EIGHTY-THIRD ANNUAL REVIEW OF THE MILLING SEASON IN SOUTHERN AFRICA (2007-2008)

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Abstract

Performance, throughput and other relevant aspects of the sugar industries in southern Africa are presented and discussed. Data from sugar mills in South Africa, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe are included. The 2007-2008 season in South Africa was characterised by extensive rains in the second half, with cane quality generally better than in 2006-2007. Initial estimates of a cane crop in excess of 21 million tons were not realised, with the final tonnage being 19.7 million tons. Mill performances were mixed, with rain giving rise to lost time and higher losses.

Regarding the Affiliate mills in neighbouring countries, those in Zambia and Zimbabwe experienced poorer recoveries than in the previous season, while those in Tanzania showed notable improvements over previous seasons.

Keywords: sugarcane, sugar factories, cane quality, crop size, performance, recovery

Introduction

This paper reviews the 2007-2008 milling season in southern Africa, and includes data from mills in South Africa, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe, that are Full (South African) or Affiliate (non-South African) Members of the Sugar Milling Research Institute (SMRI)[1,2]. Note that all Swaziland data for 2007-2008 in this review refers to Ubombo mill only and Mozambique data is for Maragra mill only. Detailed information on factory performance in 2007-2008 and recent seasons, details of cane varieties crushed and a summary of cane transport used in South Africa are presented in Tables A to H in the Appendix. The 2007-2008 milling season in South Africa was slightly better than the 2006-2007 season in terms of cane quality and recoveries, other than for Value Recovery, although the tonnage of cane harvested was lower.

[1]South African sugar factories: AK = Amatikulu, DL = Darnall, ES = Eston, FX = Felixton, GH = Gledhow, KM = Komati, ML = Malelane, MS = Maidstone, NB = Noodsberg, PG = Pongola, SZ = Sezela, UC = UCL Co. Ltd., UF = Umfolozi, UK = Umzimkulu
Malawi sugar factories: DW = Dwangwa, NH = Nchalo
Mozambique sugar factory: MA = Maragra
Swaziland sugar factory: UB = Ubombo
Tanzania sugar factories: MW = Msolwa (Kilombero), RU = Ruembe (Kilombero)
Zambia sugar factory: NK = Nakambala
Zimbabwe sugar factories: HV = Hippo Valley, TR = Triangle

[2]Note that, although Xinavane and Mafambisse (Mozambique) and Mumias (Kenya) are Affiliate Members of the SMRI, data for the 2007-2008 season were not available at the time of compilation of this review.

Cane crop

Cane varieties

The varietal distribution at southern African mills for the 2007-2008 season is shown in Appendix Table F. The most significant changes in South Africa since the 2006-2007 season were reductions in N19 in the northern irrigated areas in favour of N25, and some swings back to N12 in the Midlands. However, at many of the mills there were large changes in the percentages of unknown and mixed varieties delivered, so these trends must be viewed with caution. At many of the Affiliated mills, the percentage of NCo376 continued to decrease. Variety N14 increased at HV and NK, while it decreased at TR, and N19 and N25 also decreased at several mills.

Burning

The overall percentage of cane burnt in South Africa remained much the same as in the previous two seasons at around 90% (Appendix Table F), with little change at most mills, except for an increase in percentage burnt at PG, FX, AK and DL.

Cane quality

Trends in the cane quality indicators of Estimated Recoverable Crystal (ERC) % cane, Ash % cane and Mixed Juice sucrose purity over the past 10 seasons in South Africa are shown in Figures 1a to 1c. Cane quality in terms of ERC increased from the poor value in 2006-2007 to 11.59%, while the Ash level continued its unwelcome increase to the highest value in the past 10 seasons of 1.95%. This high ash level impacted negatively on boiling house performances, as will be discussed later. The mixed juice purity showed a welcome reversal of the previously declining trend, rising to above 86% for the first time in the past four seasons.

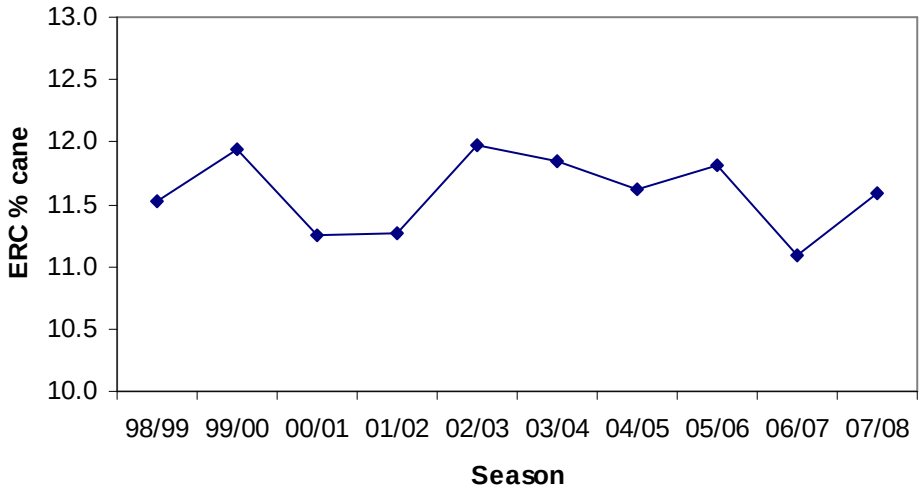

Figure 1a. ERC % cane in South Africa.

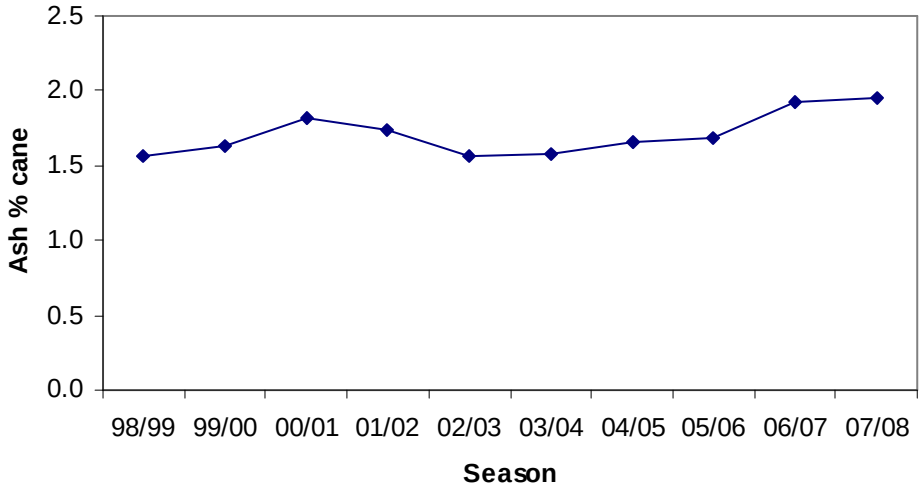

Figure 1b. Ash % cane in South Africa.

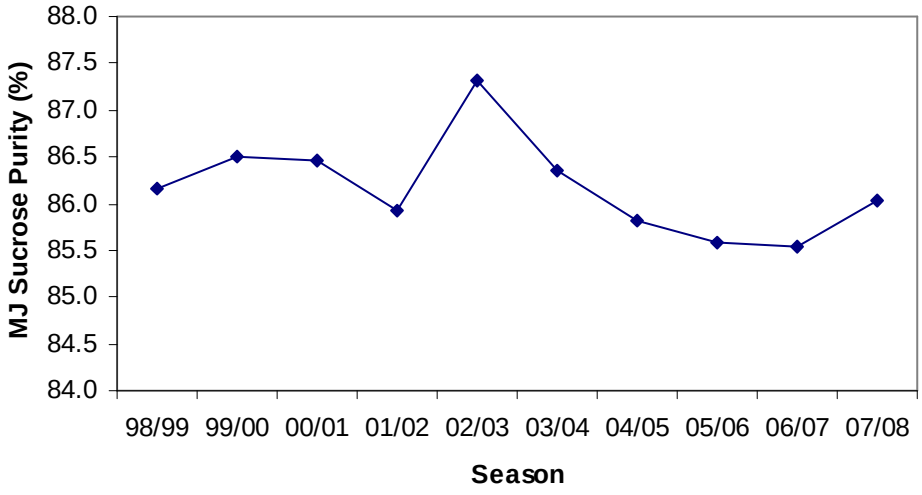

Figure 1c. Mixed juice sucrose purity in South Africa.

The monthly Recoverable Value (RV) % cane for the past three seasons in South Africa (Figure 2) show that the cane quality during the 2007-2008 season started off well, similar to that of the 2005-2006 season, then increased marginally in June before recovering well by September, but thereafter showed a steep drop. The industry average value for the season rose to 12.26% from the low value of 11.68% recorded in 2006-2007, but did not reach the level of the 2005-2006 season of 12.49%. This trend was reflected in individual mill values, with the notable exceptions of UF, which showed a continuing decline, and UK, where the quality improved to exceed that of the 2005-2006 season.

The high initial quality was the result of a large tonnage of carry-over cane, which was more mature, while the drops in quality in June (relative to 2005-2006) and October resulted from high rainfall (Figure 3). The rain in June was unseasonal, and the October and November rains were heavy and extensive. The total rainfall recorded at mills during the crushing season ranged from 337 mm at KM to 992 mm at SZ (Appendix Table F). This extensive rainfall had serious consequences for factory operations, as will be shown later, and also reduced the crop size because of extensive cloud cover associated with the rains.

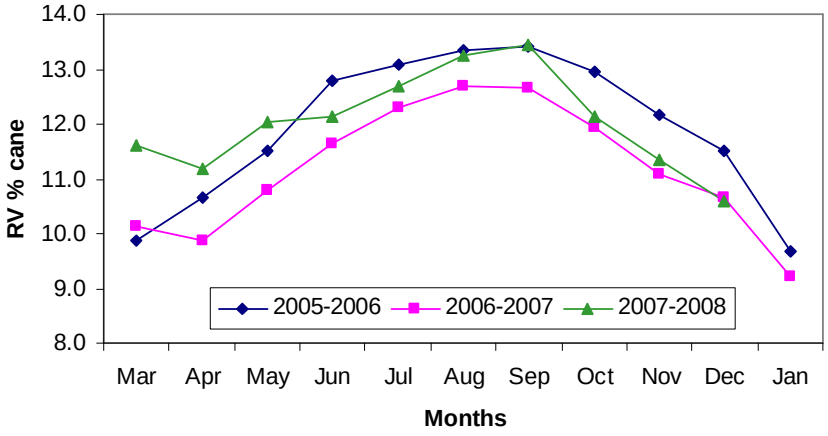

Figure 2. Monthly RV % cane in South Africa for the 2005-2006, 2006-2007 and 2007-2008 seasons.

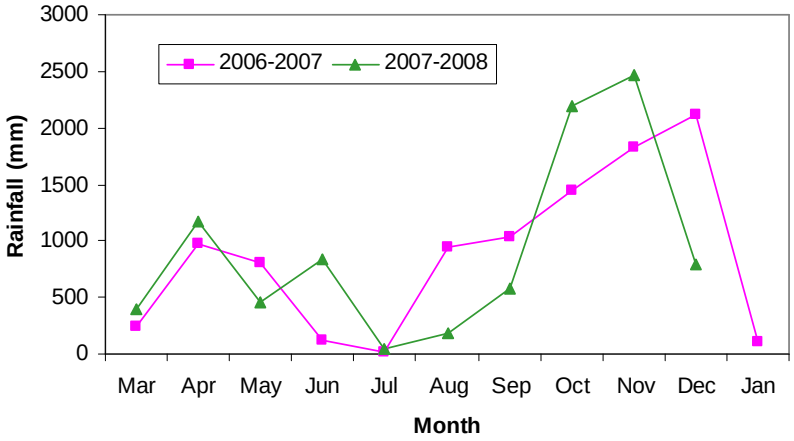

Figure 3. Monthly total rainfall at crushing South African mills for the 2006-2007 and 2007-2008 seasons (values are the monthly rainfalls summed over all mills crushing during the month).

Considering the whole region, cane quality in terms of ERC % cane declined slightly from 2006-2007 to 2007-2008 in Swaziland, Malawi and Zambia, while it increased in South Africa and very slightly in Mozambique, Tanzania and Zimbabwe (Figure 4). Zambia continues to lead the subcontinent in terms of cane quality, however.

Cane tonnage

Initial predictions for the 2007-2008 season in South Africa were for a crop in excess of 21 million tons of cane, following good summer rains in most areas apart from Zululand, and in October 2007 the South African Sugarcane Research Institute's Canesim crop model forecast still predicted a crop of 21.77 million tons (Anon, 2008). However, this did not materialise, as a result of the late season rains, and the final crop size was only 19.72 million tons of cane, continuing the declining trend of recent years (Figure 5). It is also concerning to note that the initial forecast for the 2008-2009 season is for only 92% of the 2007-2008 final crop tonnage, which would make it the smallest crop since the droughted 1995-1996 season. This long-term reduction can be partly ascribed to the shrinkage of cane-growing land around the major towns and cities and along the coast, as a result of expanding urban development. This resulted in the closure of the Mount Edgecombe mill at the end of 1995 and the recent decline in the tonnage of cane crushed at Maidstone mill (Figure 6).

The South African average crush rate in 2007-2008 increased marginally over the 2006-2007 value, from 301.88 to 303.63 tons cane per hour.

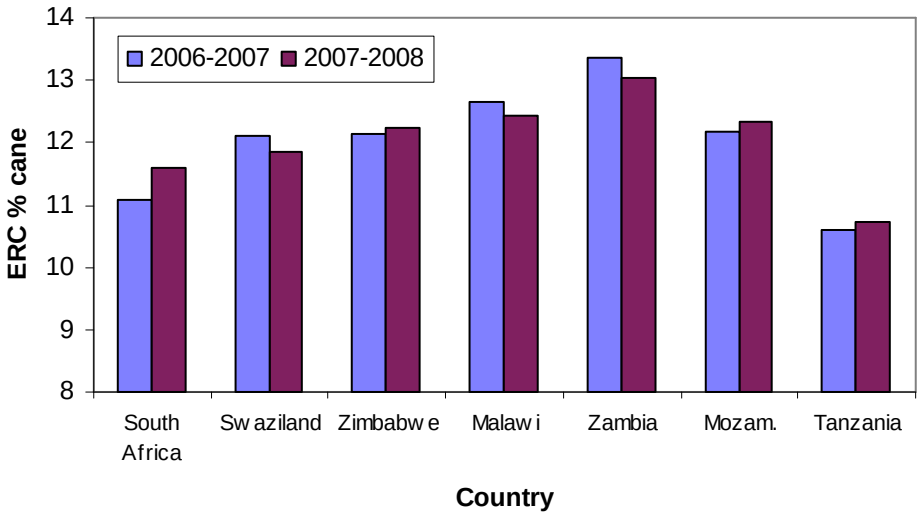

Figure 4. ERC % cane in southern Africa for the 2006-2007 and 2007-2008 seasons.

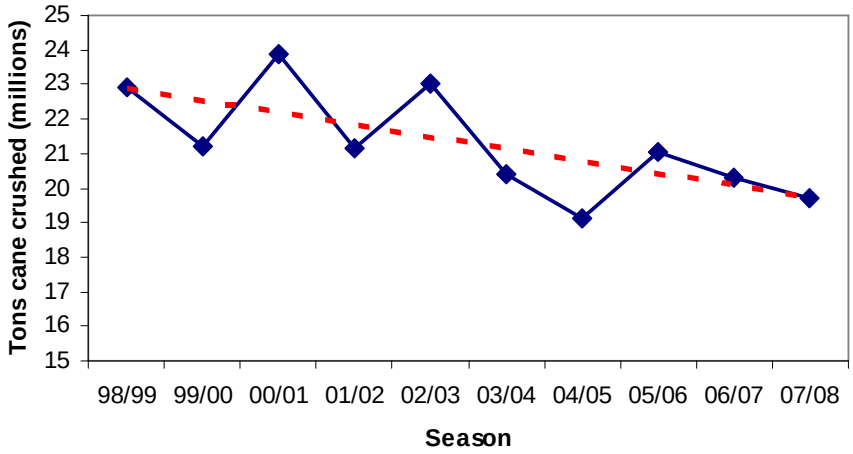

Figure 5. Cane tonnages in South Africa with linear trend-line.

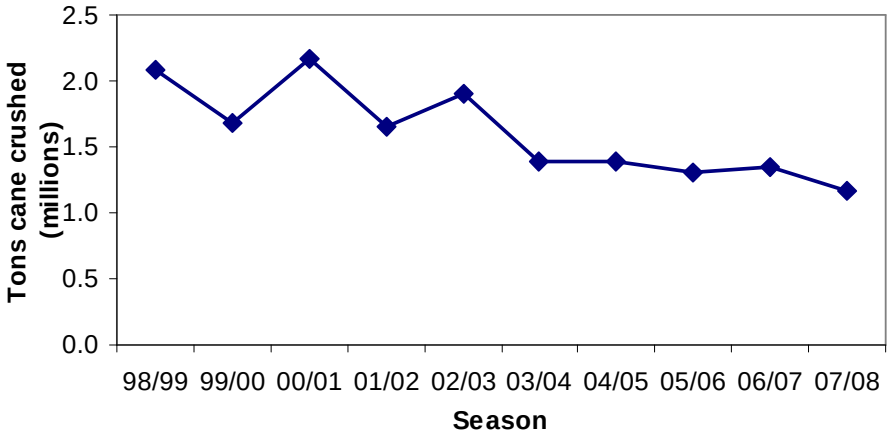

Figure 6. Cane tonnages for Maidstone mill for the past 10 seasons.

Factory Performance

Length of milling season

The 2007-2008 season in South Africa ran from 8 March 2007 (PG) until 24 December 2007 (UF), with no mills crushing after the Christmas holidays. The overall length of the season was 256 days, with Pongola having the longest season of 289 days and Felixton the shortest of 222 days. The length of the milling season in other southern African countries was 270 days in Tanzania, 248 days in Zimbabwe, 246 days in Swaziland (UB), 245 days in Zambia (NK), 227 days in Mozambique (MA) and 217 days in Malawi.

Time efficiences

The time efficiencies for South Africa in the 2007-2008 season continued the poor trend of the 2006-2007 season, with the Overall Time Efficiency (OTE) remaining low at 77.46% in 2007-2008. Figure 7 shows the trends in percentage stops for the past five years for South Africa, and, although the No-cane stops were slightly less in 2007-2008 than in 2006-2007, they remained well above the long term values and well above acceptable levels. Scheduled stops and foreign matter stops dropped slightly from the 2006-2007 values, while Other stops increased, to some extent due to the high ash levels in cane. Consequently, the industry average Lost Time % Available increased from 6.76% in 2006-2007 to 7.07% in 2007-2008.

The No-cane stops at individual mills in 2006-2007 and 2007-2008 are shown in Figure 8, with the Midlands and South Coast mills having better cane supply than the North Coast mills in 2007-2008. The extensive rains that fell throughout the industry from October onwards had a major effect on cane supply. No-cane stops in October ranged from 10.84 to 35.86% at various mills, and the industry average exceeded 20% for the month (Figure 9). While the Mpumalanga and Zululand mills in general did not experience very high No-cane stops, many of them do not have cane yards, and so suffered as a result of more intermittent, stop-start operations, and this had repercussions in terms of overall recoveries.

Overall time efficiencies for Malawi, Swaziland (UB) and Zambia were better than the South African industrial average, while Mozambique (MA), Tanzania and Zimbabwe suffered from extensive No-cane stops which brought their OTEs to below that of the South African average (Appendix Table A2).

Extraction and clarification

Extraction and Corrected Reduced Extraction (CRE) in the South African industry changed very little from 2006-2007 to 2007-2008, as fibre % cane, fibre throughput and imbibition % cane were also similar. In the 2007-2008 season, six factories (AK, FX, KM, ML, MS and UK) routed clarifier mud back to the diffusers throughout the entire season, while ES and PG operated with partial recycling.

Among the Affiliated mills, pol-based extraction ranged from a low value of 93.41% at Ruembe in Tanzania (which has continued to improve in recent years) to a value of 97.52% at Maragra in Mozambique (Figure 10). In Zimbabwe, Triangle's extraction dropped by 1.36% from 2006-2007 to 2007-2008, while that at Hippo Valley improved slightly. In Zambia, Nakambala's extraction dropped by 0.40%, and CRE dropped by 0.69%.

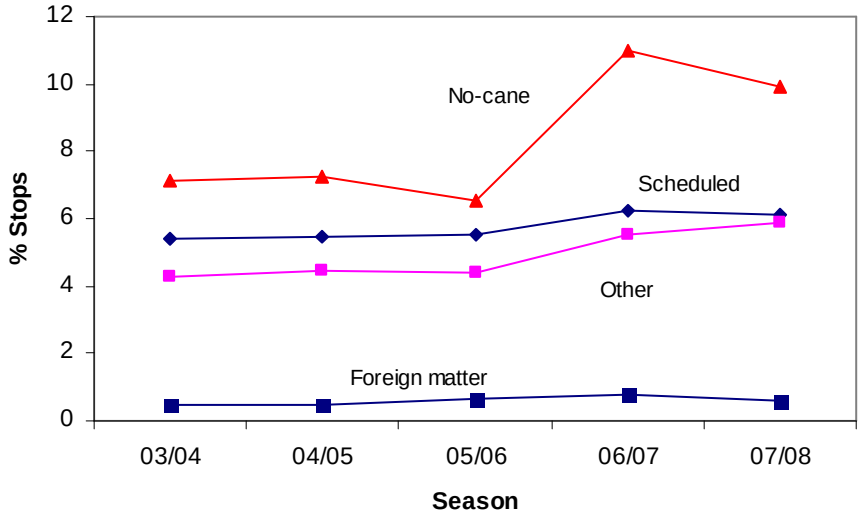

Figure 7. Percentage stops in South Africa from 2003-2004 to 2007-2008.

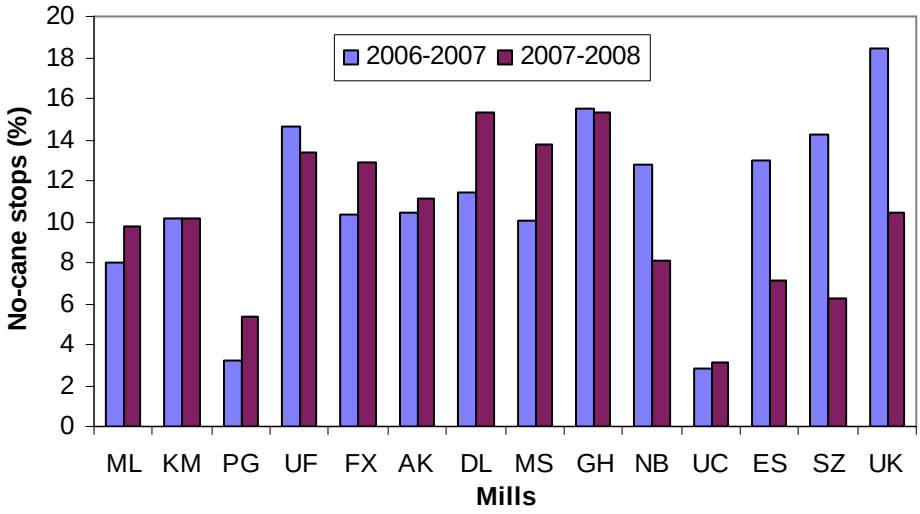

Figure 8. No-cane stops at South African mills for the 2006-2007 and 2007-2008 seasons.

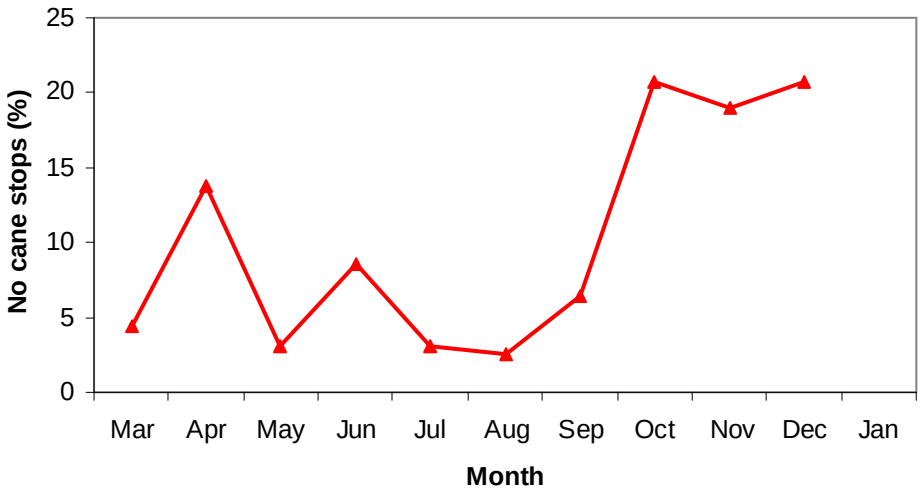

Figure 9. Monthly average No-cane stops for the South African industry in 2007-2008.

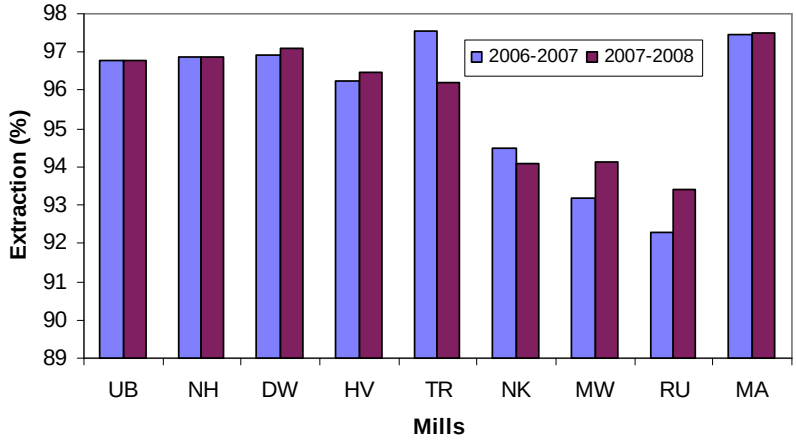

Figure 10. Pol-based Extraction at southern African mills for 2006-2007 and 2007-2008

Boiling house performance

Boiling house performance in South Africa in 2007-2008 remained at a similar level to that of 2006-2007, with a season average Boiling House Recovery (BHR) for the industry of 87.56% (Figure 11). However, the Corrected Reduced BHR (CRB) dropped by 0.28 units, as the slightly better mixed juice purity should have improved the BHR. It is speculated that the high rainfall from October onwards could have contributed to this, as a result of the cane showing early growth. Some mills reported a noticeable increase in crystal elongation following these rains, which resulted in reduced crystallisation rates and lower exhaustions, particularly in the low purity pans. This elongation is caused by the presence of oligosaccharides in the cane, and the concentration of oligosaccharides may be increased by delivery of cane tops to the mills.

Further evidence that the BHR was not as high as could have been expected can be seen from the molasses factor. This factor, the ratio of tons of sucrose in molasses to tons of non-sucrose in mixed juice, shows that in 2007-2008 it reached the highest value in the past 10 years (Figure 12). This can be due to a number of factors, such as 'gummy massecuites', oligosaccharides in juice, and poor crystallisation and centrifugal work, and shows that excess sucrose was left in molasses relative to the amount of non-sucrose entering the boiling house. Although the overall loss of sucrose to molasses as a percentage of sucrose in cane at 9.79% in 2007-2008 was lower than the value of 10.03% in 2006-2007, the juice quality suggested that it should have been still lower.

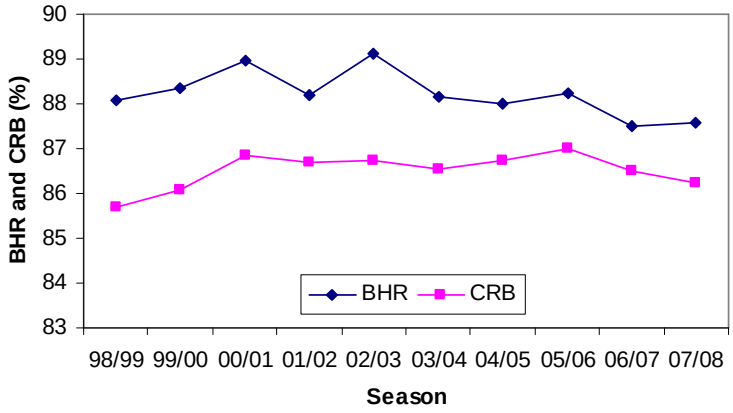

Figure 11. Boiling House Recovery (BHR) and Corrected Reduced BHR (CRB) in South Africa since 1998.

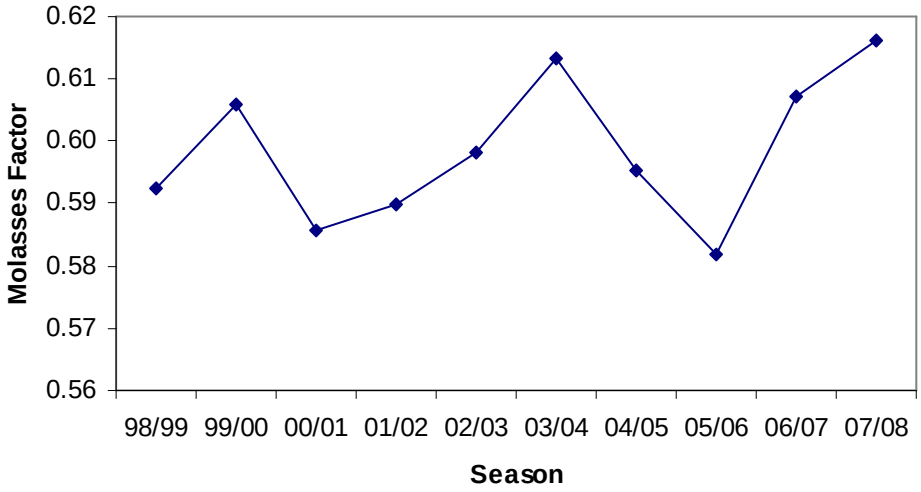

Figure 12. Molasses Factor in South Africa since 1998.

Undetermined Loss % sucrose in cane in 2007-2008 rose to the highest value in the past 10 years (2.19%; Figure 13), and in fact the highest value since 1993-1994. The largest increases at individual mills were generally at the Zululand and North Coast mills (Figure 14), although NB also showed a large increase. By contrast, GH showed a noticeable improvement over its 2006-2007 value, despite a poor OTE of 72.58%.

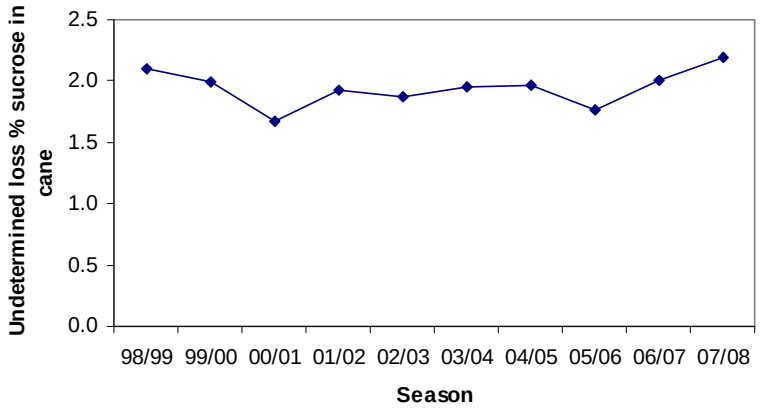

Figure 13. Undetermined loss in South Africa

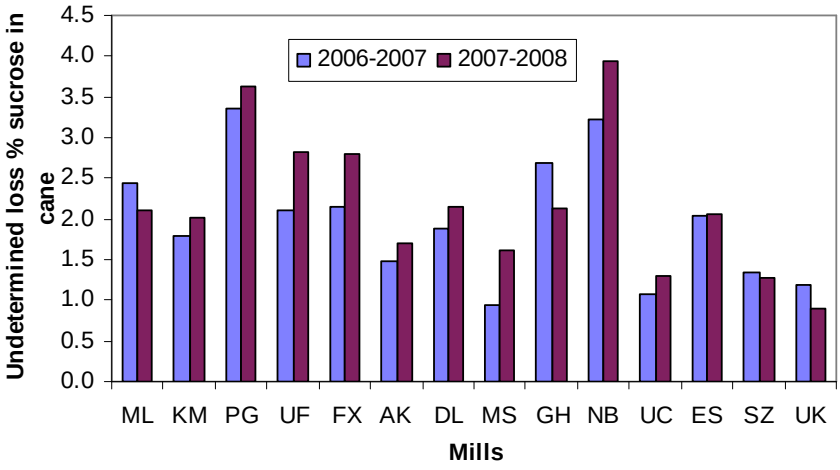

Figure 14. Undetermined loss % sucrose in cane at South African mills for 2006-2007 and 2007-2008.

Most Affiliate mills reported lower pol-based BHR values in 2007-2008 compared to 2006-2007 (Figure 15), with NH showing a good improvement and DW maintaining its excellent performance. Once again, Appendix Table A2 shows that the mills in Zimbabwe and Zambia and Ruembe in Tanzania all had low pol and Brix factors, well outside the acceptable range for the South African industry, and the overall recovery figures must be viewed with caution in these cases.

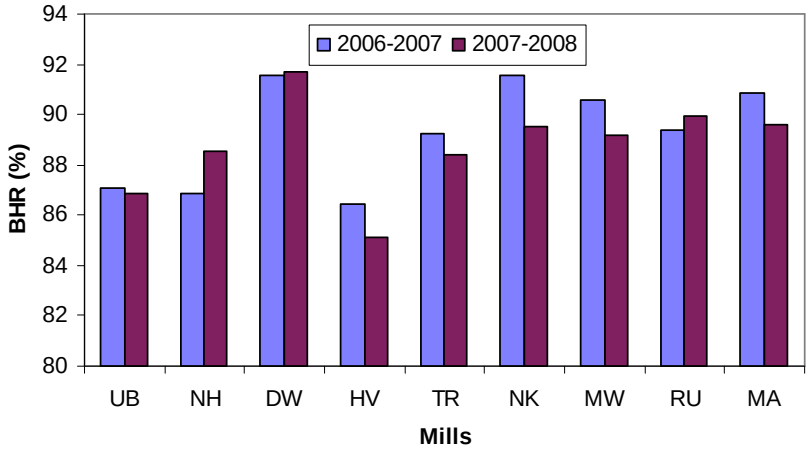

Figure 15. Pol-based BHR at southern African mills for 2006-2007 and 2007-2008.

Overall recovery parameters

Overall Recovery (OR) and Value Recovery (VR) for South Africa since the inception of the RV cane payment system are shown in Figure 16. Despite the recovery in cane quality in terms of RV % cane from 2006-2007 to 2007-2008, this was not matched by an increase in either OR or RV. Overall Recovery rose slightly to 85.65% while VR slipped to 99.30%, as might be expected from an increase in cane quality not being accompanied by an increase in sucrose recovery.

Considering the monthly values of VR for the season (Figure 17), what are evident are the poor start to the season (normal start-up problems and rains) and a sharp drop from October onwards as a result of the extensive rains and No-cane stops referred to earlier. The December value was also affected by poor end-of-season cane supply and high losses during boiling-off. In addition, Umfolozi mill's operations were severely affected by industrial action during September, and the consequences carried through to October, bringing their monthly VR values down to 91.01 and 90.76% for September and October, respectively.

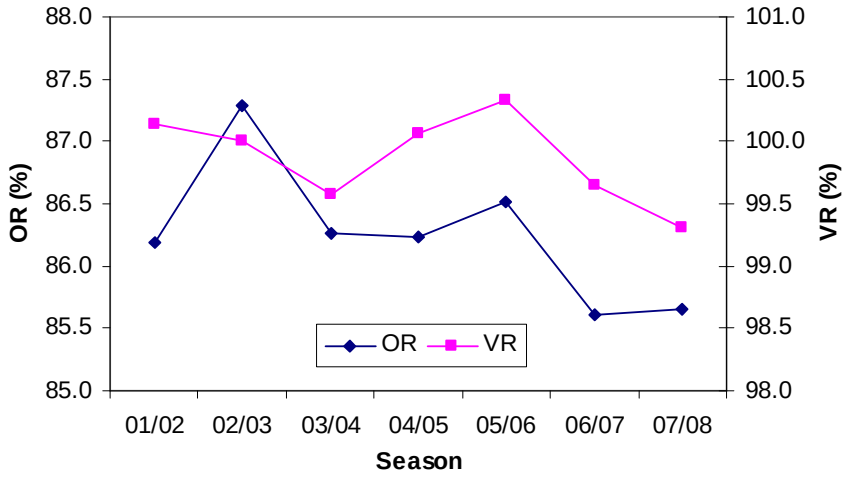

Figure 16. Overall Recovery (OR) and Value Recovery (VR) in South Africa from 2001 to 2007.

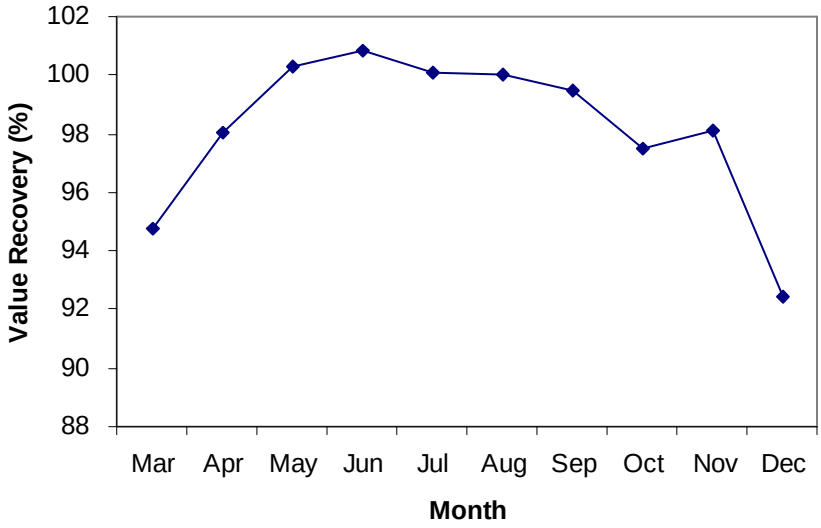

Figure 17. Monthly Value Recovery in South Africa in 2007-2008.

There has been some debate in the industry as to whether mills processing low RV cane have an inherent advantage in being able to achieve high VR values. A plot of the monthly VR values for 2007-2008 against monthly RV % cane values by mill (Figure 18) suggests that this is clearly not the case, with no trend visible. It should be noted, though, that RV % cane does not take reducing sugar:ash ratios into account, which may differ between mills having the same RV % cane, and which will generally have some effect on achievable boiling house recoveries. Consideration of the various parameters at the various mills suggests that, outside of careful operational control and best operating practices (which will always improve VR), those mills which have a reduced cane supply and generally crush at rates below their design capacity are able to maximise recovery of sugar from the cane, whereas those that crush at or near their maximum design throughputs have less capacity to achieve maximum recoveries. There is nevertheless little doubt that, after fixed costs have been covered, the more cane a mill crushes in a season, the better the returns will be.

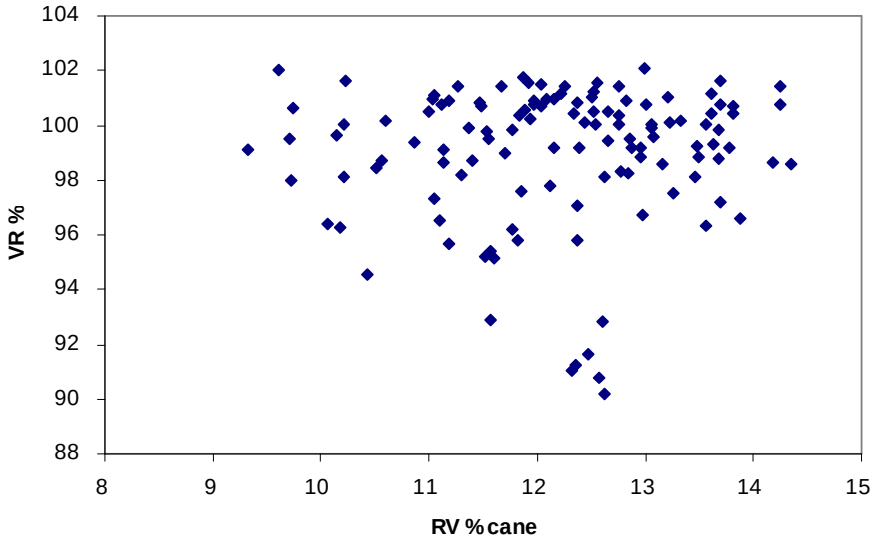

Figure 18. Relationship between monthly Value Recovery and monthly RV % cane for South African mills in 2007-2008.

The Affiliated mills returned pol-based overall recoveries that ranged from 82.15% at Hippo Valley to 89.04% at Dwangwa.

Cane to sugar ratio

The cane to sugar ratios of the South African industry and the Affiliated mills are shown in Figure 19 (with Swaziland being represented by Ubombo only, and Mozambique by Maragra only). This illustrates an improvement in South Africa and Tanzania, while Zambia showed poorer performance in 2007-2008.

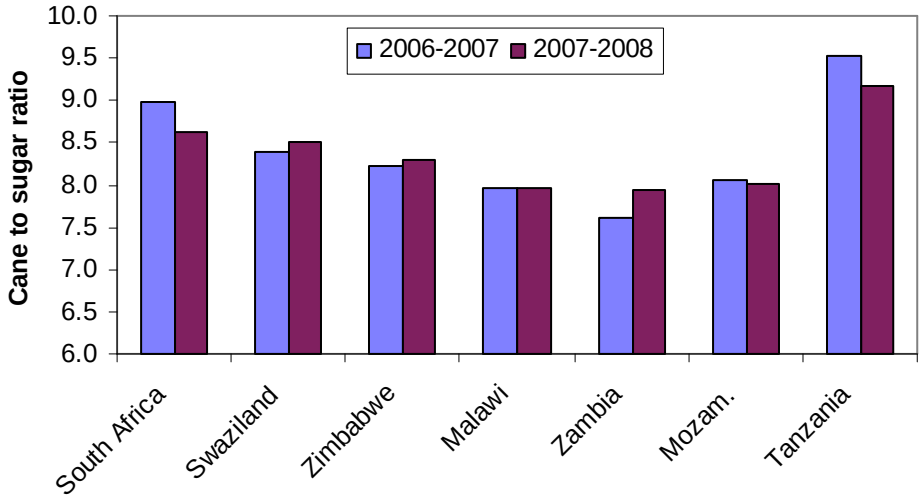

Figure 19. Cane to sugar ratio in southern Africa for 2006-2006 and 2007-2008.

Sugar quality

The trends in the Very High Pol (VHP) sugar quality with respect to colour are shown in Figure 20. Despite the difficulties experienced in 2007-2008, there was some improvement in sugar colour over the high values produced in 2006-2007, although the VHP colour did not improve to the same extent as the affinated crystal colour.

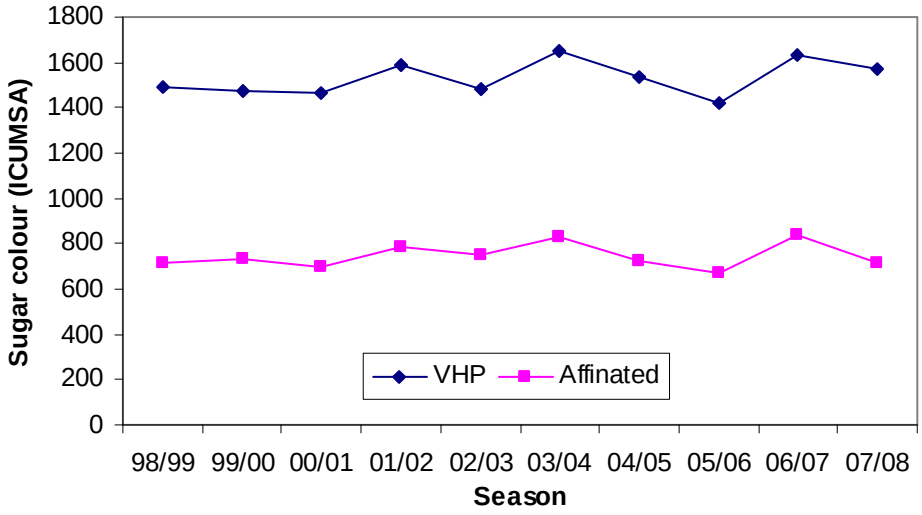

Figure 20. Very high pol (VHP) and affinated sugar colour in South Africa, 2007-2008.

Conclusions

There were high expectations for the 2007-2008 season in South Africa, following the disappointingly poor 2006-2007 season. However, extensive rains throughout the industry led to reductions in cane tonnage and disruptions at many mills, which in turn led to poor recoveries. Sufficient and rateable cane supply remains a serious concern in many mill areas, despite concerted efforts by many parties to address the issue. Consequently, the total tonnage of sugar was below expectations, although sugar quality improved over that of 2006-2007.

Regarding the Affiliate mills in neighbouring countries, those in Zambia and Zimbabwe experienced poorer recoveries than in the previous season, while those in Tanzania showed notable improvements over previous seasons.

Acknowledgements

This Annual Review is made possible by the valuable contributions of the following people and organisations, and their assistance is gratefully acknowledged: South African Sugar Millers' Association Ltd, South African Sugar Association Cane Testing Service, South African Sugarcane Research Institute, South African Sugar Terminals, SMRI Member and Affiliate Member mill laboratories, Sugar Milling Research Institute laboratories and staff, and the staff of the various mills and milling groups.

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APPENDIX: DATA TABLES

Table A1: Cane crushed and sugar made, cane composition and time accounts, performances and losses – South African mills (Season 2007-2008).

Table A2: Cane crushed and sugar made, cane composition and time accounts, performances and losses – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2007-2008).

Table B1: Analysis of bagasse, juices, filter cake, syrup and final molasses – South African Mills (Season 2007-2008).

Table B2: Analysis of bagasse, juices, filter cake, syrup and final molasses – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2007-2008).

Table C1: Massecuites, exhaustions, clarifying agents and additional fuels – South African mills (Season 2007-2008).

Table C2: Massecuites, exhaustions, clarifying agents and additional fuels – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2007-2008)

Table D: Comparative manufacturing data of recent years (South African mills).

Table E: Average manufacturing results by monthly periods for South African mills (Season 2007-2008).

Table F: Cane varieties and rainfall (Season 2007-2008).

Table G: Transport summary – South African factories (Season 2007-2008).

Table H: Comparative data of reporting South African mills from 1925 onwards.

TABLE A1
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SOUTH AFRICAN FACTORIES (SEASON 2007 - 2008)

SYMBOLS OF FACTORIES	ML *	KM-A *	KM-B *	KM-AVE	PG *	UF *	FX-A *	FX-B *	FX-AVE	AK *	DL	MS-A *	MS-B *	MS-AVE
TONS SUGAR MADE AND ESTIMATED	201386	-	-	275874	141640	112864	-	-	197432	161877	123767	-	-	128961
Refined % total sugar	67.29	-	-	-	99.86	-	-	-	-	-	-	-	-	-
Moisture all sugar	0.03	-	-	0.09	0.01	0.12	-	-	0.09	0.14	0.10	-	-	0.06
Pol all sugar	99.78	-	-	99.39	99.93	99.28	-	-	99.42	99.28	99.30	-	-	99.45
Tons cane crushed total	1673411			2278334	1307360	1033109			1843728	1415976	1075047			1170597
Tons cane crushed per tandem		1172495	1105839				944371	899357				454573	716024	
Season started on	3-Apr-2007	-	-	3-Apr-2007	8-Mar-2007	18-Apr-2007	-	-	3-May-2007	18-Apr-2007	18-Apr-2007	-	-	12-Apr-2007
Season completed on	23-Dec-2007	-	-	18-Dec-2007	22-Dec-2007	24-Dec-2007	-	-	11-Dec-2007	20-Dec-2007	2-Dec-2007	-	-	30-Nov-2007
Length of season (days)	264	-	-	259	289	250	-	-	222	246	228	-	-	232
TIME ACCOUNT														
Overall time efficiency %	84.96	79.19	77.05	78.13	82.77	77.57	73.77	71.92	72.84	73.88	68.28	59.12	68.34	63.73
Scheduled stops% gross available time	0.47	3.11	2.64	2.87	4.95	1.83	8.84	8.49	8.67	7.67	10.29	18.49	18.31	18.40
Lack of cane % gross available time	9.74	9.58	10.64	10.11	5.32	13.37	11.95	13.82	12.89	11.14	15.30	18.52	8.96	13.74
Other stops % gross available time	4.66	6.85	8.46	7.65	5.71	6.38	5.37	5.69	5.53	7.07	5.45	3.33	3.63	3.48
Foreign matter % gross available time	0.16	1.26	1.21	1.24	1.26	0.85	0.07	0.08	0.07	0.23	0.68	0.54	0.77	0.65
Lost time % available crush.time	5.20	7.97	9.90	8.92	6.45	7.60	6.78	7.34	7.06	8.73	7.40	5.33	5.05	5.18
Force majeure stops (hours)	9	1	4	2	0	322	0	0	0	88	6	0	0	0
THROUGHPUTS PER CRUSHING HOUR														
Tons cane	310.64	242.54	237.93	480.56	228.23	235.35	238.57	232.87	471.51	327.18	287.27	138.52	188.75	330.90
Tons fibre	43.10	33.37	32.49	65.88	30.67	32.19	36.31	35.38	71.70	51.65	43.05	20.60	29.05	50.26
Tons brix in mixed juice(adj.)	49.69	38.24	37.36	75.61	34.43	34.76	35.45	34.68	70.14	48.90	42.27	20.57	27.80	48.89
Tons sucrose in mixed juice(adj.)	42.66	32.89	32.20	65.11	29.32	29.61	29.80	29.22	59.03	41.76	36.60	17.57	23.47	41.47
Tons non-suc. in mixed juice(adj.)	7.03	5.35	5.15	10.50	5.12	5.16	5.65	5.45	11.10	7.14	5.67	3.01	4.32	7.42
Tons of sugar produced	37.38	-	-	58.19	24.73	25.71	-	-	50.49	37.40	33.07	-	-	36.45
COMPOSITION OF CANE CRUSHED														
Sucrose % cane	14.04	13.86	13.80	13.83	13.18	12.89	12.70	12.76	12.73	13.03	13.15	12.86	12.63	12.72
Pol % cane	13.94	13.79	13.72	13.75	13.09	12.81	12.65	12.73	12.69	13.00	13.10	12.81	12.58	12.67
Fibre % cane	13.87	13.68	13.74	13.71	13.58	14.70	15.26	15.15	15.21	15.79	16.06	14.99	15.31	15.18
Brix % cane	16.59	16.33	16.22	16.28	15.73	15.32	15.45	15.50	15.47	15.52	15.46	15.25	15.18	15.20
Ash % cane	1.56	0.96	0.96	0.96	1.89	2.54	2.05	1.93	1.99	1.61	2.04	-	-	-
ERC % cane	12.10	11.98	11.95	11.96	11.26	11.02	10.65	10.73	10.69	11.12	11.32	11.01	10.70	10.82
ERC % sucrose in cane	86.21	86.41	86.55	86.48	85.44	85.54	83.91	84.05	83.98	85.31	86.08	85.64	84.71	85.08
RV % cane	12.81	12.67	12.62	12.65	11.95	11.68	11.36	11.44	11.40	11.79	11.97	11.67	11.38	11.49
Merc % cane	12.26	12.05	12.02	12.04	11.41	11.13	10.65	10.73	10.69	11.18	11.38	11.06	10.73	10.86
EXTRACTION														
Extraction (sucrose based)	97.81	97.81	98.07	97.94	97.50	97.62	98.40	98.32	98.36	97.92	96.87	98.62	98.45	98.52
Corrected reduced extraction	97.38	97.38	97.68	97.53	97.03	97.29	98.39	98.29	98.34	97.96	96.76	98.57	98.46	98.50
Imbibition % fibre	356	325	320	323	313	388	391	394	392	380	301	385	393	390
Diffusion Rate Index	10	-	-	-	7	8	-	-	-	-	-	-	-	-
Preparation index	92	93	93	93	-	90	91	90	90	93	91	93	92	92
Pol factor	99.44	100.76	99.69	100.24	99.20	98.86	97.84	97.89	97.87	99.71	99.53	100.04	99.41	99.65
Brix factor	101.12	102.15	100.97	101.57	101.58	100.44	100.97	101.00	100.99	101.35	100.85	100.43	101.06	100.82
RECOVERIES														
Boiling house recovery (sucrose)	87.43	-	-	88.82	84.28	86.22	-	-	85.03	88.93	89.74	-	-	87.43
C. R. B.	86.14	-	-	87.55	83.74	85.28	-	-	85.70	88.17	88.25	-	-	87.40
Overall recovery (sucrose)	85.51	-	-	86.99	82.17	84.16	-	-	83.64	87.08	86.93	-	-	86.13
Ton cane per ton sugar	8.31	-	-	8.26	9.23	9.15	-	-	9.34	8.75	8.69	-	-	9.08
Ton cane per ton 96^0 pol sugar	7.99	-	-	7.98	8.87	8.85	-	-	9.02	8.46	8.40	-	-	8.76
Value Recovery %	99.64	-	-	99.93	97.11	97.91	-	-	98.95	101.13	100.07	-	-	100.96
Crystal Recovery Efficiency (XRE)	100.65	-	-	102.01	97.85	99.40	-	-	101.76	103.54	102.42	-	-	103.00
BALANCES														
Sucrose lost % sucrose in cane														
- lost in bagasse	2.19	-	-	2.06	2.50	2.38	-	-	1.64	2.08	3.13	-	-	1.48
- lost in filter cake	-	-	-	-	0.14	0.65	-	-	-	-	0.26	-	-	-
- lost in final molasses	10.18	-	-	8.93	11.56	9.98	-	-	11.93	9.14	7.53	-	-	10.79
- undetermined losses	2.11	-	-	2.02	3.63	2.83	-	-	2.79	1.70	2.15	-	-	1.60
Non sucrose ratio	1.12	-	-	1.01	1.10	1.03	-	-	0.98	0.99	1.05	-	-	1.15
Fructose ratio FM/MJ	1.06	-	-	0.93	1.11	0.94	-	-	0.90	0.85	0.87	-	-	1.04
Glucose ratio FM/MJ	0.93	-	-	0.64	0.92	0.74	-	-	0.66	0.72	0.68	-	-	0.88

*** Cane diffuser**

TABLE A1 (continued)
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SOUTH AFRICAN FACTORIES (SEASON 2007 - 2008)

SYMBOLS OF FACTORIES	GH-A *	GH-B	GH-AVE	NB	UC *	ES *	SZ-A *	SZ-B *	SZ-AVE	UK *	INDUSTRY
TONS SUGAR MADE AND ESTIMATED	-	-	129923	168856	83057	175192	-	-	244848	139936	2285613
Refined % total sugar	-	-	100.00	100.00	-	-	-	-	-	-	25.19
Moisture all sugar	-	-	0.02	0.02	0.06	0.10	-	-	0.12	0.07	0.08
Pol all sugar	-	-	99.93	99.93	99.59	99.42	-	-	99.35	99.47	99.53
Tons cane crushed total			1181104	1450010	670076	1409281			2071265	1144618	19723915
Tons cane crushed per tandem	380805	800298					1019061	1052205			
Season started on	-	-	19-Apr-2007	9-Mar-2007	19-Mar-2007	15-Mar-2007	-	-	12-Apr-2007	12-Apr-2007	8-Mar-2007
Season completed on	-	-	21-Dec-2007	22-Dec-2007	19-Dec-2007	20-Dec-2007	-	-	22-Dec-2007	22-Dec-2007	24-Dec-2007
Length of season (days)	-	-	246	288	275	280	-	-	254	254	256
TIME ACCOUNT											
Overall time efficiency %	68.19	76.96	72.58	77.28	75.82	85.28	85.72	87.40	86.57	79.95	77.46
Scheduled stops% gross available time	3.98	4.02	4.00	4.81	7.83	4.32	4.31	4.29	4.30	7.18	6.11
Lack of cane % gross available time	20.37	10.18	15.27	8.10	3.61	7.08	7.72	4.83	6.27	10.47	9.92
Other stops % gross available time	7.07	8.58	7.83	8.86	12.69	2.31	1.81	3.03	2.42	1.80	5.89
Foreign matter % gross available time	0.39	0.25	0.32	0.95	0.06	1.00	0.43	0.45	0.44	0.61	0.62
Lost time % available crush.time	9.40	10.03	9.73	10.29	14.33	2.64	2.07	3.35	2.72	2.20	7.07
Force majeure stops (hours)	5	4	4	0	8	14	0	6	3	0	457
THROUGHPUTS PER CRUSHING HOUR											
Tons cane	97.24	181.01	283.33	272.13	133.89	246.06	195.86	197.26	393.14	235.09	298.26
Tons fibre	15.01	27.49	43.26	36.17	19.25	35.00	31.14	31.62	62.77	35.00	43.48
Tons brix in mixed juice(adj.)	14.54	26.46	41.72	42.71	21.00	38.81	30.21	30.45	60.66	36.66	45.67
Tons sucrose in mixed juice(adj.)	12.44	22.65	35.71	37.31	18.35	34.17	26.06	26.34	52.40	31.84	39.29
Tons non-suc. in mixed juice(adj.)	2.11	3.81	6.02	5.39	2.65	4.64	4.15	4.11	8.25	4.82	6.38
Tons of sugar produced	-	-	31.17	31.69	16.60	30.59	-	-	46.47	28.74	34.56
COMPOSITION OF CANE CRUSHED											
Sucrose % cane	13.12	12.89	12.97	14.11	14.11	14.23	13.52	13.56	13.54	13.77	13.47
Pol % cane	13.08	12.83	12.91	14.05	14.06	14.18	13.45	13.49	13.47	13.72	13.40
Fibre % cane	15.73	16.24	16.07	14.35	14.54	14.44	16.05	16.19	16.12	14.89	14.86
Brix % cane	15.55	15.30	15.38	16.40	16.40	16.36	15.89	15.90	15.89	16.10	15.89
Ash % cane	3.25	3.23	3.24	1.83	1.28	2.48	-	-	-	2.87	1.95
ERC % cane	11.24	11.01	11.09	12.31	12.30	12.50	11.65	11.71	11.68	11.94	11.59
ERC % sucrose in cane	85.62	85.43	85.49	87.23	87.18	87.89	86.17	86.34	86.25	86.70	86.06
RV % cane	11.90	11.67	11.75	12.97	12.97	13.14	12.31	12.37	12.34	12.60	12.26
Merc % cane	11.35	11.12	11.20	12.50	12.49	12.66	11.77	11.84	11.80	12.02	11.69
EXTRACTION											
Extraction (sucrose based)	97.47	97.05	97.19	97.16	97.13	97.64	98.45	98.45	98.45	98.36	97.82
Corrected reduced extraction	97.45	97.03	97.17	96.47	96.72	97.25	98.47	98.48	98.47	98.22	97.61
Imbibition % fibre	337	333	335	267	310	416	420	435	428	485	367
Diffusion Rate Index	9	11	10	6	7	6	7	7	7	8	9
Preparation index	-	-	-	-	93	-	-	-	-	-	92
Pol factor	99.14	99.45	99.35	99.22	98.27	99.35	99.35	99.44	99.40	99.26	99.30
Brix factor	99.75	99.95	99.88	100.37	100.44	100.05	100.88	100.74	100.81	100.74	100.85
RECOVERIES											
Boiling house recovery (sucrose)	-	-	87.23	84.87	90.07	88.99	-	-	88.10	89.78	87.56
C. R. B.	-	-	86.77	82.13	86.63	85.30	-	-	85.92	87.86	86.23
Overall recovery (sucrose)	-	-	84.77	82.46	87.48	86.89	-	-	86.74	88.31	85.65
Ton cane per ton sugar	-	-	9.09	8.59	8.07	8.04	-	-	8.46	8.18	8.63
Ton cane per ton 96^0 pol sugar	-	-	8.73	8.25	7.78	7.77	-	-	8.17	7.89	8.32
Value Recovery %	-	-	99.66	95.38	99.73	98.48	-	-	100.18	101.27	99.30
Crystal Recovery Efficiency (XRE)	-	-	101.27	95.98	100.92	99.63	-	-	101.52	103.32	100.94
BALANCES											
Sucrose lost % sucrose in cane											
- lost in bagasse	-	-	2.81	2.84	2.87	2.36	-	-	1.55	1.64	2.18
- lost in filter cake	-	-	0.38	1.03	0.06	0.18	-	-	0.18	-	0.19
- lost in final molasses	-	-	9.90	9.73	8.29	8.50	-	-	10.25	9.17	9.79
- undetermined losses	-	-	2.13	3.93	1.30	2.06	-	-	1.28	0.89	2.19
Non sucrose ratio	-	-	1.02	1.03	0.96	1.02	-	-	1.07	1.03	1.04
Fructose ratio FM/MJ	-	-	0.86	0.93	0.78	0.94	-	-	0.94	0.93	0.94
Glucose ratio FM/MJ	-	-	0.66	0.75	0.45	0.62	-	-	0.70	0.70	0.73

*** Cane diffuser**

TABLE A2
CANE CRUSHED AND SUGAR MADE,CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SWAZILAND, MALAWI, ZIMBABWE, ZAMBIA, TANZANIA AND MOZAMBIQUE FACTORIES
(SEASON 2007 - 2008)

SYMBOLS OF FACTORIES	UB-A *	UB-B	UB-AVE	NH *	DW *	HV-A *	HV-B *	HV-AVE	TR-A *	TR-B	TR-AVE	NK-A	NK-B	NK-AVE	MW *	RU *	MA *
TONS SUGAR MADE AND ESTIMATED	-	-	221620	154581	111207	-	-	156061	-	-	193439	-	-	234394	53470	73966	75313
Refined % total sugar	-	-	43.83	36.16	28.78	-	-	9.95	-	-	26.49	-	-	7.55	0.00	0.00	0.00
Moisture % all sugar	-	-	0.19	0.01	0.06	-	-	0.09	-	-	0.00	-	-	0.07	0.11	0.08	0.32
Pol % all sugar	-	-	99.28	99.54	99.23	-	-	99.18	-	-	99.02	-	-	99.41	99.26	99.47	99.09
Tons cane crushed total			1886199	1285134	829940			1279898			1617244			1859587	485305	696926	603245
Tons cane crushed per tandem	1080663	805536				669714	610184		1174464	442780		621141	1238446				
Season started on	-	-	12-Apr-2007	17-Apr-2007	20-Apr-2007	-	-	20-Apr-2007	-	-	18-Apr-2007	-	-	13-Apr-2007	29-Jun-2007	25-May-2007	14-May-2007
Season completed on	-	-	14-Dec-2007	13-Nov-2007	4-Dec-2007	-	-	21-Dec-2007	-	-	25-Dec-2007	-	-	14-Dec-2007	28-Feb-2008	9-Mar-2008	27-Dec-2007
Number of crushing days	-	-	246	210	228	-	-	245	-	-	251	-	-	245	244	289	227
TIME ACCOUNT																	
Overall time efficiency %	88.23	82.10	85.17	85.25	87.73	71.16	67.19	69.15	82.75	37.28	60.71	78.73	82.16	80.44	70.99	79.54	69.39
Scheduled stops% gross available time	3.44	4.53	3.98	3.42	4.65	2.52	3.12	2.82	3.22	6.70	4.91	0.08	0.07	0.07	2.56	5.20	1.94
Lack of cane % gross available time	5.87	11.36	8.61	5.05	2.08	20.29	23.28	21.80	3.38	46.04	24.06	6.12	4.18	5.15	22.13	10.20	25.97
Other stops % gross available time	0.96	0.89	0.92	5.99	5.08	5.83	6.38	6.11	10.64	9.83	10.25	14.64	12.22	13.43	3.95	4.74	2.42
Foreign matter % gross available time	1.51	1.11	1.31	0.28	0.46	0.19	0.05	0.12	0.01	0.15	0.08	0.43	1.38	0.90	0.36	0.31	0.27
Lost time % available crush.time	1.07	1.07	1.07	6.56	5.47	7.57	8.67	8.12	11.39	20.86	14.44	15.68	12.94	14.31	5.27	5.63	3.37
Force majeure stops (hours)	110	103	107	6	0	0	0	0	0	0	0	5	4	4	5	51	128
THROUGHPUTS PER CRUSHING HOUR																	
Tons cane	209.15	168.18	378.89	299.90	176.59	167.67	157.66	325.49	236.13	209.96	456.68	134.67	259.51	396.31	102.94	128.14	162.91
Tons fibre	23.80	19.68	43.63	41.79	26.58	24.53	22.85	47.40	32.30	27.64	61.82	18.29	34.54	53.11	16.37	18.73	19.95
Tons brix in mixed juice	32.49	27.00	59.70	46.85	29.09	27.39	25.99	53.40	37.15	32.37	71.46	21.48	41.33	63.15	14.88	17.70	25.91
Tons pol in mixed juice	27.84	22.85	50.87	40.56	25.61	23.74	22.47	46.23	31.89	27.57	61.20	18.88	36.31	55.49	12.63	15.04	22.50
Tons non-pol. in mixed juice	4.65	4.15	8.82	6.28	3.48	3.65	3.52	7.17	5.27	4.80	10.26	2.60	5.02	7.66	2.25	2.66	3.41
Tons of sugar produced	-	-	44.52	36.07	23.66	-	-	39.69	-	-	54.62	-	-	49.95	11.34	13.60	20.34
COMPOSITION OF CANE CRUSHED																	
Pol % cane	13.80	13.98	13.87	13.96	14.93	14.68	14.76	14.72	14.03	13.68	13.93	14.97	14.83	14.88	13.03	12.57	14.16
Fibre % cane	13.25	12.64	12.99	14.06	15.13	15.02	14.91	14.97	13.88	13.49	13.77	14.34	14.07	14.16	17.06	16.07	13.15
Brix % cane	16.46	16.85	16.63	16.47	17.31	17.23	17.36	17.29	16.91	16.51	16.80	17.34	17.16	17.22	15.83	15.17	16.53
Ash % cane	-	-	-	2.59	-	-	-	-	0.94	0.94	0.94	-	-	-	4.21	6.12	1.38
ERC % cane	11.82	11.89	11.85	12.05	13.05	12.72	12.76	12.74	11.91	11.62	11.83	13.11	13.00	13.04	10.92	10.59	12.33
ERC % pol in cane	85.67	85.06	85.41	86.28	87.38	86.59	86.47	86.53	84.90	84.89	84.89	87.55	87.62	87.60	83.80	84.29	87.10
EXTRACTION																	
Extraction (pol based)	96.45	97.20	96.77	96.88	97.11	96.42	96.57	96.49	96.27	95.93	96.18	93.64	94.31	94.09	94.11	93.41	97.52
Corrected reduced extraction	94.86	96.00	95.35	96.31	96.75	95.89	96.01	95.95	95.50	94.95	95.35	91.99	92.71	92.46	94.36	93.20	96.60
Imbibition % fibre	278	332	301	306	334	316	361	337	278	233	266	257	241	246	289	306	278
Diffusion Rate Index	12	10	11	7	7	-	-	-	-	-	-	-	-	-	-	-	-
Preparation index	-	-	-	-	-	92	92	92	91	91	91	-	-	-	76	78	90
Pol factor	99.25	97.99	98.71	98.58	99.32	97.30	98.14	97.70	98.30	95.75	97.60	97.72	96.91	97.18	99.74	92.77	99.79
Brix factor	100.24	99.96	100.12	100.52	100.43	98.54	99.61	99.05	100.74	98.38	100.09	98.80	97.86	98.17	101.68	95.90	100.61
RECOVERIES																	
Boiling house recovery (pol)	-	-	86.88	88.51	91.69	-	-	85.14	-	-	88.37	-	-	89.49	89.15	89.92	89.58
Overall recovery (pol)	-	-	84.08	85.75	89.04	-	-	82.15	-	-	85.00	-	-	84.20	83.90	84.00	87.36
Ton cane per ton sugar	-	-	8.51	8.31	7.46	-	-	8.20	-	-	8.36	-	-	7.93	9.08	9.42	8.01
Ton cane per ton 96^{0} pol sugar	-	-	8.23	8.02	7.22	-	-	7.94	-	-	8.11	-	-	7.66	8.78	9.09	7.76
BALANCES																	
Pol lost % pol in cane																	
- lost in bagasse	-	-	3.23	3.12	2.89	-	-	3.51	-	-	3.82	-	-	5.91	5.89	6.59	2.48
- lost in filter cake	-	-	0.31	0.09	0.07	-	-	0.02	-	-	0.18	-	-	0.53	0.29	0.31	0.41
- lost in final molasses	-	-	9.38	8.18	6.49	-	-	9.25	-	-	7.79	-	-	6.27	7.89	8.48	7.28
- undetermined losses	-	-	3.01	2.86	1.51	-	-	5.06	-	-	3.21	-	-	3.08	2.03	0.63	2.47
Non pol ratio	-	-	1.02	0.99	0.95	-	-	1.13	-	-	1.00	-	-	0.96	0.95	0.97	0.92

*** Cane diffuser**

TABLE B1
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SOUTH AFRICAN FACTORIES (SEASON 2007 - 2008)

SYMBOLS OF FACTORIES	ML *	KM-A *	KM-B *	KM-AVE	PG *	UF *	FX-A *	FX-B *	FX-AVE	AK *	DL	MS-A *	MS-B *	MS-AVE
FINAL BAGASSE														
Pol % bagasse	1.03	1.11	0.97	1.04	1.18	1.10	0.61	0.64	0.63	0.82	1.28	0.56	0.62	0.60
Moisture % bagasse	51.66	47.44	48.26	47.84	49.41	49.00	52.43	52.60	52.52	50.34	50.89	51.36	50.15	50.62
Fibre % bagasse	46.35	50.48	49.84	50.17	48.26	49.04	45.80	45.57	45.69	47.93	46.77	47.37	48.44	48.03
Ash % bagasse	3.37	-	-	1.13	3.86	5.69	-	-	-	3.46	-	-	-	-
LCV in kJ per kg bagasse ##	6889	-	-	8089	7253	7017	-	-	-	7153	-	-	-	-
MIXED JUICE														
Mixed juice (adj.) % cane	119.56	117.48	116.41	116.96	114.22	125.19	126.54	126.73	126.63	127.35	113.00	125.92	128.71	127.63
Brix % mixed juice (adj.)	13.38	13.42	13.49	13.45	13.21	11.80	11.74	11.75	11.75	11.74	13.02	11.79	11.44	11.58
Sucrose purity (MJ adj.)	85.85	86.02	86.21	86.11	85.14	85.16	84.07	84.27	84.17	85.39	86.58	85.39	84.45	84.81
Apparent purity (MJ adj.)	85.24	85.52	85.68	85.60	84.60	84.67	83.75	84.02	83.88	85.17	86.23	85.04	84.10	84.46
Purity difference (MJ adj. - DAC)	-0.21	-0.05	0.02	-0.02	-0.60	-0.32	-0.76	-0.69	-0.72	0.00	0.40	0.72	-0.18	0.17
(Glucose + fructose) % sucrose (MJ unadj)	5.21	-	-	4.78	5.66	5.21	-	-	4.92	4.40	4.24	-	-	4.74
Suspended solids % MJ (unadj.)	0.09	0.12	0.11	0.11	0.18	0.82	0.18	0.18	0.18	0.27	0.95	0.12	0.13	0.13
Pol/sucrose ratio (MJ unadj.)	0.9929	0.9942	0.9939	0.9940	0.9936	0.9942	0.9962	0.9970	0.9966	0.9974	0.9959	0.9959	0.9959	0.9959
CLARIFIED JUICE														
Brix % clarified juice	13.10	-	-	13.19	12.59	11.54	-	-	11.58	11.96	12.40	-	-	10.81
Apparent purity	84.64	-	-	85.17	84.71	84.14	-	-	83.15	84.07	85.37	-	-	81.44
Purity difference (CJ - MJ)	-0.60	-	-	-0.43	0.11	-0.53	-	-	-0.73	-1.10	-0.86	-	-	-3.03
Average pH	7.1	-	-	7.0	7.1	7.1	-	-	7.2	7.1	7.0	-	-	7.1
CLARIFIER MUD														
Tons clarifier mud	57089	102038	15345	117383	13035	-	58554	81473	140027	79584	-	4799	66395	71194
Pol % clarifier mud	11.18	11.81	11.49	11.77	12.27	-	8.89	8.93	8.91	10.07	-	9.46	9.44	9.44
Brix % clarifier mud	13.45	14.05	13.81	14.01	14.26	-	10.92	10.91	10.91	12.06	-	11.50	11.48	11.48
Insoluble solids % clarifier mud	3.12	2.63	2.59	2.62	7.35	-	3.18	3.11	3.14	6.44	-	2.64	2.91	2.89
FILTER CAKE														
Pol % filter cake	-	-	-	-	1.25	1.34	-	-	-	-	0.85	-	-	-
Moisture % filter cake	-	-	-	-	72.86	70.00	-	-	-	-	-	-	-	-
Filter cake % cane	-	-	-	-	1.47	6.23	-	-	-	-	4.00	-	-	-
Filter wash index	-	-	-	-	105.0	102.2	-	-	-	-	105.0	-	-	-
Purity difference (CJ - filtrate)	-	-	-	-	2.42	2.97	-	-	-	-	0.67	-	-	-
SYRUP														
Brix % syrup	69.72	-	-	66.27	65.83	60.59	-	-	64.37	67.61	65.90	-	-	68.81
Apparent purity	84.42	-	-	84.83	84.35	83.02	-	-	82.61	84.43	85.86	-	-	82.73
Purity difference (Syrup - MJ)	-0.82	-	-	-0.77	-0.25	-1.65	-	-	-1.27	-0.74	-0.37	-	-	-1.73
Average pH	5.8	-	-	5.9	6.0	6.1	-	-	6.1	6.2	6.1	-	-	5.8
FINAL MOLASSES														
Refractometer brix	85.00	-	-	84.40	84.98	83.58	-	-	85.91	86.37	86.40	-	-	88.16
Pol/refractometer brix purity	33.91	-	-	32.66	35.54	34.02	-	-	38.18	35.42	30.68	-	-	32.69
Sucrose/refractometer brix purity	36.32	-	-	36.62	38.29	36.91	-	-	40.23	36.29	33.08	-	-	35.24
Conductivity ash %	13.56	-	-	16.96	13.40	14.38	-	-	15.17	14.91	17.29	-	-	16.07
(Glucose + fructose)/ash ratio	1.17	-	-	0.78	1.19	0.94	-	-	0.76	0.82	0.70	-	-	0.84
Fructose %	8.32	-	-	7.76	8.57	7.76	-	-	6.77	7.01	7.07	-	-	7.60
Glucose %	7.50	-	-	5.52	7.37	5.76	-	-	4.83	5.19	5.05	-	-	5.96
TPD based on molasses (made)	7.8	-	-	2.7	7.4	4.8	-	-	4.9	3.6	0.2	-	-	2.0
TPD based on mixed juice	7.8	-	-	3.7	7.4	5.4	-	-	5.6	4.5	1.6	-	-	2.3
Final molasses @ 85^{0} brix % cane	4.63	-	-	3.97	4.68	4.10	-	-	4.44	3.86	3.52	-	-	4.58
Pol/sucrose ratio	0.9335	-	-	0.8920	0.9282	0.9216	-	-	0.9490	0.9760	0.9274	-	-	0.9277

*** Cane diffuser**

Net Calorific Value(LCV) = 18260 - 31,14 Bx % bagasse - 207,63 moisture % bagasse - 182,6 ash % bagasse

TABLE B1 (continued)
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SOUTH AFRICAN FACTORIES (SEASON 2007 - 2008)

SYMBOLS OF FACTORIES	GH-A *	GH-B	GH-AVE	NB	UC *	ES *	SZ-A *	SZ-B *	SZ-AVE	UK *	INDUSTRY
FINAL BAGASSE											
Pol % bagasse	1.03	1.19	1.14	1.48	1.32	1.16	0.67	0.67	0.67	0.74	0.97
Moisture % bagasse	50.56	50.20	50.32	48.43	50.93	49.15	47.21	47.58	47.40	49.35	49.77
Fibre % bagasse	47.61	47.66	47.64	48.99	46.74	48.85	51.30	50.95	51.12	48.97	48.29
Ash % bagasse	-	-	3.01	4.14	3.09	6.57	-	-	3.82	5.56	2.95
LCV in kJ per kg bagasse ##	-	-	7230	7398	7080	6824	-	-	7704	6976	7308
MIXED JUICE											
Mixed juice(adj.) % cane	119.63	118.77	119.05	108.42	113.83	130.06	135.84	138.25	137.06	142.05	123.39
Brix % mixed juice (adj.)	12.50	12.31	12.37	14.47	13.78	12.13	11.35	11.16	11.26	10.98	12.41
Sucrose purity (MJ adj.)	85.51	85.61	85.57	87.37	87.40	88.05	86.27	86.51	86.39	86.85	86.03
Apparent purity (MJ adj.)	85.25	85.20	85.22	86.97	87.10	87.74	85.83	86.05	85.94	86.53	85.62
Purity difference (MJ adj. - DAC)	0.60	0.89	0.80	0.28	-0.54	0.46	-0.12	0.07	-0.02	0.06	-0.03
(Glucose + fructose) % sucrose (MJ unadj)	-	-	4.99	4.35	4.08	3.60	-	-	4.39	3.85	4.62
Suspended solids % MJ (unadj.)	0.24	0.88	0.67	0.97	0.14	0.17	0.11	0.11	0.11	0.19	0.31
Pol/sucrose ratio (MJ unadj.)	0.9970	0.9953	0.9958	0.9954	0.9966	0.9965	0.9948	0.9947	0.9948	0.9963	0.9953
CLARIFIED JUICE											
Brix % clarified juice	-	-	12.20	14.65	14.05	12.01	-	-	10.98	10.73	12.25
Apparent purity	-	-	85.07	87.38	86.03	87.39	-	-	85.62	85.78	85.53
Purity difference (CJ - MJ)	-	-	-0.15	0.41	-1.07	-0.35	-	-	-0.33	-0.75	-0.63
Average pH	-	-	7.1	7.1	6.9	7.0	-	-	6.9	6.9	7.0
CLARIFIER MUD											
Tons clarifier mud	-	-	-	-	-	278	-	-	-	94926	573516
Pol % clarifier mud	-	-	-	-	-	10.79	-	-	-	6.69	9.66
Brix % clarifier mud	-	-	-	-	-	12.95	-	-	-	7.93	11.61
Insoluble solids % clarifier mud	-	-	-	-	-	4.32	-	-	-	3.35	3.59
FILTER CAKE											
Pol % filter cake	-	-	1.40	2.33	1.58	2.47	-	-	2.04	-	1.69
Moisture % filter cake	-	-	70.00	75.00	72.00	72.45	-	-	69.32	-	72.06
Filter cake % cane	-	-	3.51	6.24	0.54	1.06	-	-	1.20	-	1.53
Filter wash index	-	-	101.4	98.8	98.1	101.0	-	-	102.5	-	101.3
Purity difference (CJ - filtrate)	-	-	2.39	1.10	4.70	1.71	-	-	1.31	-	1.96
SYRUP											
Brix % syrup	-	-	64.90	68.98	68.29	64.10	-	-	63.71	64.94	65.89
Apparent purity	-	-	85.04	86.93	86.77	87.45	-	-	85.87	85.52	84.92
Purity difference (Syrup - MJ)	-	-	-0.18	-0.04	-0.33	-0.29	-	-	-0.07	-1.01	-0.69
Average pH	-	-	6.1	6.0	6.4	6.1	-	-	5.9	6.0	6.0
FINAL MOLASSES											
Refractometer brix	-	-	82.77	82.55	84.95	82.67	-	-	83.17	88.82	84.84
Pol/refractometer brix purity	-	-	35.73	37.44	35.84	36.48	-	-	36.45	36.24	35.18
Sucrose/refractometer brix purity	-	-	37.36	40.31	38.74	39.33	-	-	38.90	37.98	37.68
Conductivity ash %	-	-	14.87	11.91	12.79	12.33	-	-	13.28	14.76	14.44
(Glucose + fructose)/ash ratio	-	-	0.78	1.03	0.78	0.87	-	-	0.85	0.81	0.88
Fructose %	-	-	6.78	7.35	6.80	6.76	-	-	6.84	7.07	7.37
Glucose %	-	-	4.77	4.91	3.22	3.91	-	-	4.49	4.82	5.37
TPD based on molasses (made)	-	-	4.1	8.4	6.1	6.8	-	-	6.5	4.8	5.1
TPD based on mixed juice	-	-	5.9	9.4	8.7	8.0	-	-	7.7	5.4	5.9
Final molasses @ 85^0 brix % cane	-	-	4.04	4.01	3.55	3.62	-	-	4.20	3.91	4.12
Pol/sucrose ratio	-	-	0.9564	0.9290	0.9252	0.9275	-	-	0.9372	0.9544	0.9337

*** Cane diffuser**

Net Calorific Value(LCV) = 18260 - 31,14 Bx % bagasse - 207,63 moisture % bagasse - 182,6 ash % bagasse

TABLE B2
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SWAZILAND, MALAWI, ZIMBABWE, ZAMBIA,TANZANIA AND MOZAMBIQUE FACTORIE
(SEASON 2007 - 2008)

SYMBOLS OF FACTORIES	UB-A *	UB-B	UB-AVE	NH *	DW *	HV-A *	HV-B *	HV-AVE	TR-A *	TR-B	TR-AVE	NK-A	NK-B	NK-AVE	MW	RU	MA
FINAL BAGASSE																	
Pol % bagasse	2.04	1.53	1.82	1.48	1.44	1.68	1.63	1.66	1.58	1.85	1.65	3.10	2.94	2.99	2.24	2.65	1.42
Moisture % bagasse	48.79	50.94	49.74	49.70	46.83	50.37	50.48	50.42	54.95	52.62	54.35	51.26	49.37	50.03	49.58	48.87	47.86
Fibre % bagasse	47.37	45.93	46.73	47.40	50.38	46.77	46.70	46.73	41.47	43.76	42.06	44.23	46.32	45.59	46.38	46.79	49.60
Ash % bagasse	-	-	3.97	-	-	-	-	-	-	-	-	-	-	-	5.06	7.66	2.59
LCV in kJ per kg bagasse ##	-	-	7128	-	-	-	-	-	-	-	-	-	-	-	6946	6609	7800
MIXED JUICE																	
Mixed juice % cane	107.64	113.34	110.07	113.18	120.35	114.90	121.27	117.94	104.98	100.61	103.79	104.13	103.33	103.60	111.73	113.43	109.37
Brix % mixed juice	14.43	14.16	14.31	13.80	13.69	14.22	13.59	13.91	14.99	15.32	15.08	15.32	15.41	15.38	12.93	12.18	14.54
Apparent purity	85.67	84.63	85.22	86.59	88.02	86.68	86.46	86.58	85.83	85.16	85.65	87.89	87.85	87.86	84.88	84.97	86.83
Purity difference (MJ - DAC)	0.99	0.02	0.57	0.15	0.79	0.37	0.16	0.27	0.84	-0.03	0.61	0.57	0.58	0.58	0.97	-0.67	0.46
Suspended solids % mixed juice	1.74	0.83	1.34	0.11	0.06	0.34	0.35	0.34	0.20	0.32	0.23	0.73	0.73	0.73	1.04	1.28	0.83
CLARIFIED JUICE																	
Brix % clarified juice	-	-	14.87	13.90	12.90	-	-	13.58	-	-	14.82	-	-	13.49	13.17	13.23	14.30
Apparent purity	-	-	85.09	87.39	88.17	-	-	86.01	-	-	85.01	-	-	87.16	85.64	87.02	85.97
Purity difference (CJ - MJ)	-	-	-0.13	0.80	0.15	-	-	-0.57	-	-	-0.64	-	-	-0.71	0.76	2.05	-0.86
Average pH	-	-	7.2	7.0	6.5	-	-	7.1	-	-	7.3	-	-	7.0	7.0	7.0	7.0
CLARIFIER MUD																	
Tons clarifier mud	-	-	-	-	-	44672	40386	85058	249	-	249	-	-	-	-	-	-
Pol % clarifier mud	-	-	-	-	-	12.43	12.13	12.29	6.43	-	6.43	-	-	-	-	-	-
Brix % clarifier mud	-	-	-	-	-	15.04	14.75	14.90	7.63	-	7.63	-	-	-	-	-	-
Insoluble solids % clarifier muc	-	-	-	-	-	3.30	3.43	3.36	3.21	-	3.21	-	-	-	-	-	-
FILTER CAKE																	
Pol % filter cake	-	-	1.65	0.68	0.97	-	-	-	-	-	1.01	-	-	2.05	0.93	1.03	1.41
Moisture % filter cake	-	-	-	-	72.12	-	-	-	-	-	-	-	-	77.28	66.59	-	70.86
Filter cake % cane	-	-	2.63	1.76	1.00	-	-	-	-	-	2.49	-	-	3.86	4.09	3.78	4.15
Filter wash index	-	-	96.3	99.3	106.1	-	-	-	-	-	101.7	-	-	114.0	98.2	92.1	101.7
Purity difference (CJ - filtrate)	-	-	1.12	2.33	1.18	-	-	-	-	-	1.67	-	-	1.18	1.49	2.65	1.28
SYRUP																	
Brix % syrup	-	-	67.44	66.24	66.91	-	-	62.75	-	-	65.21	-	-	68.63	64.96	63.82	64.41
Apparent purity	-	-	84.97	87.59	87.77	-	-	86.18	-	-	85.32	-	-	87.44	85.74	85.86	85.81
Purity difference (Syrup - MJ)	-	-	-0.25	1.00	-0.25	-	-	-0.40	-	-	-0.33	-	-	-0.43	0.86	0.89	-1.02
Average pH	-	-	6.0	6.3	6.3	-	-	6.4	-	-	6.4	-	-	6.3	6.8	6.5	6.1
FINAL MOLASSES																	
Refractometer brix	-	-	87.12	83.81	85.56	-	-	81.33	-	-	86.64	-	-	87.19	81.80	86.76	80.04
Pol/refractometer brix purity	-	-	36.10	36.06	35.20	-	-	36.19	-	-	33.67	-	-	34.20	33.97	35.09	35.69
Purity difference (true-target)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reducing sugars % #	-	-	20.33	-	-	-	-	15.65	-	-	-	-	-	-	-	-	-
Sulphated ash %	-	-	13.05	-	-	-	-	14.97	-	-	-	-	-	-	-	-	-
Reducing sugars/ash ratio	-	-	1.56	-	-	-	-	1.05	-	-	-	-	-	-	-	-	-
Final molasses at 85° brix % cane	-	-	4.24	3.73	3.24	-	-	4.43	-	-	3.79	-	-	3.21	3.56	3.57	3.40

*** Cane diffuser**
 # Reducing sugars determined by Lane & Eynon method.
Net Calorific Value(LCV) = 18260 - 31,14 Bx % bagasse - 207,63 moisture % bagasse - 182,6 ash % bagasse

TABLE C1
MASSECUITES, EXHAUSTIONS, CLARIFYING AGENTS AND ADDITIONAL FUELS
SOUTH AFRICAN FACTORIES (SEASON 2007-2008)

SYMBOLS OF FACTORIES	ML	KM	PG	UF	FX	AK	DL	MS	GH	NB	UC	ES	SZ	UK	INDUSTRY
A - MASSECUITE															
m^3 per ton brix in mixed juice (adj.)	0.93	-	1.31	0.76	0.99	1.05	0.94	1.01	1.11	1.25	1.05	1.06	1.01	1.00	0.92
Refractometer brix of massecuite	92.38	92.46	92.35	92.21	93.04	92.63	93.18	93.24	92.88	92.62	92.05	92.61	93.20	92.95	92.75
Purity of massecuite	85.88	84.54	84.83	83.52	84.09	84.65	86.16	83.12	85.71	87.54	86.70	86.31	86.42	85.32	85.50
Purity of A - molasses	71.73	66.59	72.50	67.33	67.47	67.55	66.20	64.37	68.65	71.48	71.61	70.59	68.15	65.16	68.92
Purity drop	14.15	17.95	12.32	16.19	16.62	17.10	19.96	18.75	17.06	16.06	15.09	15.72	18.27	20.16	16.59
Exhaustion	58.28	63.55	52.84	59.33	60.76	62.25	68.54	63.32	63.49	64.32	61.31	61.93	66.39	67.82	62.41
Pty of A-massecuite - purity syrup	1.46	-0.29	0.48	0.50	1.48	0.22	0.30	0.39	0.67	0.61	-0.07	-1.14	0.55	-0.20	0.58
Pty of remelt	86.21	82.05	86.03	83.52	86.70	84.41	84.15	85.56	83.79	84.88	86.83	86.02	85.88	85.79	85.04
B - MASSECUITE															
m^3 per ton brix in mixed juice (adj.)	0.54	-	0.56	0.27	0.35	0.36	0.24	0.33	0.44	0.63	0.35	0.33	0.34	0.44	0.36
Refractometer brix of massecuite	94.37	94.56	94.88	94.91	95.08	94.36	94.28	94.55	94.94	94.51	94.22	95.28	95.49	94.63	94.76
Purity of massecuite	71.45	68.02	72.82	66.68	69.77	68.38	67.44	66.08	69.17	72.10	71.36	71.10	70.53	69.79	70.30
Purity of B - molasses	53.18	44.64	51.43	43.47	47.14	48.76	44.35	45.82	47.00	51.29	47.84	47.05	46.15	49.31	48.81
Purity drop	18.27	23.38	21.39	23.21	22.63	19.62	23.09	20.26	22.17	20.80	23.52	24.05	24.39	20.48	21.49
Exhaustion	54.61	62.08	60.48	61.57	61.36	56.00	61.52	56.58	60.47	59.24	63.19	63.88	64.20	57.89	59.72
C - MASSECUITE															
m^3 per ton brix in mixed juice (adj.)	0.09	-	0.47	0.24	0.32	0.28	0.25	0.32	0.28	0.26	0.18	0.21	0.26	0.31	0.23
Refractometer brix of massecuite	97.00	96.99	96.89	96.57	96.59	96.39	96.77	96.99	96.76	96.64	97.85	97.13	96.41	97.43	96.80
Purity of massecuite	58.02	53.30	55.09	51.90	56.25	55.62	52.17	53.74	53.30	55.83	53.24	54.41	56.64	56.51	55.08
Purity of C - molasses	33.91	32.66	35.54	34.02	38.18	35.42	30.68	32.69	35.73	37.44	35.84	36.48	36.45	36.24	35.18
Crystal content	35.39	29.72	29.39	26.17	28.23	30.15	30.00	30.34	26.45	28.41	26.53	27.42	30.62	30.97	29.72
Exhaustion	62.88	57.50	55.06	52.22	51.97	56.24	59.42	58.20	51.29	52.65	50.93	51.88	56.08	56.25	55.74
TOTAL VOLUME ALL RAW MASSECUITES															
m^3 per ton brix in mixed juice (adj.)	1.57	-	2.34	1.27	1.66	1.69	1.43	1.66	1.84	2.15	1.58	1.60	1.61	1.75	1.51
WHITE SUGAR MASSECUITES															
kg sugar per m^3 massecuite	165	-	519	-	-	-	-	-	537	386	-	-	-	-	401
Tons limestone per 1000 tons white sugar	-	-	-	-	-	-	-	-	40.39	-	-	-	-	-	9.23
Tons coke per 1000 tons white sugar	-	-	-	-	-	-	-	-	3.83	-	-	-	-	-	0.70
Tons phosphoric acid per 1000 tons white sugar	-	-	-	-	-	-	-	-	-	1.34	-	-	-	-	0.32
Tons sulphur per 1000 tons white sugar	0.48	-	0.23	-	-	-	-	-	0.23	0.21	-	-	-	-	0.23
Phosphoric acid ppm mixed juice (unadj.)	-	-	-	-	-	-	-	-	4.69	-	22.99	80.47	11.98	43.97	11.30
Flocculant ppm mixed juice (unadj.)	4.04	2.50	4.25	6.71	3.72	4.15	1.80	2.04	3.58	8.15	4.69	6.22	4.17	2.98	4.20
Tons lime per 1000 tons cane	2.36	0.19	2.20	-	0.77	0.64	0.51	0.65	-	0.82	0.48	0.52	0.52	0.41	0.74
Enzyme ppm sugar	-	-	-	-	-	-	28.30	2.91	18.80	-	-	9.04	43.73	12.28	8.89
ADDITIONAL FUELS PER 1000 TONS CANE															
Tons of coal	24.58	1.05	13.18	5.21	15.58	2.97	1.15	23.46	10.02	27.49	5.42	1.16	25.25	0.63	12.05
Tons of wood	-	-	-	-	0.03	-	0.30	0.03	-	-	0.34	0.30	0.12	-	0.07
Converted into bagasse **	98.33	4.19	52.71	20.84	62.35	11.87	4.97	93.90	40.06	109.95	22.08	4.98	101.15	2.50	48.29

**** 1 TON COAL EQUIVALENT TO 4 TONS OF BAGASSE**
1 TON FIREWOOD EQUIVALENT TO 1,2 TONS OF BAGASSE
 # 1 TON SULPHUR DIOXIDE EQUIVALENT TO 0,5 TONS OF SULPHUR

TABLE C2
MASSECUITES, EXHAUSTIONS, CLARIFYING AGENTS AND ADDITIONAL FUELS
SWAZILAND, MALAWI, ZIMBABWE, ZAMBIA, TANZANIA AND MOZAMBIQUE FACTORIES (SEASON 2007 - 2008)

SYMBOLS OF FACTORIES	UB	NH	DW	HV	TR	NK	MW	RU	MA
A - MASSECUITE									
m^3 per ton brix in mixed juice	1.04	1.37	1.32	1.05	-	1.10	1.13	1.38	1.02
Refractometer brix of massecuite	93.32	94.16	92.19	92.36	92.39	93.45	92.19	93.56	92.59
Purity of massecuite	85.12	88.87	87.63	86.03	84.60	87.93	86.39	87.50	87.09
Purity of A - molasses	69.68	74.28	72.74	68.56	66.99	55.86	71.63	73.34	68.86
Purity drop	15.44	14.59	14.89	17.47	17.61	32.07	14.76	14.16	18.24
Exhaustion	59.83	63.84	62.34	64.59	63.06	82.63	60.22	60.70	67.24
Purity of A-massecuite - pty syrup	0.15	1.28	-0.14	-0.15	-0.72	0.49	0.65	1.64	1.28
Purity of remelt	86.73	84.71	86.66	81.60	81.81	83.97	85.87	86.29	85.55
B - MASSECUITE									
m^3 per ton brix in mixed juice	0.37	0.36	0.65	-	-	0.39	0.44	0.53	0.37
Refractometer brix of massecuite	95.70	94.10	93.27	92.73	94.66	94.89	94.59	94.13	93.86
Purity of massecuite	68.28	73.17	69.26	67.82	67.36	72.81	71.99	73.11	69.87
Purity of B - molasses	47.44	54.11	51.02	49.34	46.42	52.36	49.19	52.03	48.71
Purity drop	20.84	19.06	18.24	18.48	20.94	20.45	22.80	21.08	21.15
Exhaustion	58.07	56.77	53.77	53.79	58.02	58.95	62.33	60.11	59.03
C - MASSECUITE									
m^3 per ton brix in mixed juice	0.24	0.20	0.23	-	-	0.20	0.25	0.26	0.20
Refractometer brix of massecuite	98.38	97.49	95.63	95.83	97.33	97.38	97.19	96.61	95.72
Purity of massecuite	52.89	56.30	52.98	52.19	55.01	55.86	52.84	55.26	52.68
Purity of C - molasses	36.10	36.06	35.20	36.19	33.67	34.20	33.97	35.09	35.69
Crystal content	25.85	30.86	26.24	24.03	31.31	32.05	27.77	30.03	25.28
Exhaustion	49.68	56.23	51.79	48.05	58.49	58.92	54.08	56.24	50.14
TOTAL VOLUME ALL RAW MASSECUITES									
m^3 per ton brix in mixed juice	1.65	1.92	2.20	-	-	1.70	1.82	2.17	1.59
WHITE SUGAR MASSECUITES									
kg sugar per m^3 massecuite	518	489	526	-	-	-	-	-	-
Tons phosphoric acid/1000 tons white sugar	-	0.69	-	-	-	1.54	-	-	-
Tons sulphur/1000 tons white sugar	0.16	-	0.12	0.64	-	-	-		-
Phos. acid ppm mixed juice	-	-	-	-	-	-	-	-	0.5
Flocculant ppm mixed juice	0.2	1.4	1.9	1.8	2.4	1.7	3.2	0.1	3.9
Tons lime per 1000 tons cane	0.3	0.8	0.8	0.8	0.6	0.3	0.7	0.9	1.8
Enzyme ppm sugar	-	-	-	-	-	-	-	-	-
ADDITIONAL FUELS PER 1000 TONS CANE									
Tons of coal	5.34	-	-	8.05	6.58	-	-	-	0.72
Tons of wood	-	0.01	0.45	0.02	-	-	0.81	0.58	-
Converted into bagasse **	21.38	0.01	0.54	32.23	26.34	-	0.97	0.69	2.88

**** 1 TON COAL EQUIVALENT TO 4 TONS OF BAGASSE**
1 TON FIREWOOD EQUIVALENT TO 1,2 TONS OF BAGASSE
 # 1 TON SULPHUR DIOXIDE EQUIVALENT TO 0,5 TONS OF SULPHUR

TABLE D
COMPARATIVE MANUFACTURING DATA OF RECENT YEARS
(SOUTH AFRICAN FACTORIES)

	2007/2008	2006/2007	2004/2005	2004/2005	2003/2004
Throughput and time efficiency					
Tons cane per hour	298.26	303.63	301.95	301.95	284.40
Tons fibre per hour	43.48	44.51	44.11	44.11	41.35
Overall time efficiency	77.46	76.47	82.40	82.40	82.72
Cane					
Sucrose % cane	13.47	12.92	13.52	13.52	13.70
Fibre % cane	14.86	14.95	14.84	14.84	14.81
Mixed juice					
Sucrose purity (MJ adj.)	86.03	85.55	85.81	85.81	86.36
(Glucose + Fructose)/ash in M.J. (unadj.)	0.97	1.01	1.03	1.03	0.98
Milling					
Imbibition % fibre	367	372	369	369	375
Extraction (sucrose based)	97.82	97.84	97.98	97.98	97.87
Pol % bagasse	0.97	0.92	0.90	0.90	0.96
Moisture % bagasse	49.77	49.76	49.93	49.93	50.34
Bagasse % cane	30.19	30.30	30.30	30.30	30.46
LCV bagasse kJ/kg	7308	7377	7397	7397	7233
Available kJ in bag./kg brix in M.J. (adj)	14408	15124	14515	14515	14192
Recoveries					
Boiling house recovery (sucrose based)	87.56	87.51	88.00	88.00	88.14
Overall recovery (sucrose based)	85.65	85.61	86.23	86.23	86.26
Tons cane per ton sugar	8.63	8.99	8.53	8.53	8.42
Filter cake					
Pol % filter cake	1.69	1.68	1.56	1.56	1.71
Filter cake % cane	1.53	1.47	1.25	1.25	1.40
Final molasses					
Brix % final molasses	84.84	84.72	83.97	83.97	84.79
Sucrose/refractometer brix purity	37.68	37.43	36.94	36.94	37.92
Final molasses @ 85^{υ} brix % cane	4.12	4.08	4.16	4.16	4.03
Average sugar polarisation	99.53	99.52	99.48	99.48	99.53
Sucrose lost % sucrose in cane					
Lost in bagasse	2.18	2.16	2.02	2.02	2.13
Lost in filter cake	0.19	0.19	0.14	0.14	0.17
Lost in final molasses	9.79	10.03	9.65	9.65	9.48
Undetermined losses	2.19	2.00	1.96	1.96	1.95
Lost in boiling house	12.17	12.22	11.75	11.75	11.61
Total losses	14.35	14.39	13.77	13.77	13.74
M^3 massecuite per ton Bx in M.J.					
A - massecuite	0.92	0.95	0.92	0.92	0.95
B - massecuite	0.36	0.36	0.33	0.33	0.36
C - massecuite	0.23	0.24	0.23	0.23	0.22
Total	1.51	1.55	1.49	1.49	1.53
Exhaustion of massecuites					
A - massecuite	62.41	63.48	64.40	64.40	63.99
B - massecuite	59.72	58.92	58.63	58.63	57.76
C - massecuite	55.74	55.05	56.46	56.46	54.57
Brix of syrup	65.89	65.73	65.32	65.32	65.96

TABLE E
AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS
FOR SOUTH AFRICAN FACTORIES (SEASON 2007 - 2008)

End of month period		31 MAR 2007	28 APR 2007	2 JUN 2007	30 JUN 2007	28 JUL 2007	1 SEP 2007	29 SEP 2007	27 OCT 2007	1 DEC 2007	29 DEC 2007
Tons of sugar made and estimated	Month	30999	115739	333324	276914	310943	393525	282724	205256	250875	85314
	To-date	30999	146738	480062	756976	1067919	1461444	1744168	1949424	2200299	2285613
Tons cane crushed	Month	301071	1116336	2899844	2373333	2566390	3113384	2216309	1827170	2382919	927159
	To-date	301071	1417407	4317251	6690584	9256974	12370358	14586667	16413837	18796756	19723915
Tons cane crushed per hour actual crushing	Month	219.05	258.78	300.72	317.85	315.25	313.90	304.21	287.84	293.50	265.19
	To-date	219.05	249.18	282.62	294.18	299.73	303.18	303.33	301.53	300.49	298.62
Sucrose % cane	Month	12.83	12.38	13.19	13.31	13.82	14.40	14.66	13.32	12.59	11.82
	To-date	12.83	12.47	12.95	13.08	13.29	13.57	13.73	13.69	13.55	13.47
Fibre % cane	Month	14.15	14.85	14.03	14.16	14.11	14.28	14.87	16.29	16.44	16.63
	To-date	14.15	14.71	14.25	14.22	14.19	14.21	14.31	14.53	14.77	14.86
RV % cane	Month	11.61	11.19	12.03	12.15	12.68	13.24	13.45	12.13	11.35	10.57
	To-date	11.61	11.28	11.78	11.91	12.12	12.40	12.56	12.51	12.36	12.27
Tons cane per ton sugar	Month	9.71	9.65	8.70	8.57	8.25	7.91	7.84	8.90	9.50	10.87
	To-date	9.71	9.66	8.99	8.84	8.67	8.46	8.36	8.42	8.54	8.63
Extraction . . . . . (sucrose based)	Month	97.28	97.53	97.89	97.90	97.92	97.94	98.02	97.72	97.60	97.24
	To-date	97.28	97.48	97.76	97.81	97.84	97.87	97.89	97.88	97.84	97.82
Imbibition % fibre	Month	321	360	378	366	365	370	371	365	367	352
	To-date	321	353	370	368	367	368	368	368	368	367
Pol % bagasse	Month	1.21	1.00	0.96	0.97	1.00	1.02	0.97	0.93	0.91	0.96
	To-date	1.21	1.04	0.99	0.99	0.99	1.00	0.99	0.99	0.97	0.97
Moisture % bagasse	Month	50.62	50.16	50.43	49.92	49.83	49.59	49.23	49.14	49.73	49.93
	To-date	50.62	50.25	50.37	50.21	50.11	49.98	49.86	49.77	49.77	49.77
Boiling house recovery . . . . (sucrose based)	Month	82.28	85.53	88.60	89.12	89.12	89.16	88.32	85.87	85.27	79.87
	To-date	82.28	84.82	87.41	88.03	88.34	88.56	88.52	88.24	87.89	87.56
Overall recovery . . . . . (sucrose based)	Month	80.05	83.42	86.73	87.25	87.27	87.33	86.58	83.91	83.22	77.66
	To-date	80.05	82.68	85.45	86.10	86.44	86.68	86.66	86.36	85.99	85.65
Mixed juice sucrose purity . . .	Month	84.48	84.85	85.70	85.79	86.80	86.92	86.63	86.22	85.07	84.24
	To-date	84.48	84.77	85.40	85.54	85.90	86.17	86.25	86.24	86.10	86.03
Pol/sucrose ratio in mixed juice	Month	0.9936	0.9899	0.9939	0.9945	0.9942	0.9985	0.9969	0.9984	0.9947	0.9896
	To-date	0.9936	0.9907	0.9929	0.9935	0.9937	0.9950	0.9953	0.9956	0.9955	0.9953
Sucrose/refractometer brix purit in final molasses	Month	39.84	37.38	36.36	35.90	36.83	37.54	37.92	38.68	38.67	42.30
	To-date	39.84	37.94	36.92	36.56	36.64	36.86	37.03	37.23	37.42	37.68
Sucrose lost in final molasses % sucrose in cane	Month	12.40	10.93	9.12	9.08	8.82	8.84	9.38	10.50	11.46	13.91
	To-date	12.40	11.25	9.80	9.54	9.33	9.20	9.23	9.37	9.61	9.79
Undetermined lost sucrose % sucrose in cane	Month	4.16	2.84	1.87	1.40	1.68	1.64	1.95	3.10	2.67	5.30
	To-date	4.16	3.13	2.27	1.96	1.87	1.81	1.83	1.97	2.05	2.19
Pol/sucrose ratio FM	Month	0.9210	0.9252	0.9018	0.8865	0.9124	0.9359	0.9479	0.9764	0.9701	0.9641
	To-date	0.9210	0.9242	0.9099	0.9019	0.9048	0.9128	0.9186	0.9256	0.9318	0.9337

TABLE F
CANE VARIETIES AND RAINFALL
(SEASON 2007 - 2008)
PERCENTAGE BY WEIGHT

MILL	N 11	N 12	N 14	N 16	N 17	N 19	N 21	N 22	N 23	N 24	N 25	N 26	N 27	N 28	N 29	N 30	N 31	N 32	N 36	NCo 376	MIXED VARIETY	UNKNOWN AND OTHER	% BURNT	* RAINFALL mm
ML	-	-	9.4	-	0.2	27.0	-	1.8	5.4	1.1	41.2	0.2	-	-	-	0.8	-	11.1	0.6	-	1.3	-	99.8	452
KM	-	-	23.3	-	-	31.8	-	1.3	4.5	0.8	22.2	0.1	-	0.3	-	0.3	-	10.1	1.5	-	3.3	0.5	98.2	337
PG	-	-	19.0	-	0.4	9.1	-	1.1	9.8	0.1	29.6	8.3	-	0.5	-	0.2	-	1.1	14.2	-	3.3	3.4	99.4	700
UF	-	1.3	1.3	-	5.5	23.1	0.4	2.2	0.4	0.1	1.1	0.4	7.9	-	5.4	-	-	-	0.3	8.3	7.4	34.7	98.7	638
FX	-	1.8	1.8	-	3.7	6.2	0.3	0.2	4.4	0.1	11.9	0.3	25.0	0.5	5.5	0.2	0.2	-	1.4	9.0	2.8	24.9	85.5	629
AK	-	18.3	0.2	4.4	2.5	4.6	2.1	-	-	-	0.9	0.1	14.4	-	4.5	-	0.9	-	0.1	5.0	6.3	35.9	95.6	591
DL	-	17.5	0.2	3.6	3.4	4.3	2.8	-	-	-	-	-	19.7	-	4.6	-	1.4	-	-	4.9	1.0	36.3	96.2	646
MS	-	16.6	0.1	8.8	3.1	2.5	1.4	-	-	-	0.4	-	7.8	-	6.3	-	0.7	-	0.3	26.8	6.5	18.7	75.8	732
GH	-	17.3	0.2	9.3	1.9	1.8	0.9	-	-	-	0.6	0.1	13.8	-	2.3	-	3.2	-	0.1	15.5	5.5	27.5	72.6	861
NB	0.3	62.8	-	15.5	-	0.1	-	-	0.2	-	0.4	0.3	0.6	-	0.6	-	9.3	-	2.9	-	0.6	6.5	97.1	599
UC	0.2	56.9	-	24.4	-	0.3	1.1	0.1	0.2	-	0.7	0.5	0.1	-	0.4	0.1	7.4	-	-	-	-	7.7	98.7	698
ES	-	70.9	-	11.1	0.1	-	0.2	0.1	0.1	-	0.1	0.2	0.7	0.1	0.8	0.9	10.1	-	0.3	0.1	0.2	4.1	87.3	634
SZ	-	39.0	0.1	8.1	-	-	0.8	-	-	-	-	-	4.8	-	3.7	-	0.7	-	0.1	4.1	11.1	27.6	72.1	992
UK	-	28.7	0.2	1.5	-	-	1.9	-	-	-	-	-	2.4	-	2.7	-	1.3	-	-	6.2	2.9	52.2	94.1	735
Avg. SA Mills	-	21.9	5.1	5.3	1.3	9.2	0.8	0.5	2.1	0.2	9.4	0.7	6.9	0.1	2.5	0.2	2.2	2.2	1.7	5.2	4.0	18.5	90.3	
UB	-	-	2.7	-	-	11.6	-	-	32.1	0.2	19.1	-	-	-	-	-	-	-	-	26.3	8.1	-	-	528
NH	-	-	28.5	-	-	0.4	-	-	2.7	-	22.6	-	-	-	0.5	-	-	19.2	-	-	25.6	0.6	-	142
DW	-	-	4.0	-	-	13.9	-	-	-	-	7.8	-	-	-	-	-	-	-	-	18.9	1.9	53.5	-	133
HV	-	-	46.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.1	0.7	41.2	-	285
TR	-	-	54.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28.6	1.5	15.7	-	585
NK	-	-	13.3	-	-	31.6	-	0.5	18.5	-	31.9	-	-	-	-	-	-	0.4	-	0.3	2.7	0.9	-	823
MW	-	-	-	-	-	6.9	-	-	-	-	6.1	-	-	-	-	0.4	-	-	-	84.7	2.0	-	-	1039
RU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1039
MA	-	-	-	-	-	44.6	-	-	32.1	-	3.5	-	-	4.0	-	-	-	-	-	15.7	-	0.1	-	733

*** Rainfall during the crushing season**

TABLE G
TRANSPORT SUMMARY - SOUTH AFRICAN FACTORIES
(SEASON 2007 - 2008)
PERCENT OF CANE TRANSPORTED

MILLS	ML	KM	PG	UF	FX	AK	DL	MS	GH	NB	UC	ES	SZ	UK	AVERAGE
SOUTH AFRICAN RAILWAYS	-	-	-	-	22.0	-	-	-	-	-	-	-	-	-	2.1
TRAMS	-	-	-	66.8	-	-	0.1	-	-	-	-	-	-	-	3.5
TANKERS	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-
ARTICULATED TRUCK DRIVEN VEHICLES															
- Interlink	-	0.1	11.7	31.3	60.6	41.1	30.1	88.6	38.1	26.0	12.7	45.1	90.6	93.1	40.7
- Tri-Axle	-	-	2.1	-	1.6	0.4	7.8	0.4	0.1	2.8	0.1	15.0	-	-	2.1
- Hilo	7.0	2.0	19.8	0.3	0.3	1.9	8.0	-	2.1	2.7	1.9	-	5.6	0.1	3.7
RIGID CHASSIS VEHICLES															
- Truck	81.3	71.6	2.2	-	-	25.0	5.7	-	32.7	36.5	30.2	19.8	3.8	0.3	24.9
- Lorry	1.0	0.2	-	-	-	-	0.3	-	-	2.3	19.4	-	-	-	1.0
TRACTOR DRIVEN VEHICLES															
- Hilo	0.1	-	14.1	0.7	0.4	10.1	13.3	0.6	12.8	22.8	1.5	20.1	-	-	6.4
- Rig	2.5	-	2.3	-	15.0	13.1	16.3	1.4	1.2	4.0	10.1	-	-	0.2	4.4
- Interlink	8.1	26.2	47.8	1.0	0.2	8.5	18.3	9.0	13.1	3.0	24.0	-	-	6.4	11.3

TABLE H
COMPARATIVE DATA OF REPORTING SOUTH AFRICAN FACTORIES FROM 1925 ONWARDS

PERIOD (SEASON)	Percent Cane		Cane / sugar Ratio		Extraction	Pol % fibre in Bagasse	Percent Bagasse		Imbibition Percent		Mixed Juice		Final Molasses	Boiling House Recovery	Overall Recovery
	Pol	Fibre	Tel Quel	96° Pol Sugar	Pol based		Pol	Moisture	Cane	Fibre	Purity Pol based	Reducing Sugar/ Pol ratio	Suc/brix Purity Chem.suc.	Pol based	Pol based
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**
Average 1975 - 1980	**12.80**	**15.61**	**9.09**	**8.77**	**96.20**	**3.26**	**1.45**	**52.50**	**46.28**	**309**	**84.85**	**5.37**	**38.4**	**88.92**	**85.54**
From 1981 onwards data are sucrose based	***Sucrose based***				***Sucrose based***						***Sucrose based***	***(F + G) / suc.ratio***	***Sucrose based***	***Sucrose based***	***Sucrose based***
Average 1981 - 1984	**12.44**	**15.88**	**9.44**	**9.12**	**97.12**	**2.36**	**1.09**	**51.74**	**52.60**	**347**	**85.17**	**5.88**	**37.2**	**87.25**	**84.74**
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
1998	13.36	14.66	8.65	8.35	97.73	2.11	1.00	51.00	49.1	343	86.17	5.31	37.2	88.08	86.09
1999	13.77	14.76	8.36	8.06	97.93	1.97	0.94	50.81	52.3	362	86.51	4.73	37.7	88.33	86.50
2000	13.08	14.98	8.74	8.44	97.79	1.97	0.95	49.95	51.25	348	86.46	4.82	37.2	88.97	86.99
2001	13.11	14.97	8.81	8.5	97.74	2.02	0.95	50.81	54.32	369	85.92	4.94	37.1	88.18	86.19
2002	13.71	14.80	8.32	8.02	97.96	1.93	0.92	50.08	53.26	366	87.31	4.16	37.2	89.11	87.29
2003	13.70	14.81	8.42	8.12	97.87	2.01	0.96	50.34	54.5	375	86.36	4.59	37.9	88.14	86.26
2004	13.52	14.84	8.53	8.23	97.98	1.87	0.90	49.93	53.9	369	85.81	4.92	36.9	88.00	86.23
Average 1995 - 2004	**13.12**	**15.04**	**8.82**	**8.51**	**97.82**	**1.95**	**0.93**	**50.71**	**52.4**	**356**	**85.97**	**4.95**	**37.4**	**88.07**	**86.14**
2005	13.74	14.66	8.37	8.08	98.03	1.87	0.91	49.57	54.8	380	85.59	5.12	36.7	88.25	86.52
2006	12.85	14.95	8.99	8.68	97.84	1.91	0.92	49.76	54.5	372	85.55	4.98	37.4	87.51	85.61
2007	13.47	14.86	8.63	8.32	97.82	2.02	0.97	49.77	53.5	367	86.03	4.62	37.7	87.56	85.65
Average 2005 - 2007	**13.35**	**14.82**	**8.66**	**8.36**	**97.90**	**1.93**	**0.93**	**49.70**	**54.3**	**373**	**85.72**	**4.91**	**37.3**	**87.77**	**85.93**