81
64,09	67,72	63,24	61,16	60,22	61,86	58,49	57,97	67,74	64,38	66,16	62,09
0,26	0,28	0,22	0,25	0,30	0,25	0,27	0,28	0,28	0,27	0,22	0,27
98,79	95,18	96,46	96,69	93,51	95,48	97,10	95,44	94,51	96,51	95,71	95,92
54,04	55,93	51,22	52,01	56,68	54,73	56,39	56,25	53,37	54,74	56,54	56,07
32,75	34,36	32,99	30,06	38,19	35,28	35,17	33,68	34,15	35,45	35,06	35,92
21,29	21,57	18,23	21,95	18,49	19,45	21,22	22,57	19,22	19,29	21,48	20,15
31,27	31,28	26,24	30,34	27,97	28,69	31,78	32,38	27,58	28,84	31,66	30,16
58,58	58,75	53,11	60,34	52,78	54,91	58,04	60,50	54,69	54,59	58,50	56,08
—	760	—	—	—	—	—	—	—	569	—	—
1,49	1,68	1,46	1,63	1,80	1,64	1,60	1,80	1,72	1,70	1,48	1,67
—	4,78	—	—	—	—	—	—	—	3,37	—	—
—	0,52	—	—	—	—	—	—	—	0,42	—	—
0,85	1,34	0,59	0,83	0,82	0,32	0,64	0,62	0,55	1,80	0,53	0,88
—	0,002	—	—	—	—	—	—	—	0,01	—	—
—	—	—	46,73	163,30	—	—	—	—	—	—	—
1,48	1,43	1,62	6,81	5,88	0,18	—	4,26	—	0,61	1,31	2,72
—	—	—	—	—	—	—	—	—	0,03	—	—
—	8,16	8,07	—	5,32	9,03	0,40	5,62	—	7,97	—	—
0,82	1,15	0,83	2,28	0,57	0,19	0,19	16,30	1,70	0,15	0,50	—
0.99	34,02	9,28	2,74	21,96	36,34	1,82	42,05	2,04	32,24	0,60	39,24

*** 1 m³ fuel oil is equivalent to 5,5 tons bagasse of 6 978 kJ/kg.
1 ton fuel oil is equivalent to 6 tons bagasse of 6 978 kJ/kg.
1 ton coal is equivalent to 4 tons bagasse of 6 978 kJ/kg.
1 ton firewood is equivalent to 1,2 tons bagasse of 6 978 kJ/kg.

TABLE B_2

CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES

MOZAMBIQUE, SWAZILAND AND MALAWI MILLS

(Season 1974 - 1975)

SYMBOLS OF FACTORIES	LB	MR	AM	BZ	IC	MA	Mozambique Totals and Averages	MH	UR	NH A	NH B
Tons sugar made	61 897	44 146	78 674	30 761	40 159	30 254	285 891	105 400	90 419	49 371	
Percentage of white sugar made	54	63	27	41	63	41	46	1	14	33	
Average pol of all sugars made	99,09	99,24	98,13	98,41	99,16	98,21	98,69	98,53	98,78	97,61	
Tons crystal made in raw house	61 232	43 797	76 527	29 999	39 808	29 491	280 854	103 016	88 797	47 615	
Tons of cane crushed — Total	670 650	462 356	757 617	318 163	390 745	285 191	2 884 722	941 988	828 366	499 648	
Tons of cane crushed — per Tandem	—	—	—	—	—	—	—	—	—	426 893	72 755
Season started on	17.5.74	27.5.74	13.5.74	28.5.74	7.6.74	20.6.74	13.5.74	2.5.74	2.5.74	10.4.74	
Season completed on	20.12.74	20.12.74	28.11.74	16.12.74	28.1.75	31.1.75	31.1.75	11.1.75	14.1.75	22.1.75	
Number of crushing days	218	208	200	203	236	226	215	255	258	288	
Time account											
Hours crushing % available hrs.	72,50	62,19	81,19	72,33	62,62	43,28	65,36	80,17	74,62	75,57	39,28
Hours scheduled stops % available hrs.	3,23	3,60	8,67	9,68	16,05	10,87	8,82	5,34	9,73	8,18	11,39
Hours lack of cane % available hrs.	18,94	28,51	4,93	12,88	11,51	13,27	15,02	7,11	9,02	5,63	27,73
Hours other stops % available hrs	5,33	5,70	5,20	5,11	9,83	32,59	10,80	7,37	6,63	10,61	21,59
Throughputs per hour actual crushing											
Tons of cane crushed	178,33	149,72	195,93	90,98	110,62	126,63	144,26	191,96	179,97	90,97	61,71
Tons of fibre milled	26,49	21,81	27,99	14,23	15,62	18,15	21,06	29,05	24,34	13,60	9,50
Tons of brix processed	21,95	19,86	27,30	12,65	15,45	19,69	19,64	28,22	26,79	21,75	
Tons of sugar produced	16,46	14,30	20,35	8,80	11,37	13,43	14,30	21,48	19,64	15,09	
Composition of cane crushed											
Pol % cane	11,67	12,28	12,60	12,16	12,20	13,37	12,31	13,19	13,16	12,58	
Fibre % cane	14,86	14,57	14,99	15,65	14,93	14,33	14,89	15,37	13,52	15,01	
Brix % cane	13,56	14,56	15,20	15,46	15,21	14,60	14,69	15,86	15,88	15,45	
Tons cane per ton sugar	10,83	10,47	9,63	10,34	9,73	9,43	10,09	8,94	9,16	10,12	
Tons cane per ton 96° sugar	10,49	10,13	9,42	10,09	9,42	9,22	9,81	8,71	8,90	9,95	
E.R.C. % pol in cane	86,42	85,64	84,68	81,25	82,68	83,07	84,40	84,94	85,23	83,92	82,12
Performances											
Imbibition % cane	27,16	25,45	35,69	20,55	34,55	28,99	29,58	27,47	22,86	28,34	
Imbibition % fibre	183	175	250	131	245	202	203	182	169	190	182
Java ratio	81,18	84,11	80,56	76,46	77,79	79,59	80,28	80,69	81,10	79,45	78,66
Extraction	91,79	91,34	92,57	91,08	92,70	91,76	91,97	93,32	94,61	92,30	91,79
Pol % fibre in bagasse	6,45	7,30	6,55	6,93	6,31	7,68	6,77	5,82	5,24	6,46	6,82
Boiling house recovery	85,35	84,48	87,33	85,93	90,08	84,95	86,41	89,55	86,61	83,09	
Overall recovery	78,34	77,16	80,85	78,27	83,50	77,95	79,47	83,57	81,95	76,63	
Factory performance index	90,51	90,07	94,65	95,46	100,96	93,13	93,73	97,59	95,59	90,50	
Sucrose balance											
Lost in bagasse (a)	8,21	8,66	7,43	8,92	7,30	8,24	8,03	6,68	5,39	7,78	
Lost in filter cake (b)	0,56	0,39	0,33	0,71	0,23	1,02	0,49	0,46	0,39	0,76	
Lost in final molasses (c)	10,18	9,72	10,23	9,93	8,65	11,68	10,05	7,68	9,76	10,54	
Undetermined losses (d)	2,72	4,06	1,17	2,17	0,32	1,11	1,96	1,62	2,51	4,31	
Boiling house losses (b+c+d)	13,45	14,17	11,73	12,81	9,20	13,81	12,50	9,75	12,67	15,60	
Sum of all losses (a+b+c+d)	21,66	22,84	19,15	21,73	16,50	22,05	20,53	16,43	18,05	23,37	

TABLE C2

ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES MOZAMBIQUE, SWAZILAND AND MALAWI

(Season 1974 - 1975)

SYMBOLS OF FACTORIES	LB	MR	AM	BZ	IC	MA	Mozambique Averages	MH	UR	NH A	NH B
Final bagasse											
Pol % bagasse	2,75	3,19	2,88	3,18	2,87	3,28	2,97	2,66	2,31	2,55	2,70
Moisture % bagasse	53,80	52,38	52,23	49,57	50,60	53,96	52,30	50,79	52,72	57,14	56,39
Fibre % bagasse	42,64	43,70	43,97	45,89	45,48	42,71	43,87	45,70	44,08	39,47	39,59
Bagasse % cane	34,87	33,31	32,55	34,10	31,08	33,62	33,29	33,10	30,71	37,87	38,94
LCV in kJ per kg bagasse	6 866	7 133	7 176	7 698	7 504	6 811	7 158	7 474	7 101	6 203	6 347
First expressed juice											
Brix	S 16,40	S 17,08	18,41	S 19,03	18,80	S 20,37	18,05	19,28	19,22	18,83	19,58
Apparent purity	87,68	85,48	84,96	83,53	83,46	82,44	84,95	84,79	84,41	83,91	83,04
Last expressed juice											
Brix	S 5,44	S 6,54	2,60	S 4,82	4,55	S 3,37	4,55	S 3,60	S 2,39	4,09	5,43
Apparent purity	75,57	77,17	74,23	70,12	72,05	73,30	73,74	76,07	71,25	66,02	76,05
Purity drop	12,11	8,31	10,73	13,41	11,41	9,14	11,21	8,72	13,16	17,89	6,99
Mixed juice											
Mixed juice % cane	92,28	92,14	103,14	86,45	103,47	95,38	96,29	94,37	92,15	90,54	89,06
Brix	S 13,34	S 14,40	13,51	S 16,09	13,50	S 16,31	14,14	S 15,58	S 16,15	15,53	16,30
Apparent purity	87,06	84,55	83,74	79,59	80,98	78,85	83,16	83,75	83,63	82,39	80,85
Purity drop	0,62	0,93	1,22	3,94	2,48	3,59	1,79	0,74	0,78	1,52	2,19
Suspended solids % mixed juice	—	—	0,69	—	0,79	—	—	0,25	—	—	—
Reducing sugars/sucrose ratio	5,51	3,64	8,03	14,20	6,99	4,90	6,97	5,01	5,37	5,84	
Clarified juice											
Brix	S 13,18	S 13,77	12,90	S 15,36	13,54	S 16,11	14,14	S 15,42	S 15,81	14,57	
Apparent purity	84,23	85,34	83,88	82,68	82,35	81,19	83,28	85,83	84,68	84,42	
Reducing sugars/sucrose ratio	5,19	3,74	7,67	10,91	6,62	4,36	6,37	4,13	4,96	5,19	
Average pH	6,80	6,90	6,90	7,10	7,12	7,30	7,02	7,20	7,25	7,20	
Filter cake											
Pol % filter cake	1,46	0,96	1,44	2,35	0,79	2,67	1,52	1,87	1,06	2,66	
Filter cake % cane	4,47	4,99	2,87	3,68	3,55	5,12	3,98	3,24	4,91	3,58	
Syrup											
Brix	S 65,58	S 63,58	58,06	S 55,08	61,38	S 60,50	60,79	64,56	S 69,03	61,31	
Apparent purity	85,24	85,20	84,07	84,55	82,88	81,82	83,93	85,69	84,41	82,21	
Reducing sugars/sucrose ratio	3,84	3,17	7,57	8,12	6,75	5,29	5,77	2,26	4,93	4,64	
Average pH	6,50	6,90	6,30	6,82	6,88	6,20	6,60	6,60	6,23	6,60	
Final molasses											
Refracto brix	82,92	86,70	83,98	S 86,93	S 93,61	S 86,04	86,70	S 88,50	S 93,67	82,10	
Pol/refracto brix purity	37,24	33,36	38,03	39,77	34,74	39,89	37,17	36,68	36,93	37,52	
Sucrose/refracto brix purity	42,77	43,70	38,04	39,71	35,17	40,43	39,92	36,68	39,14	39,34	
Percentage reducing sugars	16,98	21,07	19,12	19,54	22,74	18,05	19,28	17,69	18,79	11,56	
Percentage sulphated ash	12,19	—	14,92	—	12,90	16,50	—	—	13,40	—	
Reducing sugars/ash ratio	1,39	—	1,28	—	1,76	1,09	—	—	1,40	—	
Molasses at 85° refracto brix % cane	3,27	3,21	3,99	3,57	3,53	4,54	3,64	3,25	3,86	3,97	

S = Spindle Brix

TABLE D_2

MASSECUITES, EXHAUSTIONS, CLARIFYING AGENTS AND ADDITIONAL FUELS
MOZAMBIQUE, SWAZILAND AND MALAWI MILLS
(Season 1974 - 1975)

SYMBOLS OF FACTORIES	LB	MR	AM	BZ	IC	MA	Mozambique Averages	MH	UR	NH
Brix in mixed juice % cane	**12,31**	**13,26**	**13,93**	**13,91**	**13,97**	**15,56**	**13,61**	**14,70**	**14,88**	**14,13**
A-Massecuite										
m³ per ton brix in mixed juice	0,97	0,72	0,72	0,74	0,95	0,77	0,81	0,93	0,94	0,83
Brix of massecuite	91,10	S92,25	90,80	S90,94	92,47	S92,55	RS91,68	91,95	S91,34	92,51
Purity of massecuite	81,14	85,98	84,22	84,33	84,30	84,26	84,04	85,04	85,72	82,76
Purity A-molasses	66,09	70,26	64,29	67,04	66,77	64,16	66,44	68,21	68,82	65,47
Purity drop	15,05	15,72	19,93	17,29	17,53	20,10	17,60	16,83	16,90	17,29
Exhaustion	54,70	61,48	66,27	62,20	62,58	66,56	62,40	62,25	63,23	60,50
Purity of A mc-purity syrup	−4,10	0,78	0,15	−0,22	1,42	2,44	0,11	−0,65	1,31	0,55
B-Massecuite										
m³ per ton brix in mixed juice	0,43	0,49	0,37	0,36	0,32	0,34	0,39	0,40	0,38	0,46
Brix of massecuite	91,40	S94,62	91,99	S91,47	95,21	S93,63	RS93,05	93,66	S94,20	94,11
Purity of massecuite	71,90	74,67	74,80	75,57	72,84	74,46	74,04	74,37	72,76	73,39
Purity of B-molasses	50,78	51,68	55,21	55,30	48,98	54,78	52,79	49,73	48,63	51,61
Purity drop	21,12	22,99	19,59	20,27	23,86	19,68	21,25	24,64	24,13	21,78
Exhaustion	59,68	63,72	58,47	60,01	64,20	58,45	60,79	65,91	64,56	61,33
C-Massecuite										
m³ per ton brix in mixed juice	0,37	0,30	0,23	0,30	0,26	0,29	0,31	0,24	0,35	0,31
Brix of massecuite	93,32	S99,06	93,91	S94,71	98,03	S96,76	RS95,96	96,66	S97,77	97,19
Purity of massecuite	59,70	57,76	59,58	61,69	57,70	61,36	59,63	61,57	60,09	56,38
Purity of C-molasses	37,24	33,36	38,03	39,77	34,74	39,89	37,17	36,68	36,93	37,52
Purity drop	22,46	24,40	21,55	21,92	22,96	21,47	22,46	24,89	23,16	18,86
Crystal content	33,40	36,27	32,66	34,47	34,49	34,56	34,30	37,99	35,90	29,34
Exhaustion	59,94	63,39	58,37	58,99	60,97	58,21	59,95	63,84	61,11	53,54
White sugar massecuites										
Kg sugar per m³	—	—	706	—	—	—	—	—	485	660
Total volume of all raw massecuites										
m³ per ton brix in mixed juice	1,77	1,51	1,32	1,40	1,53	1,40	1,51	1,57	1,67	1,60
Clarifying agents										
Tons lime per 1 000 T.C.	1,94	1,51	0,93	1,61	1,12	0,94	1,34	0,94	1,10	1,43
Tons sulphur per 1 000 T.C.	0,33	0,01	—	0,06	0,22	—	—	—	—	—
Phosphoric acid ppm mixed juice	—	—	—	—	0,20	—	—	—	—	0,06
Flocculents ppm mixed juice	1,10	4,22	6,77	2,36	0,49	6,62	3,59	1,69	0,90	2,66
Additional fuels per 1 000 T.C.										
Tons of fuel oil	—	1,40	—	—	—	—	—	—	—	—
Tons of coal	0,76	5,80	—	—	—	—	—	2,65	9,86	—
Tons of wood	27,54	17,82	—	47,14	0,25	—	—	—	—	12,59
Converted into bagasse	36,08	52,98	—	56,57	0,31	—	—	10,60	39,45	15,10

TABLE E

COMPARATIVE MANUFACTURING DATA OF RECENT YEARS
(South African Mills)

SEASON	1974/75	1973/74	1972/73	1971/72	1970/71
CANE					
Pol % cane	13,08	13,08	13,26	12,97	13,61
Fibre % cane	15,59	15,64	14,82	14,82	15,34
JUICES					
Brix of first expressed juice	19,16	18,99	18,95	18,55	20,10
Purity of first expressed juice	87,31	87,84	88,67	86,83	86,83
Purity of mixed juice	85,01	85,66	86,66	85,14	84,99
Reducing sugars/pol ratio (mixed juice)	5,05	4,70	4,17	4,29	3,86
MILLING					
Imbibition % fibre	286	288	279	277	285
Imbibition % cane	42,75	45,04	41,35	41,05	43,17
Extraction	95,49	95,55	95,55	95,91	95,41
Pol % bagasse	1,73	1,69	1,75	1,61	1,80
Moisture % bagasse	53,10	53,19	52,85	52,66	53,07
Bagasse % cane	34,18	34,33	33,70	32,97	34,61
LCV bagasse kJ/kg	7 049	7 033	7 099	7 143	7 052
Available kJ in bagasse/kg Bx mixed juice	16 348	16 537	16 183	16 119	15 967
RECOVERIES					
Boiling house recovery	88,76	89,13	89,48	89,41	88,57
Overall recovery	84,76	85,17	85,50	85,76	84,51
Tons cane per ton sugar	8,97	8,93	8,77	8,93	8,64
FILTER CAKE					
Pol % filter cake	1,28	1,30	1 34	1 34	1,46
Filter cake % cane	4,70	4,85	4,77	4,73	4,82
FINAL MOLASSES					
Gravity purity	38,39	39,16	40,03	39,40	38,94
Weight @ 85° brix % cane	3,71	3,52	3,30	3,26	3,69
AVERAGE SUGAR POLARISATION	99,50	99,45	99,46	99,36	99,38
SUCROSE BALANCE					
Lost in filter cake	0,46	0,48	0,48	0,49	0,51
Lost in final molasses	9,26	8,96	8,46	8,43	8,96
Undetermined losses	1,01	0,94	1,11	1,23	1,43
Lost in boiling house	10,73	10,39	10,05	10,15	11,05
Lost in bagasse	4,51	4,45	4,45	4,09	4,59
Total losses	15,24	14,83	14,50	14,24	15,64
m^3 MASSECUITE PER TON BRIX MIXED JUICE					
A-Massecuite	1,04	1,04	1,01	1,02	1,00
B-Massecuite	0,36	0,36	0,36	0,35	0,36
C-Massecuite	0,27	0,27	0,23	0,26	0,27
TOTAL	1,67	1,67	1,60	1,63	1,63
EXHAUSTION OF MASSECUITES					
A-Massecuite	63,59	64,43	64,10	63,38	64,75
B-Massecuite	62,09	60,48	60,57	60,72	61,06
C-Massecuite	56,08	56,00	54,87	56,85	55,21
PURITY RISE					
A-Massecuite purity	86,83	87,61	88,22	87,60	87,60
Syrup purity	85,82	86,82	87,36	86,53	86,37
Rise	1,01	0,79	0,86	1,07	1,29
BRIX OF SYRUP	64,72	64,20	63,22	62,53	62,12

TABLE F

AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS FOR SOUTH AFRICAN MILLS

(Season 1974 - 1975)

END OF MONTHLY PERIOD		June 1 1974	July 1 1974	July 31 1974	Aug. 31 1974	Sept. 28 1974	Nov. 2 1974	Nov. 30 1974	Dec. 28 1974	Feb. 1 1975	March 1 1975
TONS SUGAR MADE AND ESTIMATED	Month	195 611	201 844	211 933	282 792	229 191	265 177	184 179	147 069	137 678	27 722
	To-date	195 611	397 455	609 388	892 180	1 121 370	1 386 547	1 570 726	1 717 796	1 855 473	1 883 195
TONS CANE CRUSHED	Month	1 898 709	1 833 628	1 866 880	2 370 472	1 865 784	2 211 971	1 648 991	1 436 224	1 449 665	313 046
	To-date	1 898 709	3 732 337	5 599 217	7 969 689	9 835 474	12 047 445	13 696 435	15 132 659	16 582 324	16 895 370
TONS CANE CRUSHED PER HOUR ACTUAL CRUSHING	Month	163,72	170,58	170,70	171,37	170,70	165,15	163,81	167,49	171,57	198,86
	To-date	163,72	167,02	168,23	169,15	169,44	168,64	168,04	167,99	168,30	168,78
POL % CANE	Month	12,12	12,69	13,10	13,82	14,29	14,13	13,27	12,29	11,53	10,64
	To-date	12,12	12,40	12,63	12,99	13,23	13,40	13,38	13,28	13,13	13,08
FIBRE % CANE	Month	15,13	15,05	15,13	15,20	15,28	15,74	16,12	16,47	16,56	16,78
	To-date	15,13	15,09	15,10	15,13	15,16	15,27	15,37	15,47	15,57	15,59
TONS CANE PER TON 96° SUGAR	Month	9,37	8,76	8,50	8,08	7,85	8,05	8,64	9,43	10,16	11,14
	To-date	9,37	9,06	8,87	8,62	8,46	8,38	8,40	8,50	8,62	8,65
POL % FIBRE IN BAGASSE	Month	3,70	4,01	4,02	4,19	4,30	4,22	3,85	3,64	3,47	3,06
	To-date	3,71	3,85	3,91	3,99	4,05	4,08	4,05	4,01	3,96	3,94
IMBIBITION % FIBRE	Month	293	284	283	290	287	290	283	273	282	292
	To-date	293	289	287	288	288	288	286	286	286	286
POL EXTRACTION	Month	95,57	95,45	95,54	95,56	95,58	95,49	95,53	95,34	95,22	95,36
	To-date	95,57	95,51	95,52	95,53	95,54	95,53	95,53	95,52	95,49	95,49
POL % BAGASSE	Month	1,61	1,76	1,77	1,85	1,88	1,84	1,69	1,59	1,51	1,32
	To-date	1,61	1,68	1,71	1,75	1,78	1,79	1,78	1,76	1,73	1,73
MOISTURE % BAGASSE	Month	53,62	53,05	52,76	52,63	52,79	52,98	53,12	53,34	53,67	54,12
	To-date	53,62	53,34	53,15	52,99	52.95	52,96	52,98	53,02	53,08	53,10
BOILING HOUSE RECOVERY	Month	88,50	90,40	90,27	89,92	89,49	88,38	87,67	86,97	86,02	84,94
	To-date	88,50	89,45	89,74	89,79	89,73	89,47	89,26	89,06	88,82	88,76
OVERALL RECOVERY	Month	84,58	86,29	86,24	85,93	85,54	84,40	83,75	82,92	81,91	81,00
	To-date	84,58	85,44	85,72	85,78	85,73	85,47	85,27	85,06	84,82	84,76
MIXED JUICE PURITY	Month	85,03	85,81	86,11	85,85	85,50	84,39	84,42	84,48	83,13	81,45
	To-date	85,03	85,42	85,65	85,72	85,67	85,42	85,30	85,23	85,06	85,01
R.S./POL RATIO	Month	5,38	4,65	4,47	4,64	4,78	5,36	5,35	5,12	5,82	6,97
	To-date	5,38	5,01	4,82	4,76	4,77	4,88	4,94	4,95	5,02	5,05
PURITY OF FINAL MOLASSES.	Month	37,95	37,64	37,56	37,74	37,98	38,27	38,91	39,59	40,26	39,93
	To-date	37,95	37,80	37,72	37,73	37,78	37,89	38,02	38,17	38,36	38,39
SUCROSE LOST IN FINAL MOLASSES % POL IN CANE	Month	9,15	8,22	7,94	8,33	8,88	9,87	10,19	10,35	11,45	10,91
	To-date	9,15	8,68	8,42	8,40	8,49	8,76	8,93	9,06	9,24	9,26
UNDETERMINED LOST SUCROSE % POL IN CANE	Month	1,33	0,49	0,94	0,86	0,74	0,81	1,11	1,55	1,36	2,86
	To-date	1,33	0,91	0,92	0,90	0,87	0,86	0,89	0,95	0,98	1,01

TABLE G

CANE VARIETIES AND RAINFALL

(Season 1974 - 1975)

SYMBOLS OF FACTORIES	CANE VARIETIES CRUSHED (Percentage by weight)																			RAINFALL DURING 1974 in mm
	N.Co. 376	N.Co. 310	N.Co. 293	N. 50/211	N.Co. 382	Co. 331	N.Co. 339	N.Co. 292	N.Co. 334	Co. 301	N. 51/539	N. 51/168	N. 53/216	CB 36/14	CB 38/22	N. 55/805	N. /6	B. 41/227	Mixed Varieties	
ML	79,2	8,1	—	—	0,2	—	—	—	5,9	—	—	—	—	—	—	0,1	—	—	6,4	487
PG	55,5	40,2	—	—	0,1	—	—	—	1,0	0,4	—	—	—	0,6	0,1	0,1	—	—	1,6	668
UF.	9,0	51,6	—	0,1	9,0	—	0,9	—	0,1	—	0,1	0,1	—	0,8	0,3	13,0	0,1	—	14,1	693
EM	22,2	9,2	—	0,1	0,1	—	—	—	—	—	—	—	—	0,1	—	2,8	—	—	65,1	888
FX	26,3	20,8	—	0,2	3,5	—	0,1	—	—	0,2	—	0,4	1,7	0,5	—	13,9	0,6	—	31,1	977
EN.	77,6	0,6	11,8	—	1,1	—	—	—	—	—	—	—	1,9	1,5	0,7	4,2	0,1	—	—	1 096
AK	41,5	0,9	—	—	—	—	—	—	—	—	0,1	—	0,2	0,2	—	10,1	0,1	—	46,2	814
DK	87,8	0,1	0,7	—	0,3	—	—	—	0,5	—	—	—	1,5	1,1	—	7,3	—	—	0,1	1 171
GD	74,0	5,7	1,6	0,1	0,1	4,4	—	—	—	—	—	0,1	0,2	—	—	10,5	—	—	3,0	817
DL.	78,6	1,2	—	—	—	0,1	—	—	—	—	—	—	0,2	0,2	—	14,4	—	—	4,8	751
GH	60,5	0,7	0,3	—	0,7	—	—	—	—	—	0,1	—	1,1	0,5	—	15,2	—	—	20,3	689
MV	83,8	0,8	—	0,1	—	—	—	—	—	—	0,2	0,2	—	0,3	—	3,0	—	—	11,2	856
JB	17,7	0,3	46,5	0,4	25,0	2,1	—	—	—	—	—	—	1,3	1,4	—	0,6	0,4	—	4,1	807
UC	5,2	0,2	82,2	—	10,4	1,1	—	—	—	—	—	—	—	0,3	—	—	—	—	0,1	977
TS	72,7	1,5	0,4	1,3	1,1	—	—	—	—	—	—	0,1	0,7	0,5	—	17,3	0,1	—	3,7	794
ME	48,9	3,2	3,4	0,5	0,3	—	—	—	—	—	—	0,1	0,3	0,2	—	18,2	0,1	—	24,3	1 226
IL	51,5	2,8	22,6	0,2	3,9	—	—	0,7	—	—	—	0,3	1,5	1,4	—	9,3	2,3	—	2,8	1 126
RN	79,9	1,6	—	0,1	1,0	—	—	0,6	—	—	—	—	0,1	—	—	15,8	0,2	—	—	1 135
SZ	86,6	2,3	0,8	0,1	0,3	—	—	—	—	—	—	—	0,8	0,9	—	5,8	—	—	1,9	1 130
UK	79,2	1,3	7,3	—	0,3	—	—	—	—	—	—	—	0,1	0,3	—	10,3	0,2	—	0,4	1 049
Average South African Mills	54,6	8,5	6,0	0,2	2,9	0,2	—	—	0,4	—	—	0,1	0,5	0,5	—	9,6	0,2	—	15,5	—
LB	46,6	10,8	—	—	27,7	—	—	—	—	—	—	0,1	—	0,4	—	—	—	5,8	8,6	1 409
MR	53,2	23,2	—	—	21,7	—	—	—	—	—	0,2	—	0,1	—	0,1	0,7	—	0,8	—	1 458
AM	92,0	8,0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	944
BZ	95,0	5,0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 076
IC	77,0	—	—	—	—	—	—	—	—	—	—	—	—	—	11,4	—	—	—	11,6	949
MA	—	100,0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 010
MH	88,5	8,0	—	—	—	—	—	—	3,4	—	—	—	—	—	—	—	—	—	—	824
UR	74,6	14,8	—	—	—	—	—	—	5,0	—	—	—	—	—	—	3,2	—	—	2,4	703
NH	13,4	82,1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,5	812

TABLE H

TRANSPORT SUMMARY SOUTH AFRICAN MILLS

(Season 1974 - 1975)

Percent of Cane Transported

MILLS	ML	PG	UF	EM	FX	EN	AK	DK	GD	DL	GH	MV	JB	UC	TS	ME	IL	RN	SZ	UK	Average
South African Railways	13,2	—	27,4	23,1	61,4	—	9,4	—	—	—	16,3	—	22,6	6,1	—	17,2	3,6	—	2,3	—	12,6
Bogey trucks (narrow gauge)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19,6	—	—	—	0,7
Tram	—	100	70,9	30,6	38,5	—	—	40,7	—	—	—	—	—	—	—	—	1,5	—	—	—	13,9
Hilo	86,7	—	—	24,8	—	—	62,5	—	29,5	72,9	59,3	40,5	17,8	—	91,0	65,2	75,0	58,8	94,3	—	48,0
Lorry	—	—	1,5	4,6	—	9,1	0,9	13,4	31,3	10,3	3,6	45,5	38,1	64,1	1,8	17,1	—	18,0	2,9	30,5	9,8
Tractor	—	—	—	16,6	—	90,8	27,0	45,7	39,1	16,7	20,7	13,8	19,0	29,6	7,1	0,4	—	23,1	0,3	6,9	11,9
Trailer	—	—	—	—	—	—	—	—	—	—	—	—	2,2	—	—	—	—	—	—	62,5	2,8

TABLE J

COMPARATIVE DATA OF REPORTING S.A. MILLS FROM 1925 ONWARDS

PERIOD (SEASON)	Percent Cane		Cane/Sugar Ratio		Extraction	Pol % Fibre in Bagasse	Percent Bagasse		Imbibition Percent		Mixed Juice		Final Molasses Purity	Boiling House Recovery	Overall Recovery
	Sucrose	Fibre	Tel Quel	96 Pol Sugar			Pol	Moisture	Cane	Fibre	Purity	Reducing Sugar Ratio			
Average 1925–1934	13,19	15,78	9,86	9,64	89,83	8,86	3,88	50,57	27,6	175	85,09	3,65	45,3	83,67	75,12
Average 1935–1944	13,53	15,30	8,96	8,73	92,05	7,05	3,11	51,60	32,6	213	86,01	3,22	43,3	88,36	81,34
1945	14,28	15,99	8,29	8,08	93,28	6,01	2,77	50,19	35,0	219	86,23	3,38	42,0	89,29	83,30
1946	14,21	16,21	8,36	8,14	93,07	6,08	2,79	50,32	35,2	217	85,86	3,30	41,8	89,12	82,94
1947	13,32	15,80	8,84	8,60	93,94	5,53	2,54	50,46	34,4	218	86,24	2,95	41,1	89,61	83,73
1948	13,89	15,90	8,55	8,31	93,32	5,81	2,67	50,53	34,1	214	85,92	3,67	41,5	89,14	83,19
1949	13,52	16,19	8,76	8,52	92,94	5,82	2,66	50,84	33,7	208	86,22	3,11	41,4	89,68	83,35
1950	14,19	15,80	8,32	8,09	93,33	6,02	2,72	51,22	32,8	206	86,40	3,12	40,5	89,63	83,65
1951	13,33	16,29	8,98	8,73	92,98	5,74	2,57	51,71	35,0	215	84,92	3,52	40,3	88,72	82,50
1952	13,87	16,10	8,50	8,27	93,00	6,02	2,65	52,53	34,9	217	86,25	2,92	39,3	89,96	83,66
1953	13,93	16,31	8,55	8,32	92,67	6,25	2,75	52,47	32,7	200	85,61	3,66	39,5	89,36	82,81
1954	13,34	16,03	8,87	8,65	92,40	6,32	2,75	52,92	30,7	191	85,86	3,28	39,3	90,04	83,20
Average 1945–1954	13,79	16,06	8,60	8,36	93,04	5,95	2,69	51,32	33,8	210	85,95	3,29	40,7	89,46	83,23
1955	13,87	15,74	8,51	8,28	92,32	6,76	2,91	53,18	32,1	204	85,96	3,40	39,6	90,51	83,56
1956	13,35	15,81	8,87	8,62	92,93	5,98	2,60	53,12	35,2	222	85,49	3,32	39,9	89,79	83,44
1957	13,11	15,38	8,93	8,67	93,36	5,66	2,47	53,06	34,5	224	85,10	3,69	38,5	90,43	84,42
1958	13,12	15,92	9,09	8,82	92,87	5,89	2,55	52,38	32,9	207	84,46	4,30	39,1	89,49	83,11
1959	13,66	15,92	8,74	8,44	92,86	6,16	2,66	53,26	34,6	218	85,52	3,51	40,3	89,42	83,04
1960	13,69	15,22	8,70	8,41	93,35	5,98	2,60	53,01	36,2	238	85,63	3,31	40,3	89,40	83,45
1961	13,75	14,52	8,51	8,26	94,21	5,50	2,43	52,54	36,7	253	86,04	3,31	39,5	89,72	84,53
1962	13,29	15,49	8,97	8,73	94,15	5,02	2,24	52,17	41,2	266	83,36	5,11	39,6	87,81	82,67
1963	13,55	15,50	8,66	8,42	94,08	5,16	2,29	52,46	39,8	258	85,30	3,44	39,4	89,60	84,30
1964	13,90	15,38	8,42	8,20	94,16	5,23	2,34	52,64	39,4	256	85,52	3,32	39,9	89,65	84,42
Average 1955–1964	13,53	15,49	8,75	8,49	93,43	5,73	2,51	52,78	36,3	235	85,24	3,67	39,6	89,58	83,69
1965	12,99	15,57	9,20	8,97	93,99	5,00	2,20	52,98	40,6	261	84,22	3,73	39,9	87,67	82,40
1966	13,72	15,09	8,63	8,40	94,22	5,24	2,29	53,52	39,9	262	85,06	3,63	40,6	88,38	83,27
1967	12,92	15,01	9,28	9,06	94,15	5,04	2,19	53,47	39,2	261	83,41	3,81	38,8	87,52	82,33
1968	13,11	15,32	9,06	8,83	94,74	4,51	1,98	53,32	41,1	268	83,60	4,23	39,4	87,40	82,72
1969	12,88	15,03	9,10	8,86	94,98	4,30	1,89	53,30	41,2	274	84,25	4,17	38,3	88,58	84,13
1970	13,61	15,34	8,64	8,34	95,41	4,06	1,80	53,07	43,2	285	84,99	3,80	38,9	88,57	84,51
1971	12,97	14,82	8,93	8,63	95,91	3,58	1,61	52,66	41,1	277	85,14	4,20	39,4	89,41	85,76
1972	13,26	14,82	8,77	8,47	95,55	3,98	1,75	52,85	41,3	279	86,66	4,17	40,0	89,48	85,50
1973	13,08	15,64	8,93	8,62	95,55	3,87	1,69	53,19	45,0	288	85,66	4,70	39,2	89,13	85,17
1974	13,08	15,59	8,97	8,65	95,49	3,94	1,73	53,10	44,6	286	85,01	5,05	38,4	88,76	84,76
Average 1965–1974	13,16	15,22	8,95	8,68	95,00	4,35	1,91	53,15	41,7	274	84,80	4,15	39,3	88,49	84,06