

SEVENTY-THIRD ANNUAL REVIEW OF THE MILLING SEASON IN SOUTHERN AFRICA (1997-1998)

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Abstract

Performance, throughput and other relevant aspects of the sugar industries in Southern Africa are presented and discussed. Climatic conditions are back to normal in the region and this has generally been accompanied by normal to good performances. In South Africa the sugar tonnage is a record and cane quality has been good, except for its ash content. Extraction, clarification, filtration and evaporation are detailed. Performances in the boiling house have improved but molasses exhaustion, although better than in previous seasons, has not been as good as could be expected, particularly in terms of target purity difference. Sugar quality has been good, as was the case in the previous season.

The cane crop

Cane variety and transport

The contributions of some of the main cane varieties in South Africa are shown in Table 1. It should be noted that unknown and mixed varieties account for just under 25% of the cane crushed, which could impact on the results in Table 1, but the trends over the past should be less affected. These show that the popularity of NCo376 is decreasing (21,8% in 1996-97 to 17,8% this season) while the percentages of N12 and N14 have been more or less constant, at about 24% and 10% respectively, over the last four seasons. The tonnage of N19 has been increasing steadily since the 1994-95 season.

Table 1. Varietal statistics for the 1997-98 season.

Variety	% of cane crushed
N12	23,7
NCo376	17,8
N19	10,2
N14	10,0
N16	6,0
N17	2,7
N22	1,1

In the Midlands N12 and N16 together account for 75 to 95% of the cane crushed, while in the North N14 and N19 account for 75 to 85% of the crush, respectively. NCo376 is still an important variety (greater than 20% of the cane crushed) in UF, FX, AK, DL, GD, GH and MS¹. As far as cane transport is concerned, data regarding type of vehicle and mode of transport are given in Table H. Two factories, SZ and UK, report a large increase towards spillers, at the expense of bundled cane.

Burning

Over the last five seasons about 85% of the cane crushed in South Africa was burnt. This trend has continued this season with 87,6% of the cane being burnt. Six factories (PG, UF, EN, KM, ML and NB) process cane which is nearly 100% burnt.

Cane quality

Monthly values of estimated recoverable crystal (ERC) % cane and of mixed juice (MJ) sucrose purity, in South Africa, for the 1991-92, 1996-97 and 1997-98 seasons are shown in Figure 1, to represent recent, non-drought affected seasons. The seasons' to-date values are shown in Table 2. Although both ERC % cane and mixed juice purity are not as high as in 1991-92, there has been an improvement with respect to last season. Figure 1 shows that in the case of ERC this improvement is due nearly entirely to higher levels at the beginning and end of the season. In the case of the mixed juice purity, the 1997-98 values were higher throughout the whole season, with major improvements in April, May and January.

ERC % cane and mixed juice purity for each South African factory are shown in Figure 2. ERC % cane is above 12 at ML only, but values are high at UK, EN, ES and NB. Low values are however found at GH, MS and GD. Mixed juice purity is above 88 at UC, NB and EN and only two factories (MS, GD) report values under 85.

¹South African sugar factories: AK=Amatikulu, DL=Darnall, EN=Entumeni, ES=Eston, FX=Felixton, GD=Glendale, GH=Gledhow, KM=Komati, ML=Malelane, MS=Maidstone, ND=Noodsberg, PG=Pongola, SZ=Sezela, UC=Union Co-op, UF=Umfolozzi, UK=Umzimkulu.

Malawi sugar factories: DW=Dwangwa, NH=Sugar Corporation of Malawi, Nchalo.

Swaziland sugar factories: MH=Mhlume, SM=Simunye, UR=Ubombo Ranches.

Zambia sugar factory: NK=Nkambala.

Zimbabwe sugar factories: HV=Hippo Valley, TR=Triangle.

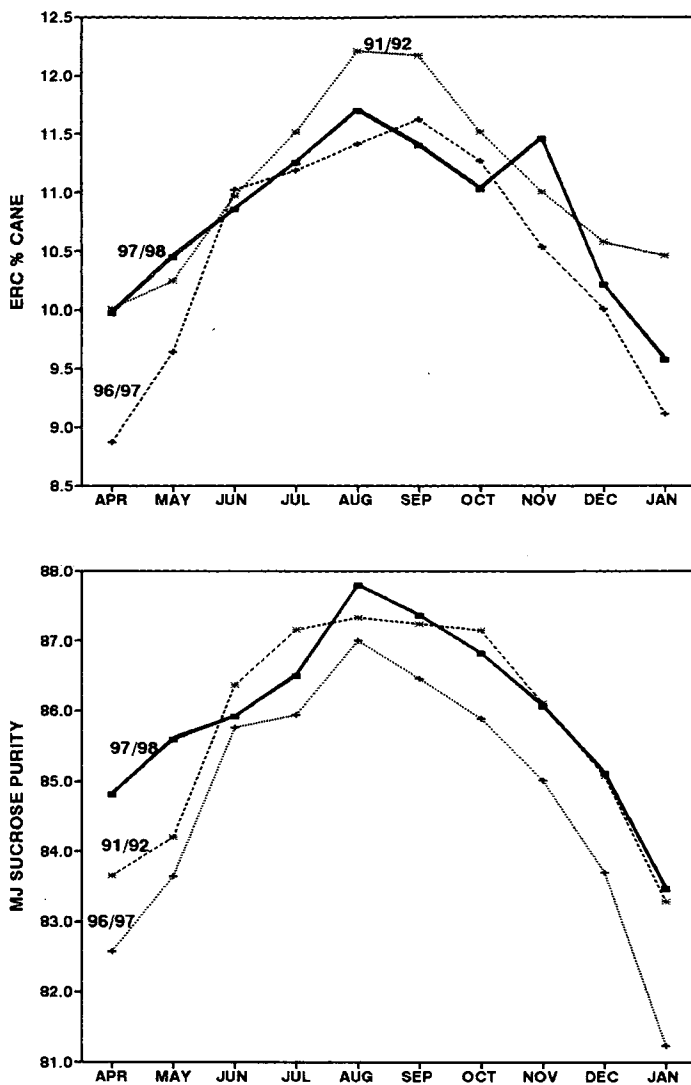


Figure 1. Trends in ERC % cane and mixed juice purity for the 1991-92, 1996-97 and 1997-98 seasons, in South Africa.

Table 2. ERC % cane and mixed juice purity for three recent, normal seasons.

Season	ERC % cane	MJ purity
1991-92	11,31	86,39
1996-97	10,76	85,38
1997-98	10,88	86,15

The monthly values of ERC % cane showed sharp peaks at UF, FX and DL; with trends being smoother at GH and ML but flat at NB, UC, MS and GD. These different trends were also present with mixed juice purity, as illustrated in Figure 3.

The trends in fibre % cane in South Africa are shown in Figure 4. Two comments may be made. Firstly, the effects of the droughts in 1983-84, 1992-93, 1993-94, 1994-95 and 1995-96 are clearly evident. Secondly, the levels from this and the previous season have not returned to the pre-drought values. In fact, fibre % cane values for these two seasons are high and the trend towards low fibre levels seems to have been broken.

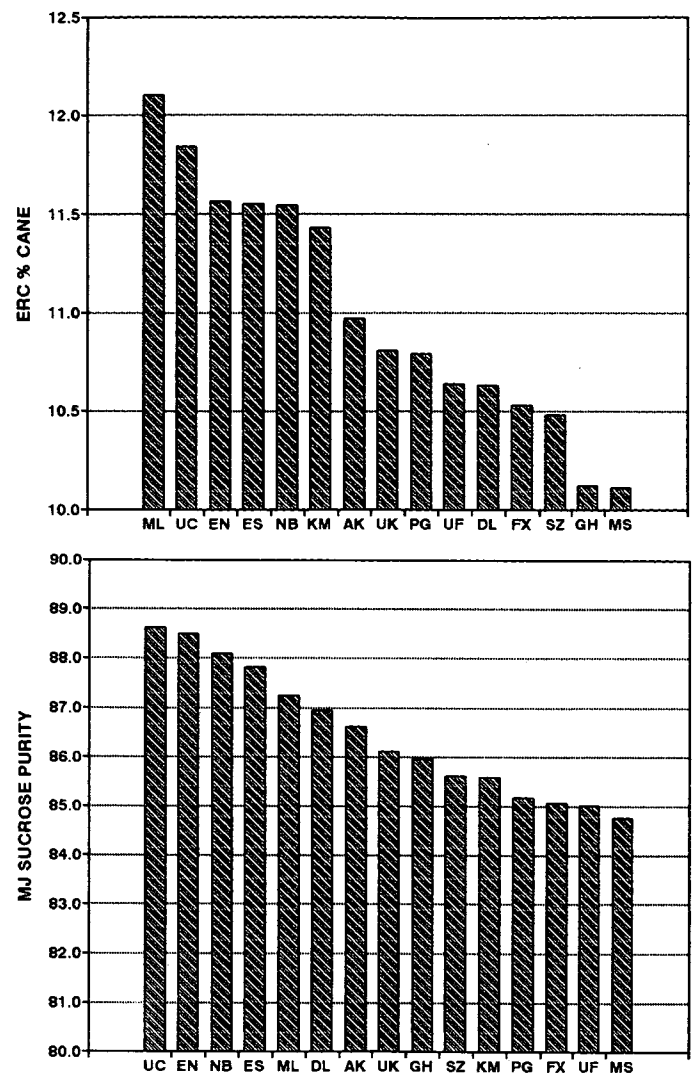


Figure 2. ERC % cane and mixed juice purity, South African factories, for the 1997-98 season.

Monthly fibre % cane values in South Africa are shown in Figure 5. After a minimum in May-June, the levels rose steeply throughout the season.

As was the case last season, the improved cane quality of 1997-98 has not included ash % cane and the ash level in cane this season is in fact the highest recorded since 1981, as shown in Figure 6. Ash % cane for the individual factories for this season is shown in Figure 7. ES again shows the highest value (2,93%). If an ash content of about 1,5% is considered as acceptable, then only MS, UK, AK, EN and UC meet this standard.

Ash levels in cane for the recent drought free seasons, namely 1991-92, 1996-97 and 1997-98, for the individual South African mills are shown in Table 3. These data show that ash in cane has been consistently low (about 1,3%) at AK and UC, and has actually decreased (to 1,3%) at EN. Furthermore, two factories, MS and UK, report average (about 1,5%) but consistent values. These observations indicate that it has been possible to control ash levels in the above five regions.

Finally, monthly values of ash in cane over the season are shown in Figure 8. Very high values were measured at the start and end of the season and the level of ash was always above 1,6%.

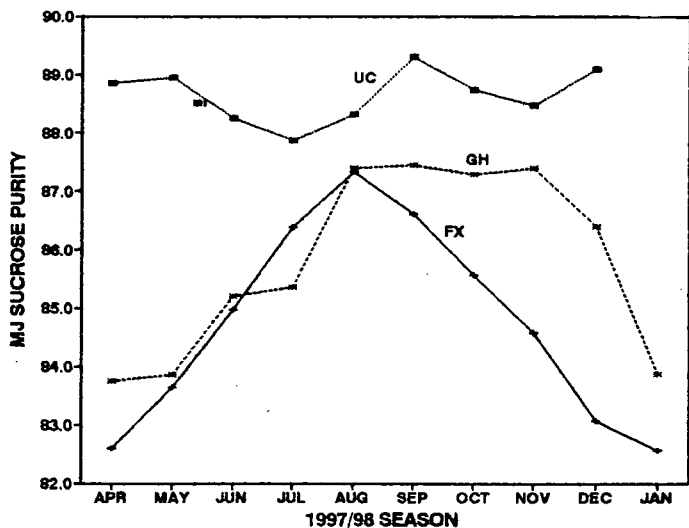
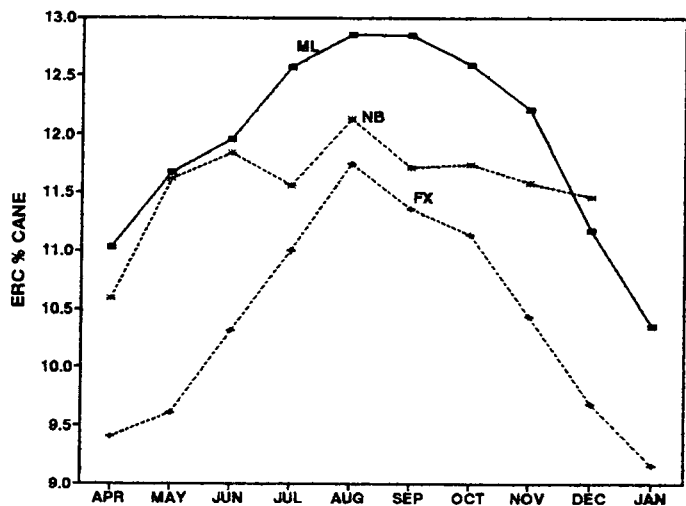


Figure 3. Monthly ERC % cane and mixed juice purities illustrating three different trends.

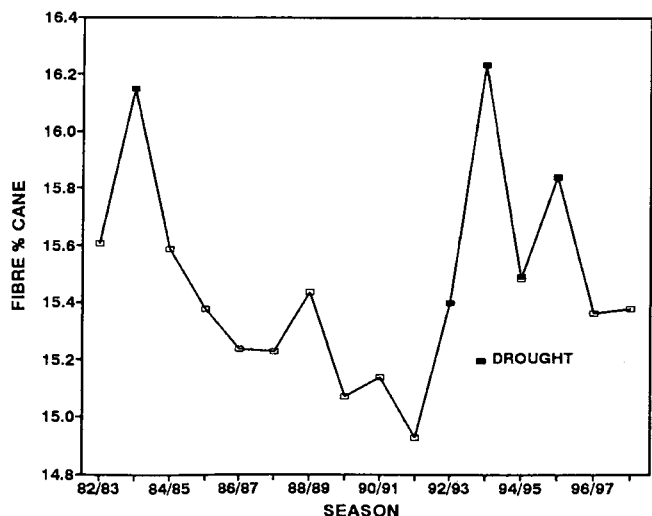


Figure 4. Fibre % cane in the South African industry.

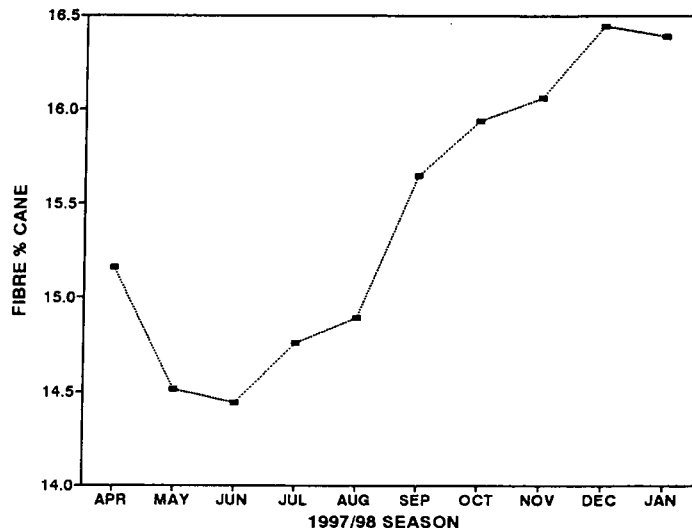


Figure 5. Trends in fibre % cane during the 1997-98 season.

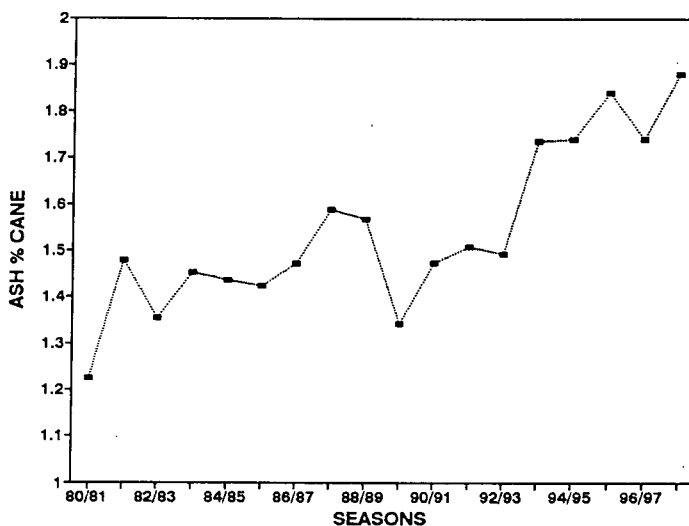


Figure 6. Ash % cane in the South African industry.

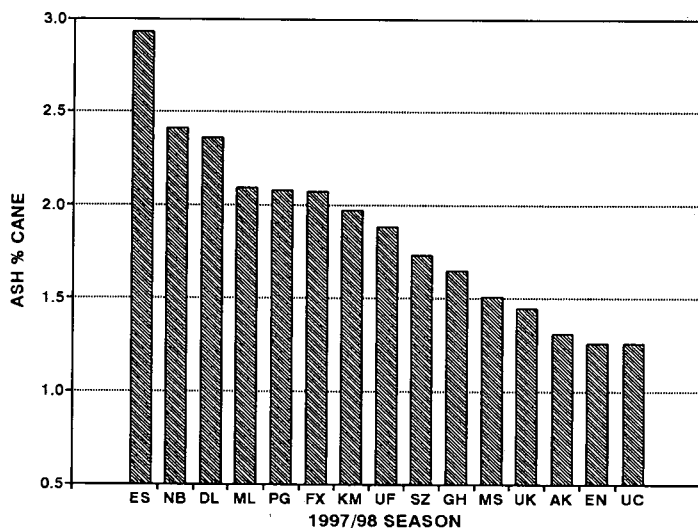


Figure 7. Ash % cane, 1997-98 season, South African mills.

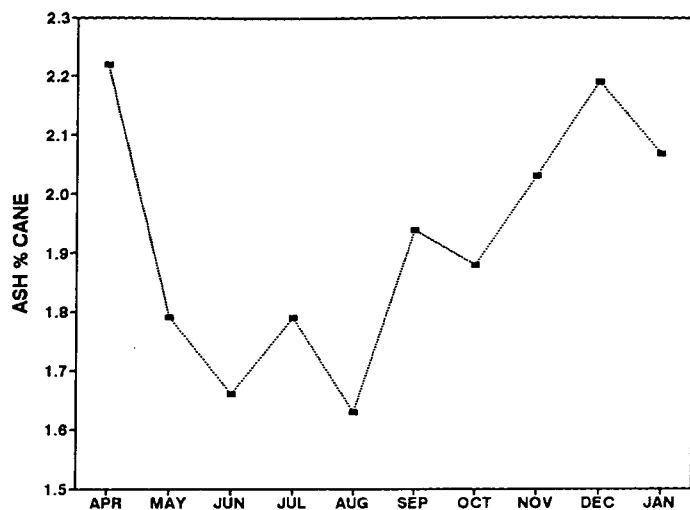


Figure 8. Monthly trends in ash % cane.

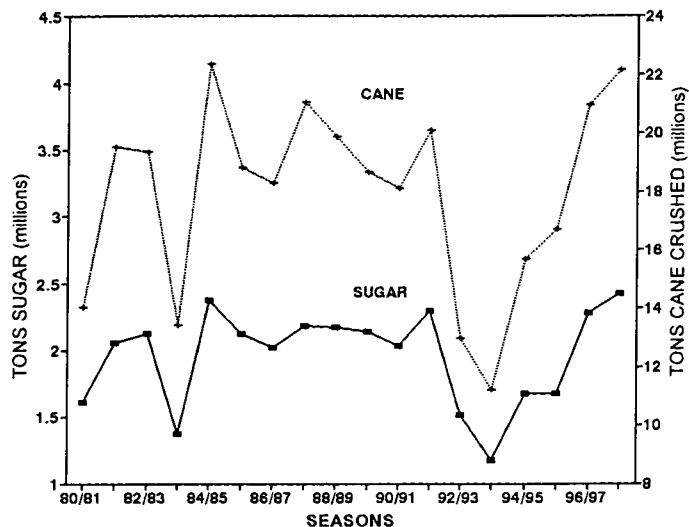


Figure 9. Cane and sugar tonnages in the South African industry.

Table 3. Ash % cane, South African mills, for the 1991-92, 1996-97 and 1997-98 seasons.

Mill	Ash % cane		
	1991-92	1996-97	1997-98
ML	1,49	1,89	2,09
KM	-	2,06	1,97
PG	-	1,47	2,08
UF	1,60	2,05	1,88
EN	1,70	1,44	1,26
FX	1,85	1,94	2,07
AK	1,24	1,08	1,31
DL	0,91	1,84	2,36
MS	1,36	1,39	1,51
GD	-	1,64	-
GH	1,90	1,49	1,65
NB	1,76	2,22	2,41
UC	1,01	1,22	1,26
ES	-	2,77	2,93
SZ	1,24	-	1,73
UK	1,52	1,65	1,45

Cane tonnage

The tonnage of cane crushed this season was lower than the record crush of 1984-85 by 200 810 tons. Sugar production, however, is a South African record at 2 420 414 tons. The season was thus an excellent one in terms of cane and sugar tonnages. The cane to sugar ratio (9,15) is slightly better than the long term South African average. Cane and sugar tonnages for the last eighteen seasons, in South Africa, are shown in Figure 9. The monthly tonnages of cane and of sugar for this season and the five-year averages are shown in Figure 10; the reduction caused by industrial action in July 1997 being clearly evident. Finally, the cane and sugar tonnages for the region are given in Table 4.

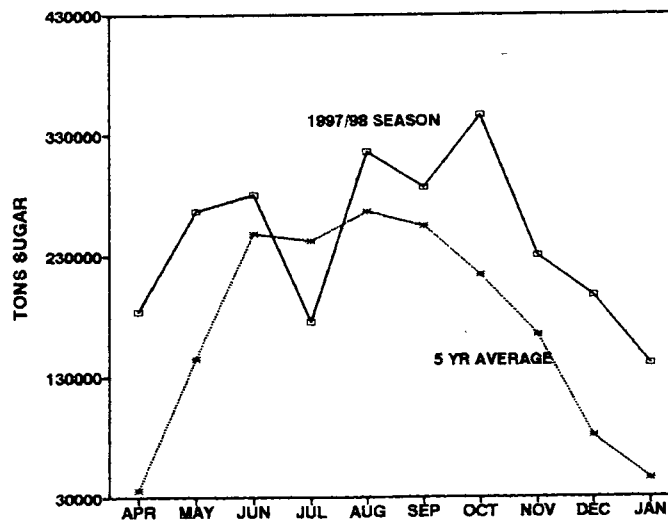
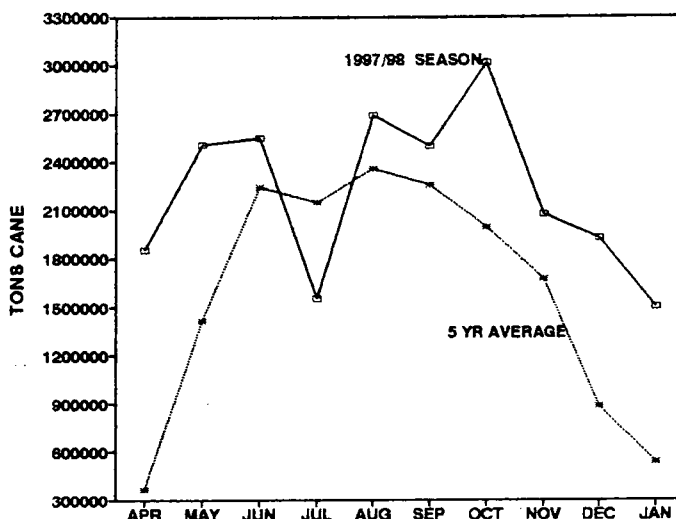


Figure 10. Monthly cane and sugar tonnages and the five-year averages, South African industry.

Table 4. Cane and sugar tonnages for the 1997-98 season.

Country	Tons cane	Tons sugar
South Africa	22 154 781	2 420 414
Zimbabwe	4 652 671	572 968
Swaziland	3 887 385	475 724
Malawi	1 675 186	192 851

Mill performance

Length of season and time efficiency

The season in South Africa started on 7 March 1997 at PG and ended on 5 February 1998 at KM. Its overall length was 335 days, the longest and shortest periods being 331 and 222 days at PG and GD, respectively.

The overall time efficiency (OTE) for the season was low at 76,64%, but DW has reported a high OTE of 88,66.

Lost time % available (LTA) is defined by:

$$LTA = \frac{\text{total hours 'other' stops}}{\text{available time} - (\text{hours 'scheduled' stops} + \text{hours 'no cane' stops})}$$

for the South African industry, as shown in Figure 11. LTA has been fairly steady, around 7%, over the period 1986 to 1993, but has not returned to this level in 1997-98.

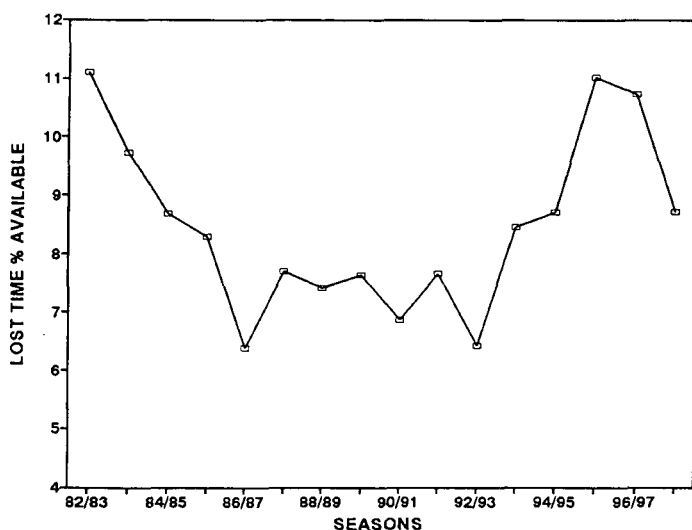


Figure 11. Trends in the parameter lost time % available in the South African industry.

Monthly values for 'no cane' and 'other' stops, for the 1997-98 season are shown in Table 5. It should be noted that the stops in July, due to industrial action and which totalled 6 434 hours, have been allocated to a new category of stops called 'force majeure', and the hours stopped for 'force majeure' are subtracted from the gross available time. The hours stopped for 'force majeure' this season, were 0 for ML, KM and UC and ranged from 456 (EN, FX1, FX2, DL) to 545 at SZ1. Chains and carrier problems caused stops at MS, AK, GH and DL, while rain caused long 'no cane' stops. Electrical problems, including a lightning strike at GH, were also reported.

Table 5. Monthly values of 'no cane' and 'other' stops in the South African industry, 1997-1998 season.

Month	No cane stops (%)	Other stops (%)
April	10,10	9,77
May	4,58	6,88
June	6,51	8,09
July	3,29	3,65
August	2,42	6,64
September	9,47	6,42
October	8,85	7,17
November	19,59	7,07
December	8,29	7,24
January 1998	10,93	6,18

Extraction plant

In South Africa, extraction (97,74) was very similar to that of the previous season (97,72). Eight extraction lines, namely KM, FX1, FX2, AK, GH1, GH2, SZ1 and DW reported extractions above 98.

Some details relevant to extraction plants follow:

- Throughput considerations were overriding in many cases (ML, FX, EN, MS, UC), and operational/mechanical problems caused mills to be by-passed in NB and DL.
- Mill sanitation has received attention in DL, GH and NB.
- About 800 tons of billeted green cane were crushed at NB. This was handled well by the whole stalk shredder and power needed was reduced considerably. Billeted but burnt cane was processed at UF, where it tended to by-pass the knives.
- A small tonnage of beet was processed with the cane at NB. At this stage the most obvious observation was some foaming in tanks and screens.
- Problems with mixed juice scales occurred at AK and GH. In both cases the four-point bending-beam arrangement was changed to a three-point compression system.
- UF had to commission its press-water clarifier as soon as the rainy season started. This prevents flooding and blinding in the diffuser, due mostly to silt.
- The rock removal system at UC worked well and it was felt that the absence of shorter cane stalks helped. The reject stream mass was approximately 1,6% of the cane mass.
- Extraction improved at ES. This was attributed to better cane preparation, optimisation of the diffuser operation and better distribution of imbibition water between the diffuser and the dewatering mills.

Clarification and filtration

Generally, clarification and filtration ran well again, in South Africa. Carry over was observed to occur at four mills, related mostly to high juice throughputs, typical of the season. Juice colours were reported to be high at ES and SZ. Six factories (AK, GH, NB, UC, ES and UK) added phosphoric acid to mixed juice, generally to improve settling. MS commissioned a new, automated mud removal system which was found to work well. FX used syrup clarification from September onwards, with air, flocculants and heat to 80°C, which removed about 75% of the turbidity. The syrup clarifier was used during the entire season at MS.

Evaporators

The season has again been characterised by high juice throughputs. Experimental work, both on the FX pilot evaporator and on full scale plants, has continued and generally, the use of juice recycles on Kestners has had positive results. Tests involving antiscalants have shown no increases in heat transfer with the use of these chemicals but the scale has been observed to become softer and easier to remove.

The trend at factories has been to try to extend periods between cleaning the evaporators as far as practically possible. Four factories (FX, AK, DL and GH) have managed to increase this period.

Syrup has been successfully stored at UK. This factory crushes somewhat faster than the boiling-house can accommodate during the week and stores the excess syrup, at 68° brix or higher. This syrup is then used on Sundays when there is no cane. The advantages as far as UK is concerned are that the bagasse surplus is used, the back-end runs for long periods without stopping and there is no need to purchase power on Sundays.

The use of an α -amylase enzyme to hydrolyse starch is well known in the industry. EN, GH, ES and SZ use the enzyme regularly, while UC and UK use it from time to time. Several factories, however, do not use any enzyme. The procedure generally is to analyse the sugar produced for its starch content and to add the enzyme to keep starch levels lower than 150 mg/kg sugar.

Boiling house

Boiling House Recovery (BHR) at 88,09 has continued its upward trend. This trend is expected however since the mixed juice purity this season (86,15) is higher than that of last season (85,38). The question that needs to be asked is whether full advantage has been taken of the increase in mixed juice purity. An empirical relationship which is often useful is that between the sum (BHR + undetermined loss) and mixed juice purity. These two quantities have been plotted against each other in Figure 12. There is a good linear relationship for the normal, non-drought afflicted seasons, but the point for 1997-98 is somewhat off the trend and below the line. A similar conclusion is reached when the sucrose lost in molasses is plotted against the level of impurity in mixed juice, as done in Figure 13. Again, the value for 1997-98 is somewhat off the trend line, this time being above it. There is therefore an indication that BHR is somewhat lower than anticipated from the mixed juice purity and that this is due to a loss in molasses which is too high.

Molasses factor (tons sucrose in molasses/tons non-sucrose in mixed juice) is also a useful parameter, and the values for the South African industry are shown in Figure 14. Two points are evident:

- There is an upward trend when drought stricken seasons are excluded.
- The value for 1997-98 is again off that trend, being slightly above it.

It can therefore be concluded that molasses exhaustion has deteriorated. This is made very evident when the target purity difference (TPD), based on molasses, is plotted against time, as done in Figure 15. TPD values in South Africa have not returned to their pre-drought levels, this season's TPD being, in fact, the second highest in the period covered in Figure 15 (1982 to 1998).

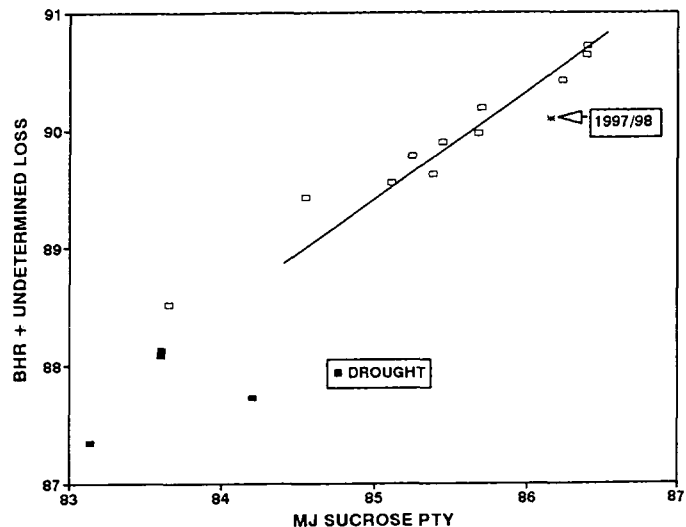


Figure 12. The effect of mixed juice purity on recovery, including undetermined loss. A linear relationship exists for normal seasons.

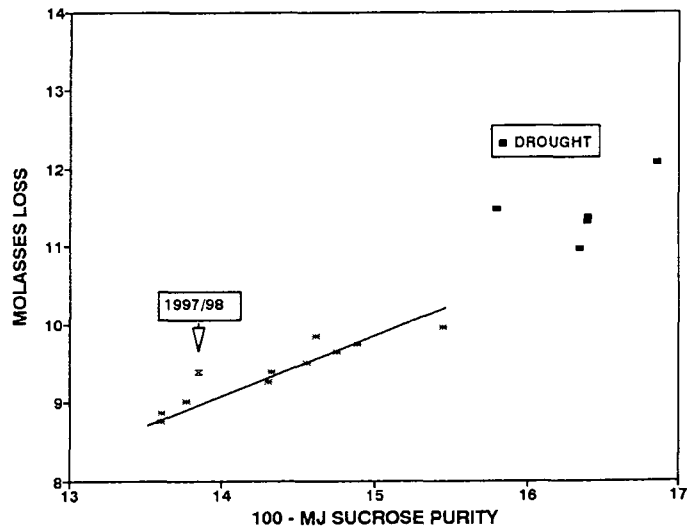


Figure 13. The effect of the level of impurity in mixed juice on the loss of sucrose in molasses. A linear trend exists for normal seasons.

Some data relevant to molasses exhaustion have been summarised in Table 6. Both the molasses factor and the TPD for the season are high. The two 1997-98 operational factors that stand out are the average width of the C-crystals which is low at 122 μ m and the elongation ratio (length of C-crystal/width of C-crystal) which is high at 2,0. These two parameters would certainly impact negatively on molasses exhaustion. The results for this season show BHR values above 90 at UC and ML, while the EN value (89,75) is also high. BHR is however low at PG, GD and UF.

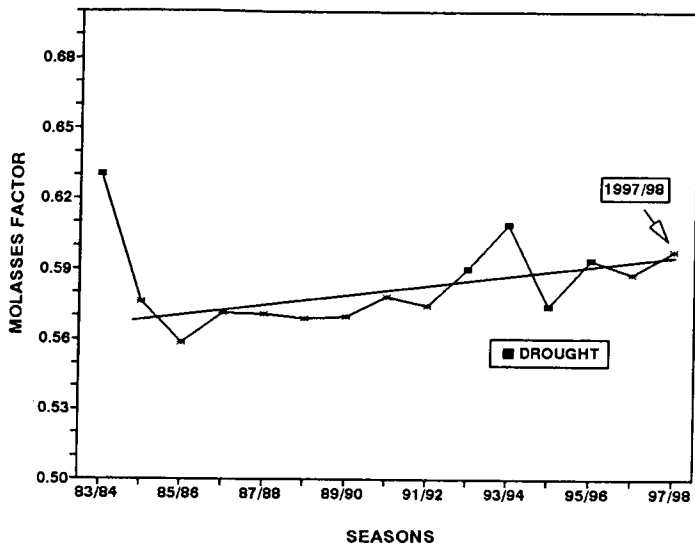


Figure 14. Molasses factor for the South African industry. The trend is for the normal seasons only.

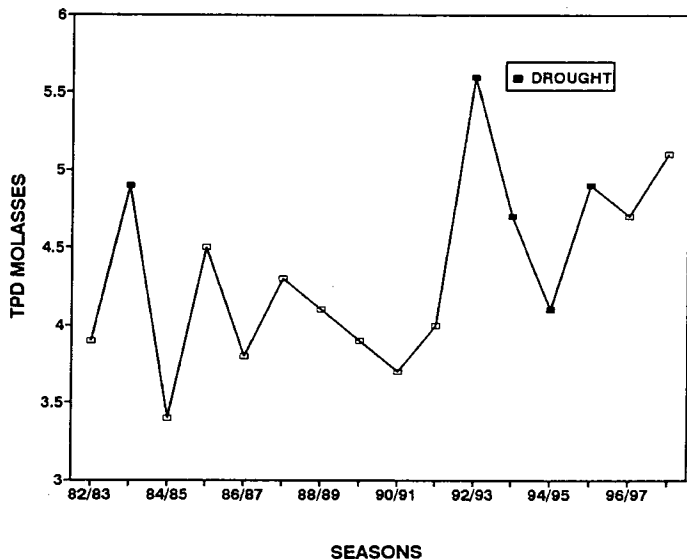


Figure 15. TPD for the South African industry.

Table 6. Data relevant to molasses exhaustion comparing the current season with preceding seasons.

Parameter	Four-season average		1996-97	1997-98
	Pre-drought	Drought		
Suc. lost in mol % in cane	9,0	11,4	9,8	9,4
Molasses factor	0,57	0,59	0,56	0,60
TPD	3,9	4,8	4,7	5,1
Tons non-sucrose in MJ/h	5,4	6,2	5,8	5,6
Dry solids % molasses	78,2	77,2	78,0	77,9
Viscosity (Pa.s) molasses at 30°C and 74% dry solids	3,4	5,8	6,0	5,0
Crystal width (µm)	136	128	138	122
Elongation ratio	1,7	1,7	1,7	2,0

Undetermined loss (2,00) is back to its usual level for the South African industry. The lowest value was 1,13% at ML and the highest 3,79% at PG.

Sucrose lost in molasses at 9,40%, is higher than expected, as discussed previously. It ranges from 7,17% at UC to 11,16% at PG and was high at FX, GD and UF. Sucrose lost in molasses at each factory for this season has been plotted against impurity in mixed juice (100-MJ purity) in Figure 16. Most of the points fall within a demarcated region but NB, ES and PG show results which are higher than expected from the impurity content of the juice.

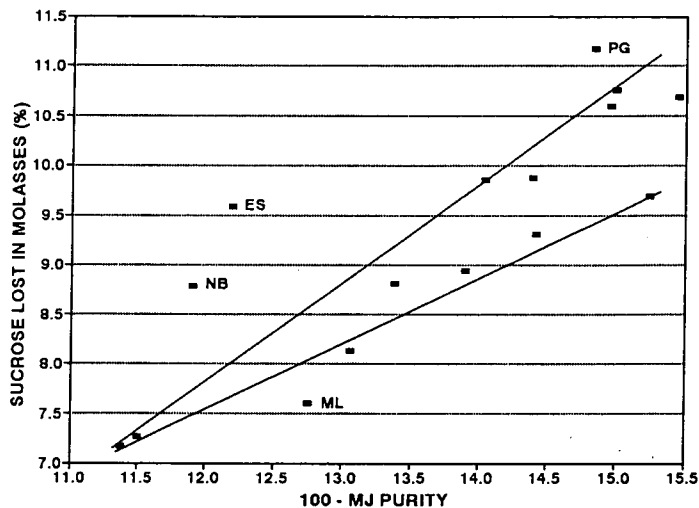


Figure 16. Sucrose lost in molasses as a function of impurity in MJ.

Molasses factor and TPD for each factory are shown in Figure 17. In both cases the range is wide and the high molasses factors are associated with high TPD values. Low TPD values were obtained at KM (2,7), AK (2,8) and DL (3,1). The following points were seen as being relevant towards the low TPD values:

- Good pan exhaustions, with high C-masseccuite brixes. Pan automation, control and steady operation had a large impact.
- Crystal content and crystal size. KM and AK produced C-crystals of 151 and 139 µm respectively.
- Attention to C-seed quality.
- Low C-sugar purity (around 80) but A-sugar quality needs to be monitored.
- Capacity, both on C-pans and C-centrifugals.

The weekly TPD values for the South African industry are shown in Figure 18. The steep increases over weeks 21, 22 and 23 follow the two-and-a-half week stop for industrial action. A smoothed curve was obtained from the data but excluding weeks 21, 22 and 23. This has been plotted on the graph. There is no doubt that the TPD values for those three weeks are abnormally high and are caused by the long stop. Inspection of Figure 18 shows that the actual TPD values for weeks 21, 22 and 23 are 7,0, 5,3 and 4,9 respectively. Corresponding values but from the smoothed curve are 3,9,

4,0 and 4,1 respectively. If these smoothed values are used in SJM calculations, using actual mixed juice purities for the three weeks and a constant sugar purity of 99,5, it can be calculated that the higher TPD values resulted in a loss of about 1500 tons of sugar over the three weeks. This loss is due only to the higher molasses purity associated with the long stop and is thus additional to losses in cane tonnages and cane quality.

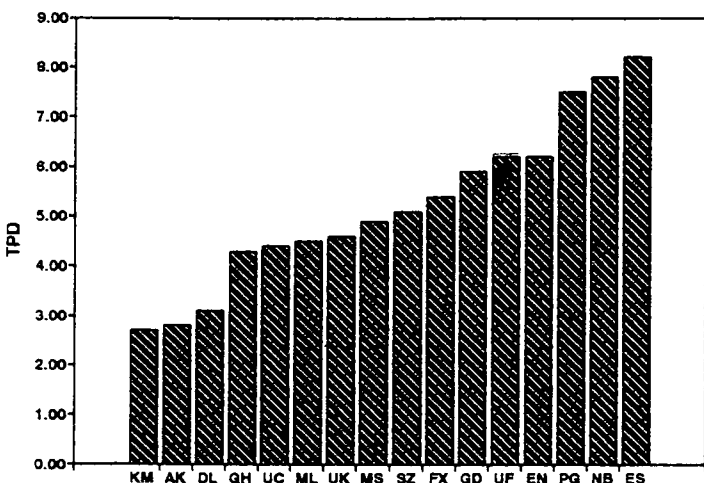
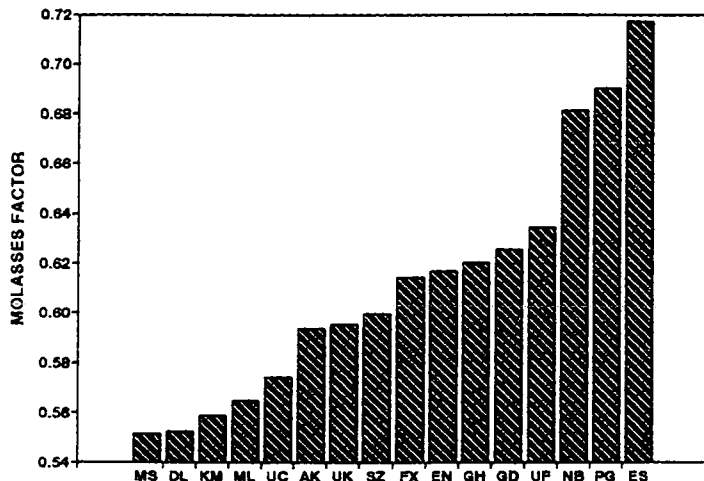


Figure 17. Molasses factor and TPD for the South African factories, 1997-98 season.

Maillard type reactions have been a serious problem at KM, throughout the season, with C-masseccuite swelling and overflowing. The temperature in the blow-up tanks at KM is kept below 65.C and, generally, temperature is kept as low as possible. KM has also tried changing the syrup pH, but this has been inconclusive as far as the gassing is concerned.

Crystallisers

Several factories back-blend molasses into crystallisers. Generally, C-molasses is diluted with water and returned to C-crystallisers, using the rotor motor amperage as a control. This procedure is seen as allowing the maximum pan exhaustion, but this must often be followed by some dilution for the crystallisers to handle the C-masseccuite.

There is little back-blending of B-molasses into B-masseccuite but some factories do back-blend A-molasses, as is or from the blow-up tanks, back into A-masseccuite.

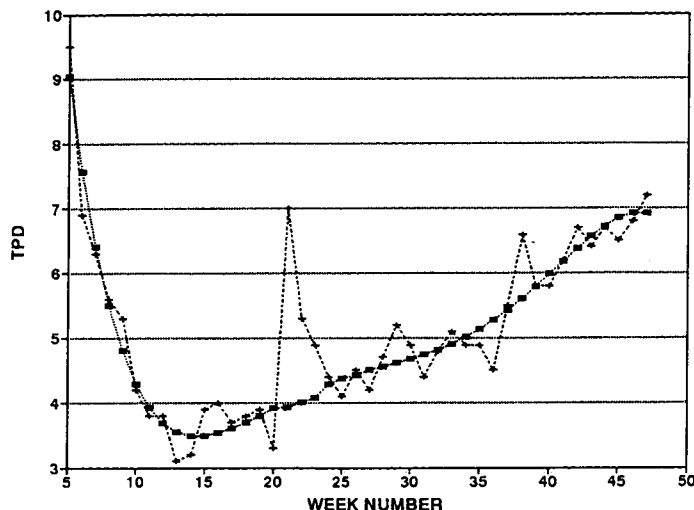


Figure 18. Weekly TPD values in the South African industry (+) and a smoothed curve (■) obtained by excluding values for weeks 21, 22 and 23.

Centrifugals

Some of the mechanical problems that occurred this season were:

- Wear on A-centrifugal basket hoops caused severe problems at FX. Rotational speed and masseccuite charge had to be reduced.
- The backing screens in the A-machines at AK could not handle the high throughputs. A-curing was poor.
- The B- and C-centrifugals at ES showed severe screen damage. The C-masseccuite flow to the centrifugals was difficult.

A continuous A-centrifugal was tested at SZ. The effects of the highly viscous A-masseccuite at SZ were noticeable and the masseccuite usually required conditioning with water, while the feed rate had to be very steady. Sugar quality was acceptable, except for moisture which was high. The molasses purity was, however, about 1 to 2 units higher than with batch machines. Similar results have been reported by DL which also tested a continuous A-machine (Zondo, 1998).

Sugar quality

The average ICUMSA colour of South African very High Pol (VHP) was 1560 for the season. The trends for this parameter are shown in Figure 19. Two points may be made:

- The effects of the droughts (1983/84, 1992-93 to 1995-96) are clearly evident.
- VHP colour in South Africa has increased over the last 11, drought-free, seasons at a rate of about 20 units per year.

Whole sugar colour can be controlled in the factory and is affected by operational factors. Curing problems have already

been discussed in the previous section. The colour of the affinated crystal is a better indicator of colour trends and of the effects of cane quality on colour. This parameter has been plotted in Figure 20 for the South African industry. Again, the drought effects are clearly seen but the increase over the years is now less evident. The average analysis of the total very high pol (VHP) sugar produced in South Africa was 99,37% pol and 0,12% moisture, which is very similar to the results for the 1996-97 season.

The trend towards low to very low refined sugar colours has continued this season. The average refined sugar colour in South Africa has been 42, compared to 39 in the 1996/97 season. ML, NB and HR have produced refined sugar of 40, or lower, ICUMSA colour. Decolourisation during refining is an important area of research, both in the laboratory and on an industrial scale, in South Africa. Significant breakthroughs have been achieved, as reported by Davis *et al.* (1998) and Moodley *et al.* (1998).

Acknowledgements

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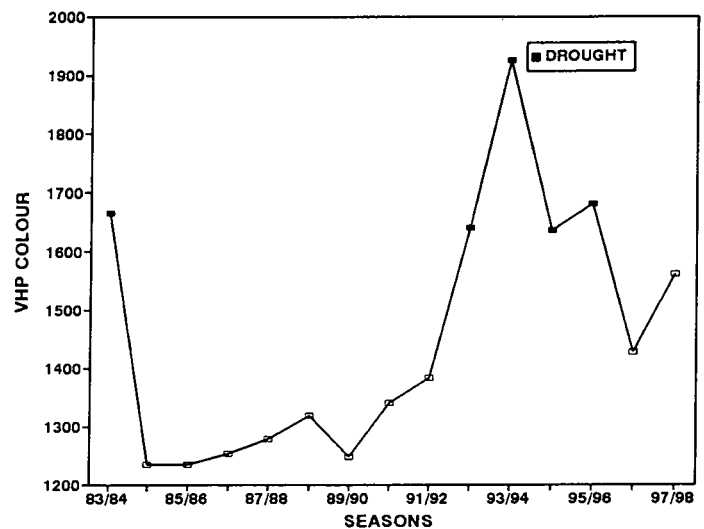


Figure 19. Trends in VHP colour in South Africa.

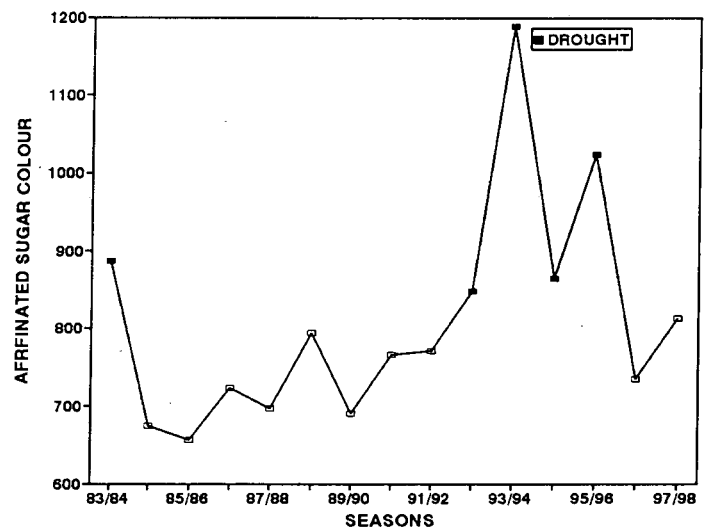


Figure 20. Trends in affinated sugar colour in South Africa.

TABLE B1
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SOUTH AFRICAN MILLS (SEASON 1997 - 1998)

SYMBOLS OF FACTORIES	ML *	KM *	PG *	UF *	EN **	FX-A *	FX-B *	FX-AVE	AK *	DL	MS-A *	MS-B *	MS-AVE
TONS SUGAR MADE AND ESTIMATED	199303	163654	132885	131781	47348	-	-	281476	185346	139443	-	-	222188
Refined % total sugar	-	-	90.28	85.20	-	-	-	-	-	-	-	-	-
Moisture all sugar	0.11	0.11	0.04	0.04	0.08	-	-	0.16	0.17	0.14	-	-	0.10
Pol all sugar	99.30	99.37	99.88	99.87	99.32	-	-	99.33	99.28	99.26	-	-	99.46
Tons cane crushed total	1614449	1415923	1276122	1263950	411120	-	-	2637644	1663337	1298974	-	-	2149047
Tons cane crushed per tandem	-	-	-	-	-	1395398	1242246	-	-	-	890933	1258114	-
Season started on	12-Apr-97	02-Apr-97	01-Mar-97	09-Apr-97	16-Apr-97	-	-	23-Apr-97	23-Apr-97	24-Apr-97	-	-	15-Apr-97
Season completed on	20-Jan-98	05-Feb-98	01-Feb-98	26-Jan-98	15-Jan-98	-	-	18-Jan-98	23-Dec-97	22-Dec-97	-	-	24-Jan-98
Number of crushing days	283	309	337	297	274	-	-	270	244	242	-	-	284
TIME ACCOUNT													
Overall time efficiency %	75.18	79.46	76.35	75.98	72.71	81.44	75.26	78.35	81.38	78.96	75.90	76.36	76.13
Sched.stops% gross avail.time	5.92	2.99	5.58	6.34	11.71	9.58	9.35	9.46	7.22	5.52	5.62	6.34	5.98
Lack of cane % gross " "	9.51	9.87	6.07	7.25	10.47	4.76	9.86	7.31	5.97	8.46	10.88	8.69	9.78
Other stops % gross " "	8.94	7.06	11.73	9.94	4.94	4.17	5.51	4.84	5.20	6.86	6.99	7.88	7.43
Foreign matter % gross" "	0.44	0.62	0.27	0.49	0.18	0.04	0.03	0.04	0.23	0.20	0.61	0.73	0.67
Lost time % avail.crush.time	10.63	8.16	13.31	11.57	6.36	4.87	6.82	5.82	6.01	7.99	8.43	9.35	8.90
Force majeure stops (hours)	0.00	0.00	480.00	483.25	456.00	480.00	480.00	480.00	504.00	456.00	502.00	504.00	503.00
THROUGHPUTS PER CRUSHING HOUR													
Tons cane	318.41	242.31	224.43	255.53	92.45	285.61	274.50	560.53	381.82	306.62	187.52	261.49	449.47
Tons fibre	46.63	38.03	33.44	36.60	12.40	45.19	43.29	88.56	58.11	45.02	27.84	38.93	66.84
Tons brix in mixed juice	49.46	36.96	32.39	36.38	13.31	41.01	39.06	80.15	54.80	42.24	25.77	35.87	61.71
Tons sucrose in mixed juice	43.15	31.63	27.58	30.92	11.78	34.90	33.20	68.10	47.47	36.72	21.88	30.36	52.25
Tons non-suc. in mixed juice	6.31	5.33	4.81	5.45	1.53	6.11	5.86	11.98	7.33	5.52	3.89	5.51	9.41
Tons of sugar produced	39.31	28.01	23.37	26.64	10.65	-	-	59.82	42.55	32.91	-	-	46.47
COMPOSITION OF CANE CRUSHED													
Sucrose % cane	13.85	13.31	12.60	12.46	13.15	12.42	12.31	12.37	12.67	12.33	11.94	11.87	11.90
Pol % cane	13.71	13.14	12.46	12.32	13.05	12.32	12.19	12.26	12.59	12.24	11.82	11.75	11.78
Fibre % cane	14.97	15.73	14.99	15.09	14.42	15.92	15.87	15.90	15.68	15.71	15.11	15.17	15.14
Brix % cane	16.09	15.80	14.99	14.91	15.12	14.87	14.76	14.82	14.83	14.52	14.31	14.27	14.28
Ash % cane	2.09	1.97	2.08	1.88	1.26	2.10	2.04	2.07	1.31	2.36	1.58	1.46	1.51
ERC % cane	12.09	11.41	10.78	10.62	11.55	10.57	10.45	10.51	10.96	10.62	10.15	10.06	10.09
ERC % sucrose in cane	87.28	85.75	85.58	85.23	87.88	85.03	84.92	84.98	86.52	86.10	84.98	84.77	84.86
EXTRACTION													
Extraction (sucrose based)	97.86	98.07	97.56	97.09	96.95	98.35	98.26	98.30	98.14	97.09	97.76	97.86	97.82
Corrected reduced extraction	97.63	98.07	97.50	96.91	96.40	98.43	98.35	98.39	98.13	97.03	97.76	97.88	97.83
Imbibition % cane	52.46	46.67	41.03	52.08	46.40	53.62	55.96	54.72	54.88	45.11	48.99	52.39	50.98
Imbibition % fibre	358	297	275	364	346	339	355	346	361	307	330	352	343
Preparation index	92	92	90	-	89	92	92	92	93	91	90	90	90
Pol factor	98.91	100.32	99.42	99.58	99.01	99.30	98.66	99.00	100.04	99.80	99.81	99.76	99.78
Brix factor	100.37	101.25	100.88	101.37	100.10	101.68	101.11	101.41	100.86	100.78	100.83	100.91	100.88
RECOVERIES													
Boiling house recovery (suc.)	90.45	87.99	84.62	86.05	89.75	-	-	87.16	88.99	88.97	-	-	88.37
C. R. B.	87.84	86.74	83.77	85.62	85.19	-	-	86.21	87.04	86.22	-	-	87.60
Overall recovery (sucrose)	88.52	86.29	82.56	83.54	87.01	-	-	85.68	87.34	86.38	-	-	86.44
Ton cane per ton sugar	8.10	8.65	9.60	9.59	8.68	-	-	9.37	8.97	9.32	-	-	9.67
Ton cane per ton 96 pol sugar	7.83	8.36	9.23	9.22	8.39	-	-	9.06	8.68	9.01	-	-	9.34
BALANCES													
Suc. lost % suc.in cane													
- lost in bagasse (a)	2.14	1.93	2.44	2.91	3.05	-	-	1.70	1.86	2.91	-	-	2.18
- lost in filter cake (b)	0.60	0.05	0.05	0.47	0.30	-	-	0.20	0.03	0.88	-	-	0.23
- lost in final molasses (c)	7.61	9.30	11.16	10.75	7.27	-	-	10.60	8.81	8.13	-	-	9.69
- undetermined losses (d)	1.13	2.42	3.79	2.33	2.38	-	-	1.82	1.96	1.70	-	-	1.45
Boiling house losses(b+c+d)	9.34	11.78	15.00	13.55	9.94	-	-	12.62	10.80	10.71	-	-	11.38
Sum of all losses(a+b+c+d)	11.48	13.71	17.44	16.46	12.99	-	-	14.32	12.66	13.62	-	-	13.56
Non sucrose ratio	1.02	0.97	1.03	0.97	1.00	-	-	1.06	1.10	1.00	-	-	0.97
Fructose ratio FM/MJ	0.96	0.91	0.85	0.84	0.81	-	-	0.96	0.95	0.81	-	-	0.98
Glucose ratio FM/MJ	0.80	0.58	0.71	0.72	0.70	-	-	0.74	0.73	0.65	-	-	0.81

* Cane diffuser

** Bagasse diffuser

TABLE B1 (continued)
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SOUTH AFRICAN MILLS (SEASON 1997 - 1998)

SYMBOLS OF FACTORIES	GD **	GH-A *	GH-B	GH-AVE	NB	UC *	ES *	SZ-A *	SZ-B *	SZ-AVE	UK *	INDUSTRY
TONS SUGAR MADE AND ESTIMATED	28035	-	-	149613	156446	94357	123442	-	-	230703	134394	2420414
Refined % total sugar	-	-	-	100.00	100.00	-	-	-	-	-	-	-
Moisture all sugar	0.11	-	-	0.02	0.02	0.07	0.11	-	-	0.11	0.06	0.10
Pol all sugar	99.44	-	-	99.93	99.97	99.54	99.38	-	-	99.35	99.54	99.50
Tons cane crushed total	280492	-	-	1485894	1388436	795065	1082425	-	-	2173070	1218833	22154781
Tons cane crushed per tandem	-	470312	1015582	-	-	-	-	1078578	1094492	-	-	-
Season started on	13-May-97	-	-	15-Apr-97	14-Mar-97	10-Mar-97	03-Apr-97	-	-	03-Apr-97	02-Apr-97	07-Mar-97
Season completed on	21-Dec-97	-	-	27-Jan-98	21-Dec-97	20-Dec-97	25-Jan-98	-	-	30-Jan-98	30-Jan-98	05-Feb-98
Number of crushing days	222	-	-	287	282	285	297	-	-	302	303	335
TIME ACCOUNT												
Overall time efficiency %	67.21	81.66	81.97	81.81	77.91	79.02	74.54	74.91	77.76	76.34	73.57	76.64
Sched.stops% gross avail.time	4.20	6.38	7.59	6.99	4.74	7.31	6.14	8.78	8.78	8.78	11.25	6.88
Lack of cane % gross " "	11.45	6.82	4.19	5.51	9.59	6.91	11.96	12.24	8.72	10.47	9.13	8.71
Other stops % gross " "	16.64	3.76	5.76	4.76	7.40	6.34	7.21	3.71	4.34	4.03	4.90	7.32
Foreign matter % gross " "	0.50	1.37	0.49	0.93	0.36	0.42	0.15	0.37	0.40	0.39	1.14	0.45
Lost time % avail.crush.time	19.85	4.41	6.56	5.50	8.67	7.43	8.82	4.71	5.29	5.01	6.24	8.72
Force majeure stops (hours)	476.75	515.00	510.00	512.50	550.64	0.00	523.00	545.00	487.00	516.00	493.00	6434.14
THROUGHPUTS PER CRUSHING HOUR												
Tons cane	85.63	91.32	195.86	287.53	286.02	147.24	220.97	216.49	208.93	425.23	246.41	285.04
Tons fibre	12.89	14.24	28.53	42.81	38.80	19.48	33.60	34.43	32.87	67.26	37.22	42.65
Tons brix in mixed juice	11.70	12.45	26.16	38.66	41.54	21.53	32.30	30.31	29.37	59.66	35.21	40.83
Tons sucrose in mixed juice	9.89	10.60	22.59	33.19	36.60	19.08	28.36	26.01	25.09	51.10	30.32	35.17
Tons non-suc. in mixed juice	1.81	1.85	3.57	5.43	4.94	2.45	3.94	4.30	4.28	8.58	4.89	5.65
Tons of sugar produced	8.56	-	-	28.95	32.23	17.47	25.20	-	-	45.14	27.17	33.61
COMPOSITION OF CANE CRUSHED												
Sucrose % cane	11.97	11.83	11.76	11.78	13.15	13.37	13.19	12.26	12.25	12.25	12.56	12.62
Pol % cane	11.84	11.72	11.62	11.65	13.02	13.26	13.11	12.15	12.17	12.16	12.46	12.51
Fibre % cane	15.32	15.77	15.43	15.54	14.82	13.36	15.75	16.08	15.91	15.99	15.39	15.38
Brix % cane	14.50	14.10	13.83	13.92	15.15	15.27	15.24	14.53	14.60	14.57	14.85	14.90
Ash % cane	-	1.64	1.65	1.65	2.41	1.26	2.93	1.78	1.69	1.73	1.45	1.88
ERC % cane	10.09	10.08	10.13	10.11	11.53	11.83	11.53	10.49	10.45	10.47	10.79	10.87
ERC % sucrose in cane	84.27	85.21	86.10	85.82	87.69	88.49	87.43	85.57	85.31	85.44	85.92	86.06
EXTRACTION												
Extraction (sucrose based)	96.50	98.11	98.08	98.09	97.33	96.93	97.30	98.03	98.00	98.02	97.94	97.74
Corrected reduced extraction	96.56	98.23	98.07	98.13	96.91	96.24	97.23	98.16	98.11	98.14	97.93	97.70
Imbibition % cane	50.15	48.52	31.53	36.90	37.42	37.73	59.18	56.57	61.28	58.94	58.41	49.92
Imbibition % fibre	333	311	216	248	276	285	389	356	389	373	387	334
Preparation index	89	92	91	91	93	93	92	89	90	90	91	91
Pol factor	99.11	99.65	98.95	99.17	99.04	98.81	99.46	99.51	99.64	99.58	99.52	99.45
Brix factor	100.10	101.11	99.32	99.88	100.90	100.11	100.88	100.57	101.04	100.81	100.85	100.82
RECOVERIES												
Boiling house recovery (suc.)	86.05	-	-	87.06	88.03	91.15	88.29	-	-	87.82	89.20	88.09
C. R. B.	85.44	-	-	85.80	84.27	86.54	84.38	-	-	86.02	87.35	86.21
Overall recovery (sucrose)	83.04	-	-	85.40	85.68	88.35	85.91	-	-	86.08	87.37	86.10
Ton cane per ton sugar	10.01	-	-	9.93	8.87	8.43	8.77	-	-	9.42	9.07	9.15
Ton cane per ton 96 pol sugar	9.66	-	-	9.54	8.52	8.13	8.47	-	-	9.10	8.75	8.83
BALANCES												
Suc. lost % suc.in cane	-	-	-	-	-	-	-	-	-	-	-	-
- lost in bagasse (a)	3.50	-	-	1.91	2.67	3.07	2.70	-	-	1.98	2.06	2.26
- lost in filter cake (b)	0.32	-	-	0.14	0.43	0.08	0.11	-	-	0.06	0.07	0.24
- lost in final molasses (c)	10.69	-	-	9.86	8.87	7.17	9.59	-	-	9.92	8.94	9.40
- undetermined losses (d)	2.45	-	-	2.68	2.35	1.32	1.69	-	-	1.96	1.56	2.00
Boiling house losses(b+c+d)	13.46	-	-	12.69	11.65	8.58	11.39	-	-	11.94	10.58	11.64
Sum of all losses(a+b+c+d)	16.96	-	-	14.60	14.32	11.65	14.09	-	-	13.92	12.63	13.90
Non sucrose ratio	0.97	-	-	1.07	1.04	0.96	1.02	-	-	1.01	0.99	1.02
Fructose ratio FM/MJ	0.85	-	-	0.92	0.92	0.82	0.89	-	-	0.91	0.93	0.91
Glucose ratio FM/MJ	0.62	-	-	0.71	0.79	0.49	0.69	-	-	0.75	0.77	0.72

* Cane diffuser

** Bagasse diffuser

TABLE B2
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SWAZILAND, MALAWI AND ZIMBABWE MILLS (SEASON 1997 - 1998)

SYMBOLS OF FACTORIES	MH-A *	MH-B	MH-AVE	UR-A *	UR-B	UR-AVE	SM	HH *	DW *	HV-A *	HV-B *	HV-AVE	TR-A *	TR-B	TR-AVE
TONS SUGAR MADE AND ESTIMATED	-	-	153321	-	-	175958	146445	111450	81401	-	-	274694	-	-	298274
Refined % total sugar	-	-	33.13	-	-	51.31	-	33.75	61.50	-	-	0.67	-	-	-
Moisture all sugar	-	-	0.21	-	-	0.22	0.29	0.11	0.11	-	-	0.21	-	-	0.29
Pol all sugar	-	-	99.12	-	-	99.21	98.75	99.22	99.63	-	-	99.03	-	-	98.81
Tons cane crushed total	574264	651210	1225474	811772	730079	1541851	1120060	1034771	640415	1144002	1104368	2248370	1610050	794251	2404301
Tons cane crushed per tandem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Season started on	-	-	06-May-97	-	-	21-Apr-97	16-Apr-97	09-Apr-97	09-May-97	-	-	03-Apr-97	-	-	01-Apr-97
Season completed on	-	-	17-Jan-98	-	-	25-Jan-98	11-Dec-97	19-Nov-97	02-Nov-97	-	-	20-Dec-97	-	-	25-Dec-97
Number of crushing days	-	-	256	-	-	279	239	224	177	-	-	261	-	-	268
TIME ACCOUNT															
Overall time efficiency %	66.47	76.32	71.39	78.19	80.36	79.27	65.56	79.15	88.66	88.01	84.90	86.47	87.70	69.16	78.38
Sched.stops% gross avail.time	4.83	5.26	5.05	4.03	3.82	3.92	2.65	4.33	5.52	3.04	2.90	2.97	3.72	7.56	5.65
Lack of cane % gross	19.88	13.85	16.86	10.59	11.27	10.93	21.34	4.17	0.24	0.14	2.47	1.29	0.81	9.50	5.18
Other stops % gross	8.71	4.45	6.58	6.31	3.91	5.11	10.46	12.10	5.47	8.78	9.71	9.24	7.48	13.24	10.38
Foreign mat. % gross	0.11	0.12	0.11	0.88	0.64	0.76	0.00	0.25	0.10	0.03	0.02	0.02	0.28	0.53	0.41
Lost time % avail.crush.time	11.59	5.51	8.44	7.47	4.64	6.06	13.76	13.26	5.81	9.07	10.26	9.66	7.86	16.07	11.69
Force majeure stops (hours)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
THROUGHPUTS PER CRUSHING HOUR															
Tons cane	140.71	138.97	279.56	154.73	135.54	290.02	304.74	243.18	179.70	215.80	220.50	436.16	288.22	178.37	478.99
Tons fibre	20.28	20.66	40.97	22.36	18.79	41.10	37.02	36.27	26.70	32.55	33.22	65.76	41.01	24.50	67.37
Tons brix in mixed juice	22.29	22.05	44.32	23.03	20.28	43.28	49.00	30.17	30.17	34.08	35.04	69.09	45.50	28.18	75.63
Tons pol in mixed juice	19.51	19.33	38.84	19.72	17.31	37.03	42.59	30.93	26.28	29.32	30.18	59.50	39.35	24.39	63.74
Tons non-pol. in mixed juice	2.78	2.72	5.49	3.32	2.97	6.29	6.41	5.26	3.89	4.76	4.86	9.61	6.14	3.78	10.20
Tons of sugar produced	-	-	34.98	-	-	33.10	39.84	26.19	22.84	-	-	53.29	-	-	59.42
COMPOSITION OF CANE CRUSHED															
Pol % cane	14.24	14.17	14.20	13.07	13.16	13.11	14.36	13.31	14.91	14.04	14.19	14.12	13.98	14.16	14.04
Fibre % cane	14.91	14.98	14.95	14.82	14.86	14.84	13.14	15.06	14.86	15.32	15.31	15.32	14.45	14.27	14.39
Brix % cane	16.62	16.45	16.53	15.49	15.66	15.57	16.82	15.80	17.31	16.62	16.88	16.75	16.63	16.81	16.69
Ash % cane	-	-	-	2.10	2.12	2.11	0.98	0.98	-	0.53	0.53	0.53	-	-	-
ERC % cane	12.39	12.38	12.38	11.23	11.28	11.25	12.50	11.42	13.03	12.10	12.18	12.14	12.01	12.18	12.07
ERC % pol in cane	87.05	87.37	87.22	85.93	85.69	85.82	87.06	85.81	87.45	86.12	85.82	85.98	85.89	86.04	85.94
EXTRACTION															
Extraction (pol based)	97.39	98.18	97.81	97.50	97.02	97.27	97.36	95.58	98.10	96.75	96.44	96.60	97.63	96.61	97.29
Corrected reduced extraction	97.02	97.99	97.54	97.29	96.62	96.98	96.32	95.32	97.84	96.49	96.13	96.31	97.27	95.91	96.83
Imbibition % cane	50.19	53.29	51.84	58.05	51.45	54.93	39.58	41.60	44.56	48.33	50.68	49.48	52.13	49.72	51.34
Imbibition % fibre	348	359	354	402	371	388	326	279	300	320	336	328	366	362	365
Preparation index	90	90	90	92	92	92	90	91	100.54	99.27	100.31	99.78	92	92	92
Pol factor	99.06	98.01	98.50	98.82	99.51	99.14	98.21	-	100.54	100.15	101.72	100.92	-	-	-
Brix factor	102.01	100.63	101.27	100.93	102.04	101.45	99.92	-	102.23	100.15	101.72	100.92	-	-	-
RECOVERIES															
Boiling house recovery (pol)	-	-	89.29	-	-	88.76	92.38	84.03	86.60	-	-	88.72	-	-	89.74
Overall recovery (pol)	-	-	87.34	-	-	86.34	89.93	80.32	84.96	-	-	85.70	-	-	87.30
Ton cane per ton sugar	-	-	7.99	-	-	8.76	7.65	9.28	7.87	-	-	8.18	-	-	8.06
Ton cane per ton 96 pol sugar	-	-	7.74	-	-	8.48	7.44	8.98	7.58	-	-	7.93	-	-	7.83
BALANCES															
Pol lost % pol in cane	-	-	2.19	-	-	2.73	2.64	4.42	1.90	-	-	3.40	-	-	2.71
- lost in bagasse (a)	-	-	0.18	-	-	0.15	0.22	0.08	0.39	-	-	0.04	-	-	0.19
- lost in filter cake (b)	-	-	7.12	-	-	8.51	7.45	12.56	7.63	-	-	7.63	-	-	7.44
- lost in final molasses (c)	-	-	3.18	-	-	2.27	-0.25	2.62	-	-	-	3.23	-	-	2.36
- undetermined losses (d)	-	-	10.47	-	-	10.94	7.42	15.26	-	-	-	10.89	-	-	9.99
Boiling house losses (b+c+d)	-	-	12.66	-	-	13.66	10.07	19.68	-	-	-	14.30	-	-	12.70
Sum of all losses (a+b+c+d)	-	-	1.01	-	-	0.95	0.97	0.97	-	-	-	1.01	-	-	1.02
Non pol ratio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Cane diffuser

**TABLE C1
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLLASSES
SOUTH AFRICAN MILLS (SEASON 1997 - 1998)**

SYMBOLS OF FACTORIES	ML *	KM *	PG *	UF *	EN **	FX-A *	FX-B *	FX-AVE	AK *	DL	MS-A *	MS-B *	MS-AVE
FINAL BAGASSE													
Pol % bagasse	0.91	0.86	1.03	1.20	1.40	0.61	0.63	0.62	0.75	1.10	0.77	0.72	0.75
Moisture % bagasse	53.53	45.32	48.27	50.59	50.57	51.68	52.37	52.00	50.12	52.62	55.46	55.99	55.77
Fibre % bagasse	44.77	52.84	49.86	47.21	46.92	46.80	46.09	46.46	48.36	45.09	42.91	42.45	42.64
Bagasse % cane	32.71	29.71	29.88	30.34	28.58	33.81	34.22	34.00	31.47	32.57	34.60	35.07	34.88
Ash % bagasse	4.46	4.57	5.54	4.82	2.44	-	-	4.46	3.21	2.78	-	-	3.04
LCV in kJ per kg bagasse ##	6270	7947	7144	6794	7254	-	-	6591	7228	6768	-	-	6086
MIXED JUICE													
Mixed juice % cane	119.75	116.96	111.15	121.75	117.82	119.81	121.74	120.72	123.41	112.54	114.38	117.32	116.10
Brix % mixed juice	12.97	13.04	12.98	11.69	12.22	11.98	11.69	11.84	11.63	12.24	12.02	11.69	11.83
Sucrose purity	87.25	85.58	85.16	85.01	88.50	85.10	84.99	85.05	86.62	86.94	84.92	84.65	84.76
Apparent purity	86.37	84.43	84.23	83.97	87.81	84.37	84.18	84.28	86.08	86.26	84.06	83.80	83.91
Purity difference(MJ - DAC)	-0.12	0.53	-0.13	-0.15	0.56	-0.44	-0.50	-0.47	0.50	1.14	0.60	0.48	0.53
(Gluc. + fruct.)/suc. ratio	4.30	5.18	5.56	5.20	3.70	-	-	5.10	4.04	4.67	-	-	5.21
Suspended solids % mixed juice	0.27	0.03	0.08	0.63	0.86	0.08	0.08	0.08	0.37	0.91	0.23	0.24	0.24
Pol/sucrose ratio	0.9899	0.9867	0.9892	0.9878	0.9921	0.9914	0.9904	0.9910	0.9937	0.9922	0.9899	0.9900	0.9899
CLARIFIED JUICE													
Brix % clarified juice	12.76	12.82	12.72	11.57	12.51	-	-	11.18	11.47	11.95	-	-	11.89
Apparent purity	85.46	83.93	84.79	84.44	86.47	-	-	82.98	84.66	85.98	-	-	82.67
Purity difference(CJ - MJ)	-0.91	-0.50	0.56	0.47	-1.34	-	-	-1.30	-1.42	-0.28	-	-	-1.24
Average pH	7.2	7.0	6.9	7.2	7.1	-	-	7.0	7.1	7.0	-	-	6.9
FILTER CAKE													
Pol % filter cake	2.11	1.87	0.60	1.16	1.14	-	-	1.01	0.61	1.93	-	-	1.44
Moisture % filter cake	70.71	69.38	58.31	67.50	69.89	-	-	73.31	75.35	70.72	-	-	74.91
Filter cake % cane	3.96	0.36	1.05	5.00	3.44	-	-	2.50	0.65	5.65	-	-	1.93
Filter wash index	101.7	101.7	102.1	101.1	97.7	-	-	105.9	101.4	102.4	-	-	99.5
Purity diff.(CJ - filtrate)	1.71	5.42	1.57	1.50	0.51	-	-	1.22	1.70	1.49	-	-	3.70
SYRUP													
Brix % syrup	67.12	64.74	61.87	62.73	63.47	-	-	63.65	65.58	60.41	-	-	64.43
Apparent purity	85.58	83.99	84.43	84.65	87.02	-	-	83.58	85.65	86.59	-	-	83.89
Purity difference(Syrup - MJ)	-0.79	-0.44	0.20	0.68	-0.79	-	-	-0.70	-0.43	0.33	-	-	-0.02
Average pH	6.0	5.9	6.2	6.3	6.1	-	-	6.0	6.1	6.4	-	-	6.1
FINAL MOLLASSES													
Refracto brix	82.59	86.00	83.22	82.04	80.74	-	-	82.73	88.22	88.03	-	-	83.99
Pol/refracto brix purity	32.51	32.05	36.55	37.30	35.83	-	-	34.45	33.04	33.74	-	-	33.21
Suc/refracto brix purity	35.12	37.48	39.01	39.47	37.54	-	-	37.19	35.30	36.55	-	-	36.66
Sulphated ash %	15.24	16.64	13.74	14.24	13.91	-	-	14.19	15.91	16.30	-	-	14.11
(Gluc. + fruct.)/ash ratio	0.93	0.79	0.90	0.83	0.81	-	-	0.88	0.74	0.81	-	-	1.03
Fructose %	7.66	8.02	6.92	6.61	6.46	-	-	7.18	6.98	7.51	-	-	8.20
Glucose %	6.45	5.08	5.42	5.25	4.87	-	-	5.26	4.87	5.70	-	-	6.38
TPD based on molasses (made)	4.5	2.7	7.6	6.1	6.2	-	-	5.4	2.8	3.1	-	-	4.9
TPD based on mixed juice	5.0	4.5	9.7	8.3	8.4	-	-	6.7	4.5	5.4	-	-	5.6
Final mol at 85 brix % cane	3.53	3.89	4.24	4.00	2.99	-	-	4.15	3.72	3.23	-	-	3.70
Pol/sucrose ratio	0.9255	0.8550	0.9370	0.9452	0.9545	-	-	0.9264	0.9361	0.9232	-	-	0.9059

* Cane diffuser

** Bagasse diffuser

LCV = 18309 - 31,14 Bx % bagasse - 207,63 moisture % bagasse - 196,05 ash % bagasse

TABLE C1 (continued)
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SOUTH AFRICAN MILLS (SEASON 1997 - 1998)

SYMBOLS OF FACTORIES	GD **	GH-A *	GH-B	GH-AVE	NB	UC *	ES *	SZ-A *	SZ-B *	SZ-AVE	UK *	INDUSTRY
FINAL BAGASSE												
Pol % bagasse	1.23	0.68	0.75	0.73	1.22	1.37	1.08	0.78	0.78	0.78	0.81	0.90
Moisture % bagasse	53.34	51.21	49.82	50.29	50.46	53.83	51.89	47.07	48.27	47.68	51.02	51.12
Fibre % bagasse	44.20	47.37	48.60	48.19	47.35	44.02	46.22	51.21	50.01	50.60	47.21	47.08
Bagasse % cane	34.07	32.92	29.97	30.90	28.65	30.05	32.89	31.05	31.46	31.26	31.99	31.78
Ash % bagasse	-	-	-	-	3.62	2.86	6.96	-	-	5.54	4.69	3.96
LCV in kJ per kg bagasse ##	-	-	-	-	7055	6507	6113	-	-	7271	6742	6793
MIXED JUICE												
Mixed juice % cane	116.08	115.60	101.56	106.01	108.77	107.68	126.29	125.51	129.82	127.68	126.41	118.14
Brix % mixed juice	11.77	11.79	13.15	12.68	13.35	13.58	11.58	11.15	10.83	10.99	11.30	12.12
Sucrose purity	84.55	85.14	86.34	85.96	88.10	88.62	87.81	85.81	85.42	85.61	86.10	86.15
Apparent purity	83.63	84.33	85.33	85.01	87.21	87.87	87.24	85.07	84.82	84.94	85.38	85.34
Purity difference(MJ - DAC)	1.14	0.01	0.96	0.65	-0.32	-0.12	-0.02	0.57	0.30	0.43	0.38	0.21
(Gluc. + fruct.)/suc. ratio	5.41	-	-	5.11	4.23	3.88	3.66	-	-	4.89	4.29	4.72
Suspended solids % mixed juice	0.23	0.16	0.85	0.61	1.15	0.12	0.43	0.14	0.14	0.14	0.23	0.35
Pol/sucrose ratio	0.9891	0.9905	0.9883	0.9890	0.9899	0.9915	0.9935	0.9913	0.9930	0.9922	0.9917	0.9906
CLARIFIED JUICE												
Brix % clarified juice	11.14	-	-	12.70	13.46	14.01	11.13	-	-	10.38	11.05	11.93
Apparent purity	84.70	-	-	84.14	87.25	87.03	86.90	-	-	84.89	84.90	84.74
Purity difference(CJ - MJ)	1.07	-	-	-0.87	0.04	-0.84	-0.34	-	-	-0.05	-0.48	-0.60
Average pH	7.0	-	-	7.1	7.1	7.0	7.0	-	-	7.0	6.9	7.0
FILTER CAKE												
Pol % filter cake	2.15	-	-	0.57	0.88	1.42	1.47	-	-	0.76	0.84	1.26
Moisture % filter cake	-	-	-	67.14	74.49	72.89	71.61	-	-	72.48	70.61	71.19
Filter cake % cane	1.80	-	-	2.91	6.47	0.80	0.99	-	-	1.00	1.00	2.44
Filter wash index	105.6	-	-	99.9	99.2	96.9	104.0	-	-	105.9	102.3	101.6
Purity diff.(CJ - filtrate)	4.22	-	-	0.58	0.45	1.60	2.26	-	-	0.92	0.82	1.10
SYRUP												
Brix % syrup	62.66	-	-	65.70	69.52	66.38	59.84	-	-	63.66	67.26	64.42
Apparent purity	85.14	-	-	84.31	87.52	88.34	87.06	-	-	85.07	85.27	85.17
Purity difference(Syrup - MJ)	1.51	-	-	-0.70	0.31	0.47	-0.18	-	-	0.13	-0.11	-0.17
Average pH	6.2	-	-	6.0	6.1	6.2	6.2	-	-	6.0	6.1	6.1
FINAL MOLASSES												
Refracto brix	78.07	-	-	81.31	83.05	78.88	79.52	-	-	80.56	80.79	82.91
Pol/refracto brix purity	35.99	-	-	33.71	36.57	33.19	39.89	-	-	35.19	34.40	34.61
Suc/refracto brix purity	39.03	-	-	36.52	39.31	38.26	41.82	-	-	38.10	36.92	37.53
Sulphated ash %	14.46	-	-	13.96	12.26	12.98	12.31	-	-	13.24	13.63	14.22
(Gluc. + fruct.)/ash ratio	0.76	-	-	0.88	1.06	0.82	0.80	-	-	0.93	0.88	0.88
Fructose %	6.57	-	-	7.23	7.61	7.15	5.99	-	-	7.18	7.00	7.25
Glucose %	4.40	-	-	5.10	5.41	3.47	3.87	-	-	5.19	5.03	5.28
TPD based on molasses (made)	5.9	-	-	4.3	7.8	4.4	8.2	-	-	5.1	4.6	5.1
TPD based on mixed juice	8.4	-	-	6.4	9.5	7.3	10.1	-	-	6.7	6.1	6.7
Final mol at 85 brix % cane	3.86	-	-	3.74	3.49	2.95	3.56	-	-	3.75	3.58	3.72
Pol/sucrose ratio	0.9220	-	-	0.9231	0.9303	0.8674	0.9537	-	-	0.9237	0.9317	0.9222

* Cane diffuser

** Bagasse diffuser

LCV = 18309 - 31,14 Bx % bagasse - 207,63 moisture % bagasse - 196,05 ash % bagasse

TABLE C2
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SWAZILAND, MALAWI AND ZIMBABWE MILLS (SEASON 1997 - 1998)

SYMBOLS OF FACTORIES	MH-A *	MH-B	MH-AVE	UR-A *	UR-B	UR-AVE	SM	NH *	DW *	HV-A *	HV-B *	HV-AVE	TR-A *	TR-B	TR-AVE
FINAL BAGASSE															
Pol % bagasse	1.23	0.83	1.01	1.05	1.37	1.20	1.52	1.76	1.00	1.50	1.62	1.56	1.08	1.59	1.25
Moisture % bagasse	49.72	50.41	50.09	51.44	48.92	50.30	48.43	52.48	45.79	47.83	48.54	48.19	50.79	51.14	50.90
Fibre % bagasse	47.71	47.73	47.72	46.60	48.63	47.52	48.60	44.75	52.35	49.46	48.29	48.88	46.44	45.50	46.13
Bagasse % cane	30.22	31.14	30.71	31.01	28.50	29.82	24.99	33.33	28.39	30.50	31.20	30.84	30.64	30.18	30.49
Ash % bagasse	-	-	-	-	-	-	3.62	-	-	-	-	1.73	-	-	-
LCV in kJ per kg bagasse ##	-	-	-	-	-	-	7453	-	-	-	-	7875	-	-	-
MIXED JUICE															
Mixed juice % cane	119.97	122.15	121.13	127.05	122.95	125.11	114.59	108.27	116.17	117.83	119.48	118.64	121.50	119.54	120.85
Brix % mixed juice	13.20	12.99	13.09	11.72	12.17	11.93	14.03	13.75	14.45	13.40	13.30	13.35	12.99	13.21	13.07
Apparent purity	87.53	87.67	87.60	85.61	85.34	85.48	86.92	85.46	87.11	86.04	86.13	86.09	86.49	86.57	86.52
Purity difference(MJ - DAC)	-0.68	-0.77	-0.73	-0.57	-0.84	-0.69	0.08	0.00	-0.43	0.77	0.86	0.82	0.24	0.00	0.27
Suspended solids % mixed juice	0.41	0.09	0.24	0.29	0.81	0.53	0.86	0.13	-	0.20	0.21	0.20	0.18	0.45	0.27
CLARIFIED JUICE															
Brix % clarified juice	-	-	13.09	-	-	12.27	13.69	14.08	14.10	-	-	13.33	-	-	12.87
Apparent purity	-	-	88.38	-	-	84.43	86.41	85.63	87.66	-	-	85.37	-	-	85.82
Purity difference(CJ - MJ)	-	-	0.78	-	-	-1.05	-0.51	0.17	0.55	-	-	-0.72	-	-	-0.70
Average pH	-	-	7.1	-	-	7.1	7.0	7.2	6.8	-	-	6.5	-	-	6.8
FILTER CAKE															
Pol % filter cake	-	-	1.12	-	-	0.79	0.88	2.26	2.88	-	-	1.48	-	-	1.04
Moisture % filter cake	-	-	68.72	-	-	-	70.93	70.52	72.83	-	-	75.20	-	-	-
Filter cake % cane	-	-	2.28	-	-	2.48	3.58	0.48	2.02	-	-	0.35	-	-	2.52
Filter wash index	-	-	100.0	-	-	97.2	102.5	97.6	102.5	-	-	100.2	-	-	101.5
Purity diff.(CJ - filtrate)	-	-	0.93	-	-	-	2.13	5.88	-	-	-	3.25	-	-	1.32
SYRUP															
Brix % syrup	-	-	64.51	-	-	59.73	66.68	68.51	61.47	-	-	40.36	-	-	65.99
Apparent purity	-	-	87.97	-	-	85.48	88.07	86.10	88.22	-	-	85.82	-	-	85.99
Purity difference(Syrup - MJ)	-	-	0.37	-	-	0.00	1.15	0.64	1.11	-	-	-0.27	-	-	-0.53
Average pH	-	-	6.1	-	-	6.1	6.1	6.6	6.4	-	-	6.2	-	-	6.2
FINAL MOLASSES															
Refracto brix	-	-	82.24	-	-	82.14	84.77	81.34	-	-	-	86.22	-	-	84.23
Pol/refracto brix purity	-	-	34.67	-	-	35.92	35.74	45.08	-	-	-	33.61	-	-	33.57
Purity difference(true-target)	-	-	-	-	-	4.02	-	8.85	-	-	-	9.70	-	-	-
Reducing sugars % #	-	-	18.94	-	-	19.12	15.59	10.51	-	-	-	20.42	-	-	-
Sulphated ash %	-	-	-	-	-	13.53	14.56	15.69	-	-	-	14.31	-	-	14.45
Reducing sugars/ash ratio	-	-	-	-	-	1.41	1.07	0.67	-	-	-	1.43	-	-	-
Final mol at 85 brix % cane	-	-	3.43	-	-	3.66	3.52	4.36	-	-	-	3.77	-	-	3.66

* Cane diffuser # Reducing sugars determined by Lane & Eynon method.

LCV = 18309 - 31,14 Bx % bagasse - 207,63 moisture % bagasse - 196,05 ash % bagasse

**TABLE D1
MASSECUITES, EXHAUSTIONS, CLARIFYING AGENTS AND ADDITIONAL FUELS.
SOUTH AFRICAN MILLS (SEASON 1997-1998)**

SYMBOLS OF FACTORIES	ML	KM	PG	UF	EN	FX	AK	DL	MS	GD	GH	NB	UC	ES	SZ	UK	INDUSTRY
A - MASSECUITE																	
m3 per ton brix in mixed juice	1.24	1.08	1.23	1.09	1.03	1.00	0.96	1.03	1.00	0.92	1.10	1.35	1.03	1.02	1.04	1.00	1.08
Ref brix of massecuite	94.47	93.22	91.18	92.02	90.77	93.11	93.10	93.12	92.53	92.71	92.70	92.22	91.57	92.18	92.78	92.52	92.70
Purity of massecuite	85.78	83.08	85.38	86.40	88.12	85.20	85.24	85.82	84.14	84.07	85.78	88.18	86.93	86.43	84.97	84.40	85.51
Purity of A - molasses	70.38	64.85	71.18	70.98	72.84	68.99	64.83	68.96	65.44	66.13	70.57	72.79	71.86	69.88	67.54	66.29	68.82
Purity drop	15.40	18.23	14.20	15.42	15.28	16.21	20.41	16.86	18.70	17.94	15.21	15.39	15.07	16.55	17.43	18.11	16.69
Exhaustion	60.61	62.43	57.71	61.50	63.84	61.35	68.08	63.29	64.31	63.00	60.25	64.14	61.61	63.57	63.20	63.65	62.58
Pty of A-mass - purity syrup	0.20	-0.91	0.95	1.75	1.10	1.62	-0.41	-0.77	0.25	-1.07	1.47	0.66	-1.41	-0.63	-0.10	-0.87	0.33
Pty of remelt	85.20	82.90	84.23	85.75	88.30	88.88	83.58	84.02	84.18	85.81	86.72	85.81	86.37	82.96	83.70	81.80	84.96
B - MASSECUITE																	
m3 per ton brix in mixed juice	0.52	0.35	0.59	0.50	0.36	0.37	0.26	-	0.24	0.31	0.41	0.51	0.32	0.36	0.37	0.36	0.39
Ref brix of massecuite	96.61	95.99	93.52	94.78	92.32	95.36	95.25	94.69	93.81	94.96	94.43	94.54	94.60	94.08	93.72	94.02	94.71
Purity of massecuite	70.52	65.18	71.00	71.29	74.50	71.43	66.45	68.94	65.42	66.22	70.49	73.07	72.43	70.27	68.54	67.06	69.79
Purity of B - molasses	49.83	44.55	51.31	49.58	53.71	48.57	44.15	48.91	46.43	44.83	47.59	53.47	48.93	50.15	45.82	45.45	48.50
Purity drop	20.69	20.63	19.69	21.71	20.79	22.86	22.30	20.03	18.99	21.39	22.90	19.60	23.50	20.12	22.72	21.61	21.29
Exhaustion	58.48	57.08	56.96	60.40	60.29	62.23	60.09	56.87	54.19	58.55	61.99	57.65	63.53	57.44	61.18	59.07	59.23
C - MASSECUITE																	
m3 per ton brix in mixed juice	0.22	0.13	0.39	0.27	0.25	0.32	0.24	0.24	0.25	0.23	0.25	0.21	0.21	0.23	0.25	0.28	0.25
Ref brix of massecuite	98.38	97.56	96.16	97.21	94.47	97.30	97.21	96.59	96.69	96.98	96.58	96.42	97.14	96.27	95.76	96.57	96.79
Purity of massecuite	52.14	53.55	53.72	55.18	57.08	56.85	54.18	54.01	53.39	49.67	53.96	55.45	53.74	55.00	53.15	53.17	54.28
Purity of C - molasses	32.51	32.05	36.55	37.30	35.83	34.45	33.04	33.74	33.21	35.99	33.71	36.57	33.19	39.89	35.19	34.40	34.61
Crystal content	28.62	30.87	26.02	27.72	31.29	33.25	30.69	29.55	29.21	20.72	29.50	28.70	29.88	24.20	26.54	27.63	29.11
Exhaustion	55.79	59.09	50.37	51.67	58.02	60.11	58.27	56.64	56.58	43.02	56.61	53.68	57.24	45.71	52.14	53.82	55.42
TOTAL VOLUME ALL RAW MASSECUITES																	
m3 per ton brix in mixed juice	1.98	1.56	2.21	1.85	1.64	1.69	1.46	-	1.49	1.46	1.76	2.07	1.57	1.61	1.66	1.64	1.69
WHITE SUGAR MASSECUITES																	
Kg sugar per m3 massecuite	593	-	629	679	-	-	-	-	-	-	565	453	-	-	-	-	569
Tons limestone per 1000 tons white sugar	-	-	74.77	-	-	-	-	-	-	-	32.72	-	-	-	-	-	-
Tons coke/1000 tons white sugar	-	-	13.92	-	-	-	-	-	-	-	4.75	-	-	-	-	-	-
Tons phos acid/1000 tons white sugar	-	-	-	-	-	-	-	-	-	-	-	1.25	-	-	-	-	-
Tons sulphur/1000 tons white sugar	0.09	-	0.11	4.33	-	-	-	-	-	-	0.06	0.17	-	-	-	-	-
Phos. acid ppm mixed juice	-	-	-	-	-	-	2.58	-	-	-	-	3.71	44.39	19.53	2.52	-	-
Flocculant ppm mixed juice	1.21	1.25	4.02	3.09	2.43	4.85	2.22	2.87	4.00	10.90	3.87	6.42	3.92	7.98	4.67	-	3.70
Tons lime per 1000 tc	2.50	0.15	5.69	1.11	-	0.55	0.58	0.55	0.86	0.74	-	0.78	0.45	0.60	0.58	-	0.97
Enzyme ppm sugar	-	-	-	-	9.29	-	-	22.20	4.57	4.28	23.51	-	-	9.11	18.64	-	5.62
ADDITIONAL FUELS PER 1000 TC																	
Tons of coal	42.86	4.40	16.75	13.19	2.77	12.05	1.39	1.19	18.06	13.19	8.50	8.92	5.00	7.32	-	1.08	-
Tons of wood	-	0.35	0.06	-	0.24	0.06	0.05	0.17	0.02	2.91	-	0.13	0.41	0.70	-	-	-
Converted into bagasse **	171.43	18.03	67.09	52.74	11.38	48.26	5.62	4.98	72.25	56.26	34.00	35.84	20.48	30.12	-	4.34	-

** 1 TON COAL EQUIVALENT TO 4 TONS OF BAGASSE

1 TON FIREWOOD EQUIVALENT TO 1,2 TONS OF BAGASSE

**TABLE D2
MASSECUITES, EXHAUSTIONS, CLARIFYING AGENTS AND ADDITIONAL FUELS
SWAZILAND, MALAWI AND ZIMBABWE MILLS (SEASON 1997 - 1998)**

SYMBOLS OF FACTORIES	MH	UR	SM	NH	DW	HV	TR
A - MASSECUITE							
m3 per ton brix in mixed juice	1.24	1.16	0.99	1.39	1.22	1.03	0.96
Ref brix of massecuite	93.48	92.92	93.35	92.58	91.82	91.67	92.43
Purity of massecuite	88.09	83.99	86.88	86.12	90.12	87.32	85.34
Purity of A - molasses	71.14	72.17	70.52	73.83	77.49	68.00	68.43
Purity drop	16.95	11.82	16.36	12.29	12.63	19.32	16.91
Exhaustion	66.67	50.57	63.88	54.53	62.26	69.14	62.76
Purity of A-mass - pty syrup	0.12	-1.49	-1.19	0.02	1.90	1.50	-0.65
Purity of remelt	83.89	85.62	86.44	98.90	93.33	86.47	84.70
B - MASSECUITE							
m3 per ton brix in mixed juice	0.44	0.42	0.31	0.54	0.64	-	-
Ref brix of massecuite	94.21	94.45	97.16	94.29	92.84	-	-
Purity of massecuite	71.96	68.15	70.42	70.85	71.42	-	-
Purity of B - molasses	48.76	46.95	48.21	55.48	56.71	-	-
Purity drop	23.20	21.20	22.21	15.37	14.71	-	-
Exhaustion	62.92	58.64	60.90	48.73	47.58	-	-
C - MASSECUITE							
m3 per ton brix in mixed juice	0.25	0.21	0.22	-	-	-	-
Ref brix of massecuite	97.44	97.11	98.87	95.84	-	-	-
Purity of massecuite	53.57	51.88	56.16	61.58	-	-	-
Purity of C - molasses	34.67	35.92	35.74	45.08	-	33.61	33.57
Crystal content	28.19	24.19	31.41	28.80	-	-	-
Exhaustion	54.01	48.01	56.58	48.79	-	-	-
TOTAL VOLUME ALL RAW MASSECUITES							
m3 per ton brix in mixed juice	1.94	1.80	1.52	-	-	-	-
WHITE SUGAR MASSECUITES							
Kg sugar per m3 massecuite	565	632	-	486	528	-	-
Tons phos acid/1000 tons white sugar	-	-	-	1.41	-	-	-
Tons sulphur/1000 tons white sugar	0.19	0.06	-	0.24	0.17	-	-
Phos. acid ppm mixed juice	-	-	-	14.3	-	-	-
Flocculant ppm mixed juice	1.2	2.2	2.0	5.3	3.1	1.1	2.9
Tons lime per 1000 tc	0.8	1.1	0.8	1.2	1.3	0.5	0.4
Enzyme ppm sugar	-	-	-	-	-	-	-
ADDITIONAL FUELS PER 1000 TC							
Tons of coal	22.57	9.81	5.01	-	-	4.95	6.82
Tons of wood	-	-	-	0.19	0.16	0.05	-
Converted into bagasse **	90.28	39.25	20.05	0.23	0.19	19.87	27.29

** 1 TON COAL EQUIVALENT TO 4 TONS OF BAGASSE

1 TON FIREWOOD EQUIVALENT TO 1,2 TONS OF BAGASSE

TABLE E
COMPARATIVE MANUFACTURING DATA OF RECENT YEARS
(SOUTH AFRICAN MILLS)

Season	1997/98	1996/97	1995/96	1994/95	1993/94
Throughput and time efficiency					
Tons cane per hour	285.04	275.57	268.50	246.90	249.90
Tons fibre per hour	42.65	41.20	41.35	37.19	39.55
Time efficiency	76.64	76.48	75.45	78.76	76.77
Cane					
Sucrose % cane	12.62	12.60	11.87	12.54	12.53
Fibre % cane	15.38	15.36	15.84	15.49	16.23
Mixed juice					
Sucrose purity	86.15	85.38	83.60	83.66	83.14
(Gluc. + Fruct.)/ash in M.J.	1.14	1.24	1.29	1.26	1.03
Milling					
Imbibition % fibre	334	337	356	366	380
Extraction (sucrose based)	97.74	97.72	97.69	97.87	97.75
Pol % bagasse	0.90	0.90	0.83	0.83	0.83
Moisture % bagasse	51.12	51.40	51.70	51.27	51.52
Bagasse % cane	31.78	31.96	33.01	32.05	33.88
LCV bagasse kJ/kg	6793	6798	6696	6878	6952
Avail. kJ in bag./kg brix in M.J.	15073	15069	15941	15025	15985
Recoveries					
Boiling house recovery (sucrose based)	88.09	87.82	85.93	86.50	85.05
Overall recovery (sucrose based)	86.10	85.82	83.94	84.66	83.14
Tons cane per ton sugar	9.15	9.20	9.99	9.37	9.56
Filter cake					
Pol % filter cake	1.26	1.29	1.01	0.88	0.92
Filter cake % cane	2.44	2.48	2.59	3.18	3.35
Final molasses					
Brix % final molasses	82.91	82.97	81.72	82.20	82.01
Sucrose/refracto brix purity	37.53	37.28	37.34	36.87	38.21
Tons fin.molasses at 85 bx % cane	3.72	3.91	4.25	4.39	4.66
Average sugar polarisation	99.50	99.50	99.47	99.44	99.58
Sucrose lost % sucrose in cane					
Lost in bagasse	2.26	2.28	2.31	2.13	2.25
Lost in filter cake	0.24	0.25	0.22	0.22	0.25
Lost in final molasses	9.40	9.84	11.37	10.97	12.07
Undetermined losses	2.00	1.81	2.15	2.02	2.29
Lost in boiling house	11.64	11.90	13.74	13.21	14.61
Total losses	13.90	14.18	16.06	15.34	16.86
M3 massecuite per ton Bx in M.J.					
A - massecuite	1.08	1.04	1.00	0.98	1.00
B - massecuite	0.39	0.36	0.34	0.36	0.36
C - massecuite	0.25	0.26	0.29	0.29	0.31
Total	1.69	1.64	1.63	1.63	1.67
Exhaustion of massecuites					
A - massecuite	62.58	63.22	63.20	64.79	63.79
B - massecuite	59.23	60.98	58.62	59.87	58.38
C - massecuite	55.42	55.93	55.77	56.40	52.89
Brix of syrup	64.42	64.74	64.36	64.93	64.47

**TABLE F
AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS
FOR SOUTH AFRICAN MILLS (SEASON 1997 - 1998)**

End of month period		3 MAY 1997	31 MAY 1997	28 JUN 1997	2 AUG 1997	30 AUG 1997	27 SEP 1997	1 NOV 1997	29 NOV 1997	27 DEC 1997	31 JAN 1998	28 FEB 1998
Tons of sugar made and estimated	Month To-date	183675 183675	266779 450454	280708 731162	174529 905691	315596 1221287	286490 1507777	346595 1854372	230082 2084454	195983 2280437	139977 2420414	0 2420414
Tons cane crushed	Month To-date	1854892 1854892	2509005 4363897	2545666 6909563	1552515 8462078	2686567 11148645	2499765 13648410	3014300 16662710	2073289 18735999	1922937 20658936	1495845 22154781	0 22154781
Tons cane crushed per hour actual crushing	Month To-date	247.42 247.42	293.36 271.90	297.27 280.73	278.46 280.31	294.99 283.71	295.29 285.77	285.11 285.65	281.77 285.21	281.52 284.87	287.47 285.04	0.00 285.04
Sucrose % cane	Month To-date	11.73 11.73	12.16 11.98	12.59 12.20	12.99 12.35	13.36 12.59	13.09 12.68	13.20 12.78	12.81 12.78	12.02 12.71	11.44 12.62	0.00 12.62
Fibre % cane	Month To-date	15.16 15.16	14.51 14.79	14.44 14.66	14.76 14.68	14.89 14.73	15.65 14.90	15.91 15.08	16.06 15.19	16.44 15.30	16.39 15.38	0.00 15.38
Tons cane per ton sugar	Month To-date	10.10 10.10	9.40 9.69	9.07 9.45	8.90 9.34	8.51 9.13	8.73 9.05	8.70 8.99	9.01 8.99	9.81 9.06	10.69 9.15	0.00 9.15
Extraction (sucrose based)	Month To-date	97.29 97.29	97.85 97.62	97.87 97.71	97.85 97.74	97.87 97.77	97.76 97.77	97.76 97.77	97.73 97.76	97.51 97.74	97.70 97.74	0.00 97.74
Imbibition % fibre	Month To-date	339 339	347 344	337 341	336 340	335 339	320 335	332 335	334 335	323 333	336 334	0 334
Pol % bagasse	Month To-date	1.01 1.01	0.87 0.93	0.90 0.92	0.91 0.91	0.93 0.92	0.92 0.92	0.90 0.92	0.88 0.91	0.88 0.91	0.77 0.90	0.00 0.90
Moisture % bagasse	Month To-date	51.56 51.56	51.46 51.50	51.40 51.47	51.23 51.42	50.81 51.28	50.61 51.15	50.86 51.09	50.94 51.08	51.32 51.10	51.34 51.12	0.00 51.12
Boiling house recovery (sucrose based)	Month To-date	86.37 86.37	88.86 87.83	89.07 88.30	87.98 88.24	89.37 88.53	89.09 88.64	88.65 88.64	88.20 88.59	86.53 88.41	83.30 88.09	0.00 88.09
Overall recovery (sucrose based)	Month To-date	84.03 84.03	86.95 85.73	87.17 86.28	86.09 86.24	87.47 86.56	87.10 86.66	86.66 86.66	86.20 86.61	84.38 86.41	81.39 86.10	0.00 86.10
Mixed juice sucrose purity	Month To-date	84.81 84.81	85.60 85.27	85.91 85.51	86.50 85.70	87.78 86.22	87.36 86.44	86.75 86.49	86.06 86.45	85.12 86.33	83.48 86.15	0.00 86.15
Pol/suc. ratio in mixed juice	Month To-date	0.9859 0.9859	0.9854 0.9856	0.9881 0.9866	0.9896 0.9872	0.9903 0.9880	0.9956 0.9894	0.9959 0.9906	0.9952 0.9911	0.9893 0.9910	0.9852 0.9906	0.0000 0.9906
Sucrose/refracto brix purity in final molasses	Month To-date	37.33 37.33	35.06 36.03	35.69 35.91	38.22 36.34	38.09 36.75	38.83 37.11	37.66 37.21	37.85 37.29	38.25 37.38	39.39 37.53	0.00 37.53
Sucrose lost in final molasses % sucrose in cane	Month To-date	10.23 10.23	9.12 9.58	8.81 9.29	9.55 9.34	8.50 9.13	8.83 9.07	8.99 9.06	9.60 9.12	10.24 9.22	12.16 9.40	0.00 9.40
Undetermined lost sucrose % sucrose in cane	Month To-date	2.77 2.77	1.56 2.07	1.67 1.92	1.93 1.92	1.67 1.86	1.61 1.81	1.86 1.82	1.67 1.80	2.57 1.87	3.92 2.00	0.00 2.00
Pol/sucrose ratio FM	Month To-date	0.8805 0.8805	0.8673 0.8731	0.8686 0.8715	0.9021 0.8775	0.9411 0.8927	0.9627 0.9056	0.9582 0.9153	0.9508 0.9195	0.9366 0.9211	0.9347 0.9222	0.0000 0.9222

**TABLE G
CANE VARIETIES AND RAINFALL (SEASON 1997 - 1998)
PERCENTAGE BY WEIGHT**

MILL	N 11	N 12	N 13	N 14	N 16	N 17	N 18	N 19	N 21	N 22	N 23	N 24	N 25	N 52/219	N 55/805	NCo 293	NCo 310	NCo 376	NCo 382	MIXED VARIETY	UNKNOWN AND OTHER	% BURNT	* RAINFALL mm
ML	-	-	-	42.6	-	1.0	-	34.1	-	7.1	0.4	9.7	2.4	-	-	-	-	-	-	0.2	2.5	100.0	328
KM	-	-	-	52.3	-	0.4	-	32.3	-	3.9	0.1	1.6	1.8	-	-	-	-	-	-	0.1	7.6	100.0	652
PG	-	-	-	34.8	-	1.9	-	39.3	-	3.2	1.5	1.4	7.2	-	-	-	-	-	-	0.7	10.0	100.0	1045
UF	-	4.1	-	7.6	-	16.4	0.6	26.7	1.7	1.5	-	-	-	0.1	-	-	1.3	28.1	-	12.0	0.1	98.5	694
EN	0.1	42.3	0.4	0.2	13.7	0.5	-	-	-	-	-	-	-	-	-	1.1	-	13.1	-	-	28.6	98.4	763
FX	-	3.8	-	3.4	-	5.7	0.3	10.4	0.4	0.4	-	-	-	-	0.1	-	-	29.7	-	2.0	43.6	84.4	971
AK	-	20.9	0.1	1.3	1.9	3.5	0.1	4.1	0.5	-	-	-	-	-	0.1	-	0.1	23.7	0.1	6.4	37.1	91.4	611
DL	-	22.1	0.6	2.1	11.3	3.2	0.3	1.6	0.2	-	-	-	-	-	0.1	-	0.1	55.6	-	2.9	0.1	59.5	695
MS	0.1	30.8	0.1	0.8	12.8	2.1	0.1	1.0	0.5	-	-	-	-	-	0.2	0.1	-	31.1	-	6.2	14.1	78.6	718
GD	0.1	8.6	-	5.6	8.5	3.0	-	2.8	-	-	-	-	-	-	-	-	-	66.9	-	4.4	-	82.0	608
GH	0.1	25.9	0.2	2.0	6.9	2.7	0.2	0.8	1.2	-	-	-	-	-	0.1	0.1	-	24.0	-	1.2	34.6	79.8	775
NB	0.9	71.5	-	0.1	18.4	-	-	-	2	-	-	-	-	-	-	1.0	-	0.5	0.1	0.1	5.4	99.9	572
UC	1.0	68.8	-	0.1	26.7	0.1	-	-	2	-	-	-	-	-	-	0.4	-	0.6	-	-	0.3	74.5	833
ES	-	68.1	0.1	0.2	7.6	0.2	-	0.1	0.3	-	-	-	-	-	-	0.5	-	1.5	-	0.7	20.7	88.9	750
SZ	-	26.9	-	0.4	4.1	0.1	-	-	0.3	-	-	-	-	-	-	-	0.8	10.2	-	6.4	50.5	81.5	1528
UK	-	29.4	-	2.1	3.8	0.2	-	-	2.7	-	-	-	-	-	-	0.2	0.1	13.5	0.1	1.6	46.3	87.6	1185
Average SA Mills	0.1	23.7	0.1	10.0	6.0	2.7	0.1	10.2	0.7	1.1	0.1	0.9	0.7	-	0.1	0.1	0.2	17.8	-	3.1	22.2	87.4	
MH	-	-	-	13.5	-	1.3	-	18.6	-	0.5	0.4	0.4	0.7	-	-	-	-	64.7	-	0.1	-	-	551
UR	-	-	-	11.4	-	0.1	-	9.9	-	-	-	-	-	-	-	-	-	64.1	-	3.6	11.0	-	634
SM	-	-	-	21.6	-	0.6	-	5.5	-	-	-	-	-	-	-	-	-	70.4	-	1.1	0.8	-	1448
NH	-	-	-	84.5	-	0.4	-	3.1	0.1	-	-	-	-	-	-	-	-	-	-	5.2	6.7	-	118
DW	-	-	-	36.2	-	1.7	-	-	-	-	-	-	-	-	-	-	-	20.1	-	2.2	39.6	-	55
HV	-	-	-	7.4	-	-	-	-	-	-	-	-	-	0.2	-	-	-	88.2	-	0.2	4.2	-	121
TR	-	-	-	15.5	-	-	-	-	-	-	-	-	-	-	-	-	-	78.5	-	0.8	5.2	-	232

* Rainfall during the crushing season

TABLE H
 TRANSPORT SUMMARY SOUTH AFRICAN MILLS (SEASON 1997 - 1998)
 PERCENT OF CANE TRANSPORTED

MILLS	ML	KM	PG	UF	EN	FX	AK	DL	MS	GD	GH	NB	UC	ES	SZ	UK	AVERAGE
SOUTH AFRICAN RAILWAYS	-	-	-	-	-	22.1	-	-	-	-	-	-	-	-	-	-	2.6
TRAMS	-	-	-	54.6	-	-	-	-	-	-	-	-	-	-	-	-	3.1
UNKNOWN	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-	0.2
ARTICULATED TRUCK DRIVEN VEHICLES																	
- Interlink	-	-	4.6	24.0	33.4	54.8	68.7	25.9	80.8	-	50.6	27.0	7.7	74.6	80.0	79.2	44.5
- Tri-Axle	-	-	-	-	-	-	-	3.0	-	3.5	26.0	0.4	0.5	2.7	-	-	2.1
- Hilo	95.6	100.0	25.5	12.3	-	3.6	1.3	19.2	0.6	51.9	18.3	9.9	8.7	3.0	10.9	4.5	21.5
RIGID CHASSIS VEHICLES																	
- Truck	-	-	-	-	-	-	-	-	-	0.3	-	14.5	19.1	-	7.1	11.4	2.9
- Lorry	-	-	-	-	6.8	-	-	2.3	0.1	8.2	0.1	7.3	24.2	-	1.8	0.3	1.9
TRACTOR DRIVEN VEHICLES																	
- Hilo	-	-	9.7	1.4	-	-	7.6	25.8	1.8	9.4	-	21.0	8.9	14.3	-	0.7	5.3
- Rig	-	-	-	0.7	59.6	19.3	21.4	22.4	4.6	26.0	4.8	18.8	14.6	-	-	0.6	9.2
- Interlink	4.4	-	60.1	3.3	-	-	0.5	1.2	11.9	0.3	-	0.7	15.9	5.2	-	3.0	6.2

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

PERIOD (SEASON)	Percent Cane		Cane / Sugar Ratio		Extraction Pol based	Pol % fibre in Bagasse	Percent Bagasse		Imbibition Percent		Mixed Juice		Final Molasses Suc/brix Purity Chem.suc.	Boiling House Recovery Pol based	Overall Recovery Pol based
	Pol	Fibre	Tel Quel	96 Pol Sugar			Pol	Moisture	Cane	Fibre	Purity Pol based	Reducing Sugar/ Pol 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
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
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
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
1975	12.60	15.67	9.33	9.00	95.38	3.87	1.68	53.52	43.7	279	84.70	5.31	38.8	88.68	84.58
1976	12.43	15.52	9.41	9.08	95.48	3.79	1.66	53.20	41.7	281	84.47	5.58	38.2	88.99	84.97
1977	12.83	15.79	9.12	8.80	95.87	3.51	1.56	52.55	45.6	302	84.39	5.67	38.3	88.62	84.96
1978	12.64	15.22	9.07	8.77	96.63	2.95	1.35	51.59	45.4	314	85.36	5.27	38.0	89.58	86.55
1979	12.96	15.49	8.85	8.54	96.92	2.70	1.23	52.04	49.1	333	85.40	5.11	38.3	89.48	86.73
1980	13.34	15.95	8.73	8.42	96.89	2.73	1.24	52.10	52.2	344	84.80	5.25	38.7	88.17	85.42
1981 onwards data are sucrose based	Sucrose				Sucrose based						Sucrose based	(GL+FR)/ suc.ratio	Sucrose based	Sucrose based	Sucrose based
1981	12.30	16.13	9.50	9.18	97.02	2.38	1.10	51.57	52.4	341	85.67	6.94	37.1	87.75	85.14
1982	12.86	15.61	9.10	8.79	97.02	2.57	1.19	51.35	51.5	345	85.12	5.59	36.6	87.64	85.03
1983	12.33	16.15	9.74	9.40	97.02	2.37	1.08	52.68	55.0	356	84.20	5.69	38.2	85.37	82.83
1984	12.27	15.62	9.43	9.11	97.42	2.12	0.99	51.35	51.5	344	85.69	5.28	37.0	88.23	85.96
Average 1975 - 1984	12.66	15.71	9.23	8.91	96.57	2.90	1.31	52.20	48.8	324	84.98	5.57	37.9	88.25	85.22
1985	13.13	15.38	8.88	8.57	97.47	2.25	1.04	51.64	52.9	358	84.55	6.28	36.3	87.51	85.30
1986	12.80	15.24	9.08	8.76	97.66	2.03	0.95	51.27	54.3	368	85.44	5.44	36.7	87.70	85.65
1987	12.00	15.23	9.67	9.33	97.63	1.94	0.91	51.24	52.6	357	85.25	5.76	36.8	87.84	85.76
1988	12.61	15.44	9.16	8.83	97.60	2.04	0.96	50.92	53.0	355	85.70	5.43	36.8	88.33	86.21
1989	13.17	15.07	8.72	8.41	97.67	2.11	0.98	51.61	53.5	366	86.40	4.94	36.7	88.74	86.67
1990	12.91	15.14	8.92	8.60	97.75	1.98	0.92	51.62	54.1	368	86.23	5.00	37.0	88.50	86.51
1991	13.04	14.93	8.77	8.42	97.95	1.85	0.87	47.07	54.4	375	86.39	4.80	37.1	88.88	87.06
1992	13.82	15.40	8.57	8.23	97.81	1.79	0.93	51.92	58.1	387	83.61	6.49	37.4	85.92	84.05
1993	12.53	16.23	9.56	9.22	97.75	1.78	0.83	51.52	60.1	380	83.14	5.55	38.2	85.05	83.14
1994	12.54	15.49	9.37	8.99	97.87	1.77	0.83	51.27	55.1	366	83.66	6.14	36.9	86.50	84.66
Average 1985 - 1994	12.86	15.36	9.07	8.74	97.72	1.95	0.92	51.01	54.8	368	85.04	5.58	37.0	87.50	85.50
1995	11.73	15.84	9.99	9.64	97.69	1.78	0.83	51.70	54.9	356	83.60	6.09	37.3	85.93	83.94
1996	12.60	15.36	9.20	8.88	97.72	1.92	0.90	51.40	50.4	337	85.38	5.23	37.3	87.82	85.82
1997	12.62	15.38	9.15	8.83	97.74	1.91	0.90	51.12	49.9	334	86.15	4.72	37.5	88.09	86.10
Average 1995 - 1997	12.32	15.53	9.45	9.12	97.72	1.87	0.88	51.41	51.7	342	85.04	5.35	37.4	87.28	85.29

TABLE E
COMPARATIVE MANUFACTURING DATA OF RECENT YEARS
(SOUTH AFRICAN MILLS)

Season	1997/98	1996/97	1995/96	1994/95	1993/94
Throughput and time efficiency					
Tons cane per hour	285.04	275.57	268.50	246.90	249.90
Tons fibre per hour	42.65	41.20	41.35	37.19	39.55
Time efficiency	76.64	76.48	75.45	78.76	76.77
Cane					
Sucrose % cane	12.62	12.60	11.87	12.54	12.53
Fibre % cane	15.38	15.36	15.84	15.49	16.23
Mixed juice					
Sucrose purity	86.15	85.38	83.60	83.66	83.14
(Gluc. + Fruct.)/ash in M.J.	1.14	1.24	1.29	1.26	1.03
Milling					
Imbibition % fibre	334	337	356	366	380
Extraction (sucrose based)	97.74	97.72	97.69	97.87	97.75
Pol % bagasse	0.90	0.90	0.83	0.83	0.83
Moisture % bagasse	51.12	51.40	51.70	51.27	51.52
Bagasse % cane	31.78	31.96	33.01	32.05	33.88
LCV bagasse kJ/kg	6793	6798	6696	6878	6952
Avail. kJ in bag./kg brix in M.J.	15073	15069	15941	15025	15985
Recoveries					
Boiling house recovery (sucrose based)	88.09	87.82	85.93	86.50	85.05
Overall recovery (sucrose based)	86.10	85.82	83.94	84.66	83.14
Tons cane per ton sugar	9.15	9.20	9.99	9.37	9.56
Filter cake					
Pol % filter cake	1.26	1.29	1.01	0.88	0.92
Filter cake % cane	2.44	2.48	2.59	3.18	3.35
Final molasses					
Brix % final molasses	82.91	82.97	81.72	82.20	82.01
Sucrose/refracto brix purity	37.53	37.28	37.34	36.87	38.21
Tons fin.molasses at 85 bx % cane	3.72	3.91	4.25	4.39	4.66
Average sugar polarisation	99.50	99.50	99.47	99.44	99.58
Sucrose lost % sucrose in cane					
Lost in bagasse	2.26	2.28	2.31	2.13	2.25
Lost in filter cake	0.24	0.25	0.22	0.22	0.25
Lost in final molasses	9.40	9.84	11.37	10.97	12.07
Undetermined losses	2.00	1.81	2.15	2.02	2.29
Lost in boiling house	11.64	11.90	13.74	13.21	14.61
Total losses	13.90	14.18	16.06	15.34	16.86
M3 massecuite per ton Bx in M.J.					
A - massecuite	1.08	1.04	1.00	0.98	1.00
B - massecuite	0.39	0.36	0.34	0.36	0.36
C - massecuite	0.25	0.26	0.29	0.29	0.31
Total	1.69	1.64	1.63	1.63	1.67
Exhaustion of massecuites					
A - massecuite	62.58	63.22	63.20	64.79	63.79
B - massecuite	59.23	60.98	58.62	59.87	58.38
C - massecuite	55.42	55.93	55.77	56.40	52.89
Brix of syrup	64.42	64.74	64.36	64.93	64.47

**TABLE F
AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS
FOR SOUTH AFRICAN MILLS (SEASON 1997 - 1998)**

End of month period		3 MAY 1997	31 MAY 1997	28 JUN 1997	2 AUG 1997	30 AUG 1997	27 SEP 1997	1 NOV 1997	29 NOV 1997	27 DEC 1997	31 JAN 1998	28 FEB 1998
Tons of sugar made and estimated	Month	183675	266779	280708	174529	315596	286490	346595	230082	195983	139977	0
	To-date	183675	450454	731162	905691	1221287	1507777	1854372	2084454	2280437	2420414	2420414
Tons cane crushed	Month	1854892	2509005	2545666	1552515	2686567	2499765	3014300	2073289	1922937	1495845	0
	To-date	1854892	4363897	6909563	8462078	11148645	13648410	16662710	18735999	20658936	22154781	22154781
Tons cane crushed per hour actual crushing	Month	247.42	293.36	297.27	278.46	294.99	295.29	285.11	281.77	281.52	287.47	0.00
	To-date	247.42	271.90	280.73	280.31	283.71	285.77	285.65	285.21	284.87	285.04	285.04
Sucrose % cane	Month	11.73	12.16	12.59	12.99	13.36	13.09	13.20	12.81	12.02	11.44	0.00
	To-date	11.73	11.98	12.20	12.35	12.59	12.68	12.78	12.78	12.71	12.62	12.62
Fibre % cane	Month	15.16	14.51	14.44	14.76	14.89	15.65	15.91	16.06	16.44	16.39	0.00
	To-date	15.16	14.79	14.66	14.68	14.73	14.90	15.08	15.19	15.30	15.38	15.38
Tons cane per ton sugar	Month	10.10	9.40	9.07	8.90	8.51	8.73	8.70	9.01	9.81	10.69	0.00
	To-date	10.10	9.69	9.45	9.34	9.13	9.05	8.99	8.99	9.06	9.15	9.15
Extraction (sucrose based)	Month	97.29	97.85	97.87	97.85	97.87	97.76	97.76	97.73	97.51	97.70	0.00
	To-date	97.29	97.62	97.71	97.74	97.77	97.77	97.77	97.76	97.74	97.74	97.74
Imbibition % fibre	Month	339	347	337	336	335	320	332	334	323	336	0
	To-date	339	344	341	340	339	335	335	335	333	334	334
Pol % bagasse	Month	1.01	0.87	0.90	0.91	0.93	0.92	0.90	0.88	0.88	0.77	0.00
	To-date	1.01	0.93	0.92	0.91	0.92	0.92	0.92	0.91	0.91	0.90	0.90
Moisture % bagasse	Month	51.56	51.46	51.40	51.23	50.81	50.61	50.86	50.94	51.32	51.34	0.00
	To-date	51.56	51.50	51.47	51.42	51.28	51.15	51.09	51.08	51.10	51.12	51.12
Boiling house recovery (sucrose based)	Month	86.37	88.86	89.07	87.98	89.37	89.09	88.65	88.20	86.53	83.30	0.00
	To-date	86.37	87.83	88.30	88.24	88.53	88.64	88.64	88.59	88.41	88.09	88.09
Overall recovery (sucrose based)	Month	84.03	86.95	87.17	86.09	87.47	87.10	86.66	86.20	84.38	81.39	0.00
	To-date	84.03	85.73	86.28	86.24	86.56	86.66	86.66	86.61	86.41	86.10	86.10
Mixed juice sucrose purity	Month	84.81	85.60	85.91	86.50	87.78	87.36	86.75	86.06	85.12	83.48	0.00
	To-date	84.81	85.27	85.51	85.70	86.22	86.44	86.49	86.45	86.33	86.15	86.15
Pol/suc. ratio in mixed juice	Month	0.9859	0.9854	0.9881	0.9896	0.9903	0.9956	0.9959	0.9952	0.9893	0.9852	0.0000
	To-date	0.9859	0.9856	0.9866	0.9872	0.9880	0.9894	0.9906	0.9911	0.9910	0.9906	0.9906
Sucrose/refracto brix purity in final molasses	Month	37.33	35.06	35.69	38.22	38.09	38.83	37.66	37.85	38.25	39.39	0.00
	To-date	37.33	36.03	35.91	36.34	36.75	37.11	37.21	37.29	37.38	37.53	37.53
Sucrose lost in final molasses % sucrose in cane	Month	10.23	9.12	8.81	9.55	8.50	8.83	8.99	9.60	10.24	12.16	0.00
	To-date	10.23	9.58	9.29	9.34	9.13	9.07	9.06	9.12	9.22	9.40	9.40
Undetermined lost sucrose % sucrose in cane	Month	2.77	1.56	1.67	1.93	1.67	1.61	1.86	1.67	2.57	3.92	0.00
	To-date	2.77	2.07	1.92	1.92	1.86	1.81	1.82	1.80	1.87	2.00	2.00
Pol/sucrose ratio FM	Month	0.8805	0.8673	0.8686	0.9021	0.9411	0.9627	0.9582	0.9508	0.9366	0.9347	0.0000
	To-date	0.8805	0.8731	0.8715	0.8775	0.8927	0.9056	0.9153	0.9195	0.9211	0.9222	0.9222

**TABLE G
CANE VARIETIES AND RAINFALL (SEASON 1997 - 1998)
PERCENTAGE BY WEIGHT**

MILL	N 11	N 12	N 13	N 14	N 16	N 17	N 18	N 19	N 21	N 22	N 23	N 24	N 25	N 52/219	N 55/805	NCo 293	NCo 310	NCo 376	NCo 382	MIXED VARIETY	UNKNOWN AND OTHER	% BURNT	* RAINFALL mm
ML	-	-	-	42.6	-	1.0	-	34.1	-	7.1	0.4	9.7	2.4	-	-	-	-	-	-	0.2	2.5	100.0	328
KM	-	-	-	52.3	-	0.4	-	32.3	-	3.9	0.1	1.6	1.8	-	-	-	-	-	-	0.1	7.6	100.0	652
PG	-	-	-	34.8	-	1.9	-	39.3	-	3.2	1.5	1.4	7.2	-	-	-	-	-	-	0.7	10.0	100.0	1045
UF	-	4.1	-	7.6	-	16.4	0.6	26.7	1.7	1.5	-	-	-	0.1	-	-	1.3	28.1	-	12.0	0.1	98.5	694
EN	0.1	42.3	0.4	0.2	13.7	0.5	-	-	-	-	-	-	-	-	-	1.1	-	13.1	-	-	28.6	98.4	763
FX	-	3.8	-	3.4	-	5.7	0.3	10.4	0.4	0.4	-	-	-	-	0.1	-	-	29.7	-	2.0	43.6	84.4	971
AK	-	20.9	0.1	1.3	1.9	3.5	0.1	4.1	0.5	-	-	-	-	-	0.1	-	0.1	23.7	0.1	6.4	37.1	91.4	611
DL	-	22.1	0.6	2.1	11.3	3.2	0.3	1.6	0.2	-	-	-	-	-	0.1	-	0.1	55.6	-	2.9	0.1	59.5	695
MS	0.1	30.8	0.1	0.8	12.8	2.1	0.1	1.0	0.5	-	-	-	-	-	0.2	0.1	-	31.1	-	6.2	14.1	78.6	718
GD	0.1	8.6	-	5.6	8.5	3.0	-	2.8	-	-	-	-	-	-	-	-	-	66.9	-	4.4	-	82.0	608
GH	0.1	25.9	0.2	2.0	6.9	2.7	0.2	0.8	1.2	-	-	-	-	-	0.1	0.1	-	24.0	-	1.2	34.6	79.8	775
NB	0.9	71.5	-	0.1	18.4	-	-	-	2	-	-	-	-	-	-	1.0	-	0.5	0.1	0.1	5.4	99.9	572
UC	1.0	68.8	-	0.1	26.7	0.1	-	-	2	-	-	-	-	-	-	0.4	-	0.6	-	-	0.3	74.5	833
ES	-	68.1	0.1	0.2	7.6	0.2	-	0.1	0.3	-	-	-	-	-	-	0.5	-	1.5	-	0.7	20.7	88.9	750
SZ	-	26.9	-	0.4	4.1	0.1	-	-	0.3	-	-	-	-	-	-	-	0.8	10.2	-	6.4	50.5	81.5	1528
UK	-	29.4	-	2.1	3.8	0.2	-	-	2.7	-	-	-	-	-	-	0.2	0.1	13.5	0.1	1.6	46.3	87.6	1185
Average SA Mills	0.1	23.7	0.1	10.0	6.0	2.7	0.1	10.2	0.7	1.1	0.1	0.9	0.7	-	0.1	0.1	0.2	17.8	-	3.1	22.2	87.4	
MH	-	-	-	13.5	-	1.3	-	18.6	-	0.5	0.4	0.4	0.7	-	-	-	-	64.7	-	0.1	-	-	551
UR	-	-	-	11.4	-	0.1	-	9.9	-	-	-	-	-	-	-	-	-	64.1	-	3.6	11.0	-	634
SM	-	-	-	21.6	-	0.6	-	5.5	-	-	-	-	-	-	-	-	-	70.4	-	1.1	0.8	-	1448
NH	-	-	-	84.5	-	0.4	-	3.1	0.1	-	-	-	-	-	-	-	-	-	-	5.2	6.7	-	118
DW	-	-	-	36.2	-	1.7	-	-	-	-	-	-	-	-	-	-	-	20.1	-	2.2	39.6	-	55
HV	-	-	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	88.2	-	0.2	4.2	-	121
TR	-	-	-	15.5	-	-	-	-	-	-	-	-	-	-	-	-	-	78.5	-	0.8	5.2	-	232

* Rainfall during the crushing season

TABLE H
 TRANSPORT SUMMARY SOUTH AFRICAN MILLS (SEASON 1997 - 1998)
 PERCENT OF CANE TRANSPORTED

MILLS	ML	KM	PG	UF	EN	FX	AK	DL	MS	GD	GH	NB	UC	ES	SZ	UK	AVERAGE
SOUTH AFRICAN RAILWAYS	-	-	-	-	-	22.1	-	-	-	-	-	-	-	-	-	-	2.6
TRAMS	-	-	-	54.6	-	-	-	-	-	-	-	-	-	-	-	-	3.1
UNKNOWN	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-	0.2
ARTICULATED TRUCK DRIVEN VEHICLES																	
- Interlink	-	-	4.6	24.0	33.4	54.8	68.7	25.9	80.8	-	50.6	27.0	7.7	74.6	80.0	79.2	44.5
- Tri-Axle	-	-	-	-	-	-	-	3.0	-	3.5	26.0	0.4	0.5	2.7	-	-	2.1
- Hilo	95.6	100.0	25.5	12.3	-	3.6	1.3	19.2	0.6	51.9	18.3	9.9	8.7	3.0	10.9	4.5	21.5
RIGID CHASSIS VEHICLES																	
- Truck	-	-	-	-	-	-	-	-	-	0.3	-	14.5	19.1	-	7.1	11.4	2.9
- Lorry	-	-	-	-	6.8	-	-	2.3	0.1	8.2	0.1	7.3	24.2	-	1.8	0.3	1.9
TRACTOR DRIVEN VEHICLES																	
- Hilo	-	-	9.7	1.4	-	-	7.6	25.8	1.8	9.4	-	21.0	8.9	14.3	-	0.7	5.3
- Rig	-	-	-	0.7	59.6	19.3	21.4	22.4	4.6	26.0	4.8	18.8	14.6	-	-	0.6	9.2
- Interlink	4.4	-	60.1	3.3	-	-	0.5	1.2	11.9	0.3	-	0.7	15.9	5.2	-	3.0	6.2

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

PERIOD (SEASON)	Percent Cane		Cane / Sugar Ratio		Extraction Pol based	Pol % fibre in Bagasse	Percent Bagasse		Imbibition Percent		Mixed Juice		Final Molasses Suc/brix Purity Chem.suc.	Boiling House Recovery Pol based	Overall Recovery Pol based
	Pol	Fibre	Tel Quel	96 Pol Sugar			Pol	Moisture	Cane	Fibre	Purity Pol based	Reducing Sugar/ Pol 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
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
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
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
1975	12.60	15.67	9.33	9.00	95.38	3.87	1.68	53.52	43.7	279	84.70	5.31	38.8	88.68	84.58
1976	12.43	15.52	9.41	9.08	95.48	3.79	1.66	53.20	41.7	281	84.47	5.58	38.2	88.99	84.97
1977	12.83	15.79	9.12	8.80	95.87	3.51	1.56	52.55	45.6	302	84.39	5.67	38.3	88.62	84.96
1978	12.64	15.22	9.07	8.77	96.63	2.95	1.35	51.59	45.4	314	85.36	5.27	38.0	89.58	86.55
1979	12.96	15.49	8.85	8.54	96.92	2.70	1.23	52.04	49.1	333	85.40	5.11	38.3	89.48	86.73
1980	13.34	15.95	8.73	8.42	96.89	2.73	1.24	52.10	52.2	344	84.80	5.25	38.7	88.17	85.42
1981 onwards data are sucrose based	Sucrose				Sucrose based						Sucrose based	(GL+FR)/ suc.ratio	Sucrose based	Sucrose based	Sucrose based
1981	12.30	16.13	9.50	9.18	97.02	2.38	1.10	51.57	52.4	341	85.67	6.94	37.1	87.75	85.14
1982	12.86	15.61	9.10	8.79	97.02	2.57	1.19	51.35	51.5	345	85.12	5.59	36.6	87.64	85.03
1983	12.33	16.15	9.74	9.40	97.02	2.37	1.08	52.68	55.0	356	84.20	5.69	38.2	85.37	82.83
1984	12.27	15.62	9.43	9.11	97.42	2.12	0.99	51.35	51.5	344	85.69	5.28	37.0	88.23	85.96
Average 1975 - 1984	12.66	15.71	9.23	8.91	96.57	2.90	1.31	52.20	48.8	324	84.98	5.57	37.9	88.25	85.22
1985	13.13	15.38	8.88	8.57	97.47	2.25	1.04	51.64	52.9	358	84.55	6.28	36.3	87.51	85.30
1986	12.80	15.24	9.08	8.76	97.66	2.03	0.95	51.27	54.3	368	85.44	5.44	36.7	87.70	85.65
1987	12.00	15.23	9.67	9.33	97.63	1.94	0.91	51.24	52.6	357	85.25	5.76	36.8	87.84	85.76
1988	12.61	15.44	9.16	8.83	97.60	2.04	0.96	50.92	53.0	355	85.70	5.43	36.8	88.33	86.21
1989	13.17	15.07	8.72	8.41	97.67	2.11	0.98	51.61	53.5	366	86.40	4.94	36.7	88.74	86.67
1990	12.91	15.14	8.92	8.60	97.75	1.98	0.92	51.62	54.1	368	86.23	5.00	37.0	88.50	86.51
1991	13.04	14.93	8.77	8.42	97.95	1.85	0.87	47.07	54.4	375	86.39	4.80	37.1	88.88	87.06
1992	13.82	15.40	8.57	8.23	97.81	1.79	0.93	51.92	58.1	387	83.61	6.49	37.4	85.92	84.05
1993	12.53	16.23	9.56	9.22	97.75	1.78	0.83	51.52	60.1	380	83.14	5.55	38.2	85.05	83.14
1994	12.54	15.49	9.37	8.99	97.87	1.77	0.83	51.27	55.1	366	83.66	6.14	36.9	86.50	84.66
Average 1985 - 1994	12.86	15.36	9.07	8.74	97.72	1.95	0.92	51.01	54.8	368	85.04	5.58	37.0	87.50	85.50
1995	11.73	15.84	9.99	9.64	97.69	1.78	0.83	51.70	54.9	356	83.60	6.09	37.3	85.93	83.94
1996	12.60	15.36	9.20	8.88	97.72	1.92	0.90	51.40	50.4	337	85.38	5.23	37.3	87.82	85.82
1997	12.62	15.38	9.15	8.83	97.74	1.91	0.90	51.12	49.9	334	86.15	4.72	37.5	88.09	86.10
Average 1995 - 1997	12.32	15.53	9.45	9.12	97.72	1.87	0.88	51.41	51.7	342	85.04	5.35	37.4	87.28	85.29