EIGHTIETH ANNUAL REVIEW OF THE MILLING SEASON IN SOUTHERN AFRICA (2004-2005)

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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, Swaziland, Zimbabwe, Malawi and Zambia[1] are included. The 2004-2005 season showed the effects of the continued dry conditions in southern Africa, with cane quality still poor. Mill performance was generally better than in 2003-2004, with more consistent operation through better planning and increased focus on good operation at some mills. The cane crop in South Africa was less than 20 million tons for the first time since 1995-1996, and 2.238 million tons of sugar was made at a cane to sugar ratio of 8.42.

Introduction

This paper reviews the 2004-2005 milling season in southern Africa, including data from mills in South Africa, Swaziland, Zimbabwe, Malawi and Zambia. As is the custom, detailed information on the factory performance figures of the last and recent seasons and details of cane varieties crushed and a summary of cane transport used in South Africa are presented in Tables B to J in the Appendix.

Cane crop

Cane varieties

The varietal distribution for southern African mills is shown in Table G for the 2004-2005 season. Few changes occurred in South Africa since the 2003-2004 season, with the only notable changes being a decrease in percentage of N27 at Darnall and an increase in the percentage of N27 at Felixton. Notable reductions in the percentage of NCo376 have occurred in Swaziland, with corresponding increases in the percentages of N19, N23 and N25. In Zimbabwe, too, NCo376 percentages have reduced, being replaced by N14.

Burning

The overall percentage of cane burnt in South Africa remained the same as in the previous season at just under 88% (Table G), although individual mills showed some changes (increases at Darnall, Gledhow and Noodsberg, and decreases at Felixton, Eston and Umzimkulu).

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[1]South African sugar factories: AK = Amatikulu, DL = Darnall, FX = Felixton, GH = Gledhow (Ushukela Milling), KM = Komati, ML = Malelane, MS = Maidstone, NB = Noodsberg, PG = Pongola, SZ = Sezela, UC = Union Co-op, UF = Umfolozi, UK = Umzimkulu
Malawi sugar factories: DW = Dwangwa, NH = Nchalo
Swaziland sugar factories: MH = Mhlume, SM = Simunye, UB = Ubombo
Zambia sugar factory: NK = Nakambala
Zimbabwe sugar factories: HV = Hippo Valley, TR = Triangle

Cane quality

Trends in the cane quality indicators of Estimated Recoverable Crystal (ERC) % cane, Ash % cane and Mixed Juice sucrose purity are shown for the past ten seasons in Figures 1 a-c. Cane quality in terms of ERC and Ash levels was slightly poorer in 2004-2005, compared with 2003-2004, and the mixed juice purity dropped further to the lowest value since the 1996-1997 season. A comparison of the monthly values of Recoverable Value (RV) % cane for the past two seasons (Figure 2) shows that the 2004-2005 season's curve started lower than in 2003-2004, and followed a similar trend during the mid-season as in the previous year, but with a less pronounced peak. Two factors are responsible for this: the continuing dry conditions, the usual dry winter, and the continued consequences in the Midlands area of the severe frost experienced in mid-2003, impacting on 18-24 month cane.

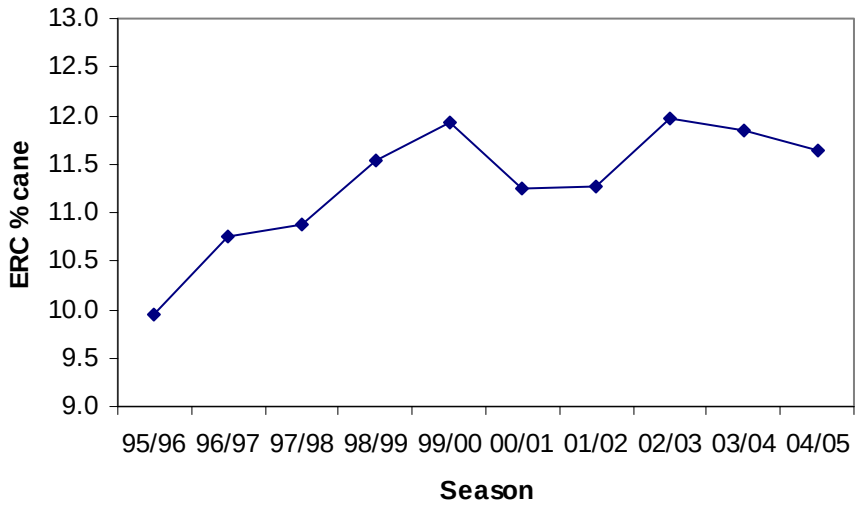

Figure 1a. ERC % cane in South Africa.

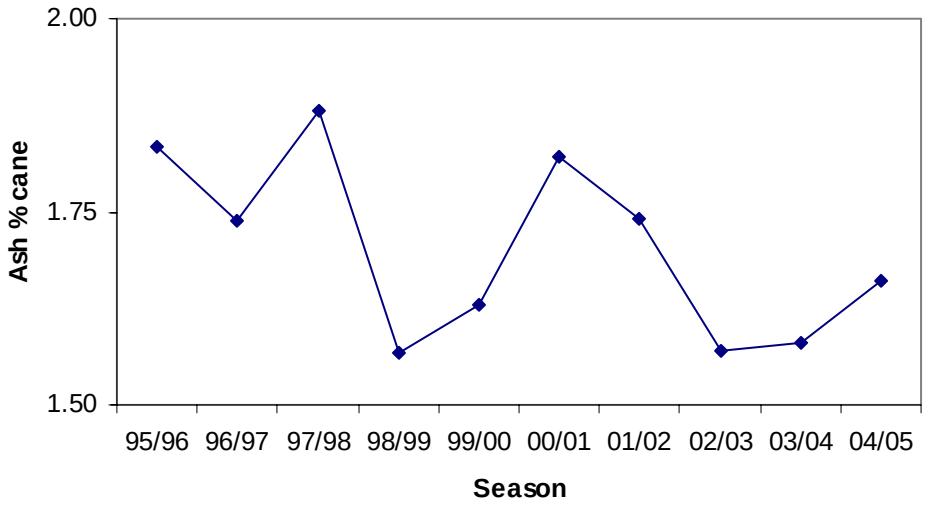

Figure 1b. Ash % cane in South Africa.

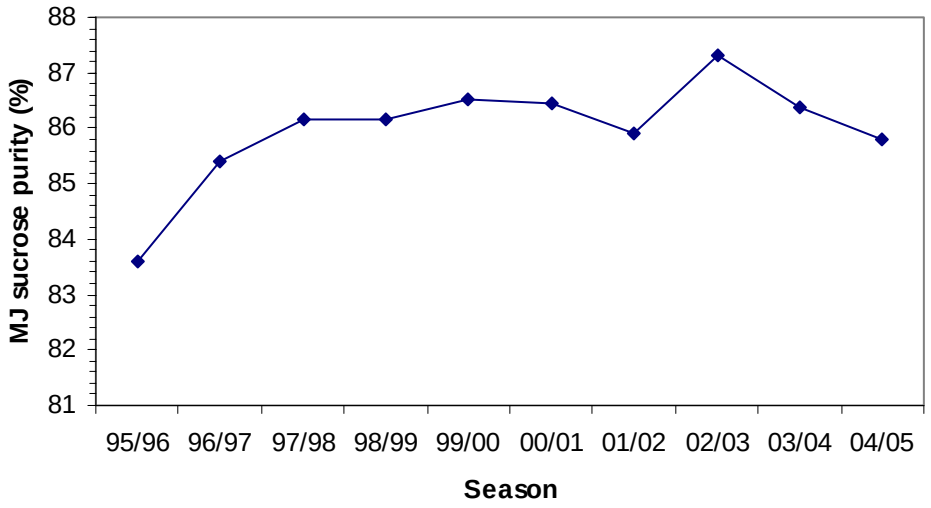

Figure 1c. Mixed juice sucrose purity in South Africa.

As a consequence, the average RV % cane dropped slightly from the previous season's value, the South African industry average dropping from 12.46 to 12.30%. Trends over the past three seasons at individual mills (Figure 3) reveal some interesting changes. Cane quality has continued to decline at Malelane and Komati, with RV % cane having dropped by 0.6 units over the two seasons. The quality improved noticeably at Felixton, with an increase in RV % cane of nearly 1 unit from 2003-2004 to 2004-2005. By contrast, cane grown in the Midlands areas declined in quality during the 2004-2005 season, particularly at Noodsberg and Union Co-op.

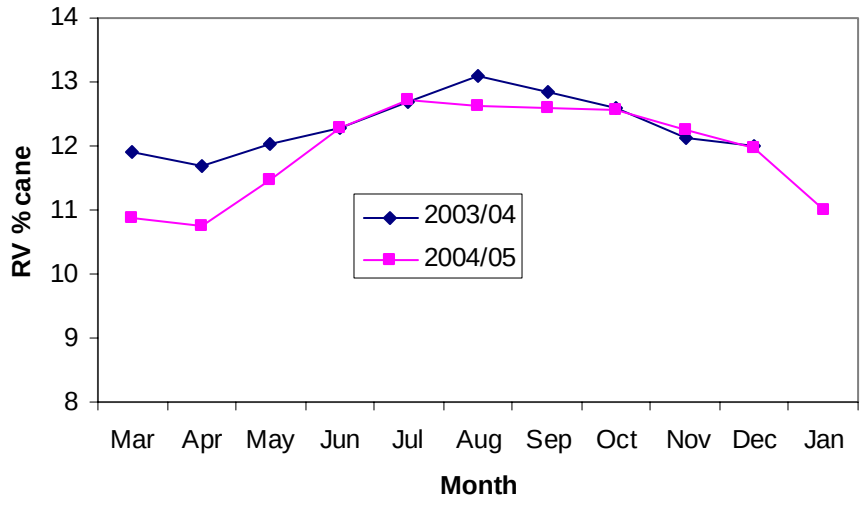

Figure 2. Monthly RV % cane in South Africa for the 2003-2004 and 2004-2005 seasons.

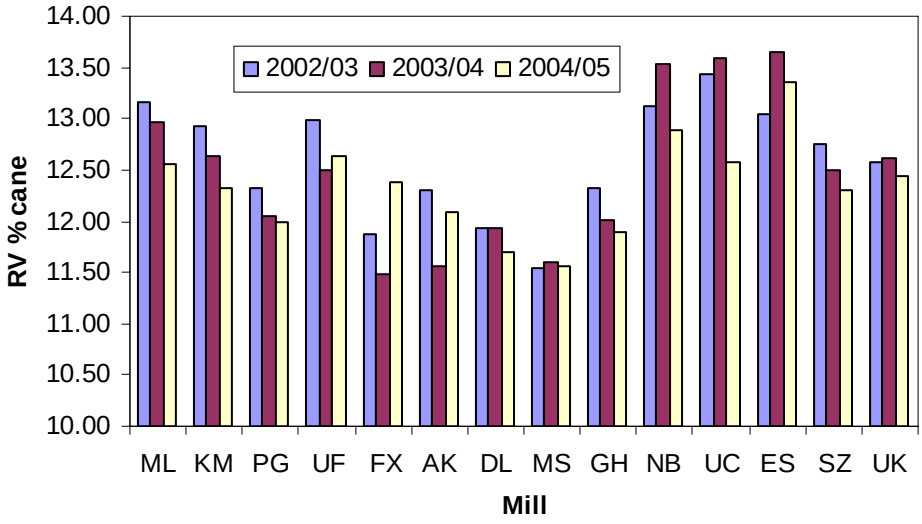

Figure 3. RV % cane for South African mills for the 2002-2003, 2003-2004 and 2004-2005 seasons.

In other southern Africa countries, cane quality has also declined in the past two seasons, as shown in Figure 4. Zimbabwe growers have suffered some yield declines and this has impacted severely on a portion of the crop. Swaziland's average ERC has also not recovered from the dry conditions in 2003-2004, and has further declined slightly.

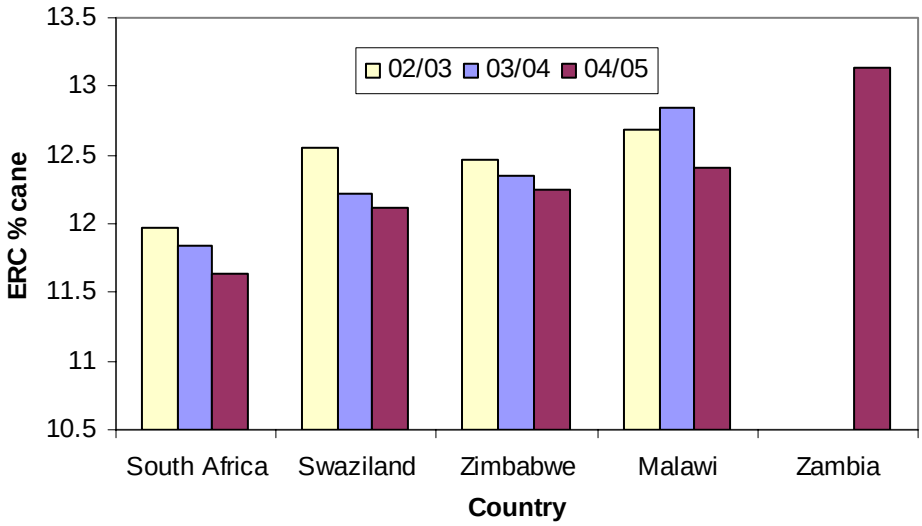

Figure 4. ERC % cane in southern Africa for the 2002-2003, 2003-2004 and 2004-2005 seasons.

Cane tonnage

The South African crop size of 19.095 million tons in 2004-2005 was the smallest since the 1995-1996 season, the last year of the previous severe drought, and it dropped below 20 million tons for the first time since then (Figure 5). Closure of the Entumeni mill at the end of the 2003 season had little effect on this as the cane was diverted to Amatikulu. The reduction in crop size was not uniform across the industry, with the Midlands and South Coast Mills being worst affected. Comparative crop sizes for South African mills for the past two seasons are shown in Table 1, along with the percentage changes. The reduction in crop size at Noodsberg in particular was dramatic, while although Maidstone's crop size remained about

the same, it was about 500 000 tons less than in the 2002-2003 season. Amatikulu also showed a large drop from 2002-2003 to 2003-2004 of over 500 000 tons, but this recovered in 2004-2005 by crushing cane previously sent to Entumeni.

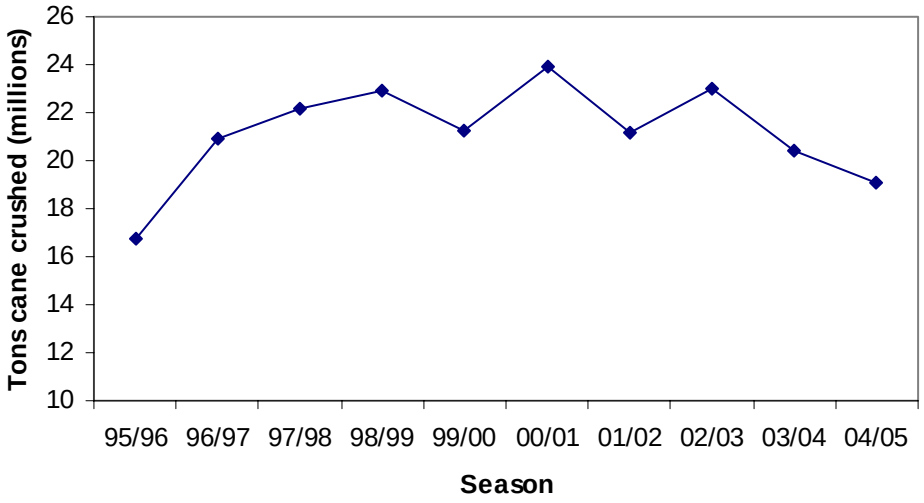

Figure 5. Cane tonnages in South Africa.

Table 1. Comparative crops sizes for South African mills for 2002-2003, 2003-2004 and 2004-2005.

Mill	Tons cane crushed			Change
	2002/2003	2003/2004	2004/2005	(2004 – 2003)
ML	1 853 104	1 837 756	1 551 272	-16%
KM	2 056 787	2 137 724	1 978 631	-7%
PG	1 409 293	1 426 868	1 370 009	-4%
UF	1 262 294	1 087 606	1 067 594	-2%
EN	409 394	361 203	-	-
FX	2 175 081	1 894 726	2 015 262	+6%
AK	1 672 146	1 160 625	1 690 400	+46%
DL	1 373 582	1 097 397	1 261 744	+15%
MS	1 899 923	1 389 215	1 393 182	0%
GH	1 383 225	1 175 622	1 094 490	-7%
NB	1 673 982	1 614 763	1 064 757	-34%
UC	804 492	777 306	629 994	-19%
ES	1 418 128	1 307 274	1 074 963	-18%
SZ	2 321 365	2 014 283	1 946 180	-3%
UK	1 299 759	1 136 866	956 282	-16%
Industry	23 012 555	20 418 934	19 094 760	-6%

Cane tonnages crushed in other southern African countries are shown in Table 2, from which it can be seen that the Zimbabwe mills have experienced a significant reduction in crop size in the last two seasons, as a result of the factors mentioned earlier. In Swaziland and Malawi the crop size has remained fairly consistent.

Table 2. Comparative crops sizes for southern African mills for 2002-2003, 2003-2004 and 2004-2005.

Country	Tons of cane crushed		
	2002/2003	2003/2004	2004/2005
Swaziland	4 608 933	5 046 252	4 883 962
Zimbabwe	4 634 387	4 065 652	3 415 028
Malawi	2 098 084	2 019 855	2 064 380
Zambia	-	-	1 798 877

Factory performance

Length of milling season

As with the 2003-2004 season, the small cane crop led to a short milling season, the South African industry's Length of Milling Season being 232 days in 2004-2005 (Figure 6). This was 10 days shorter than in 2003-2004 and the shortest since 1994, with Union Co-op being the first mill to start on 17 March 2004 and Malelane being the last mill to close on 29 December 2004. The longest period at any one factory was 275 days at Pongola, while the shortest was 200 days at Umzimkulu. The Lengths of Milling Season in other southern African countries were remarkably similar, being 246 days in Swaziland, 233 days in Zimbabwe, 227 days in Malawi and 240 days in Zambia.

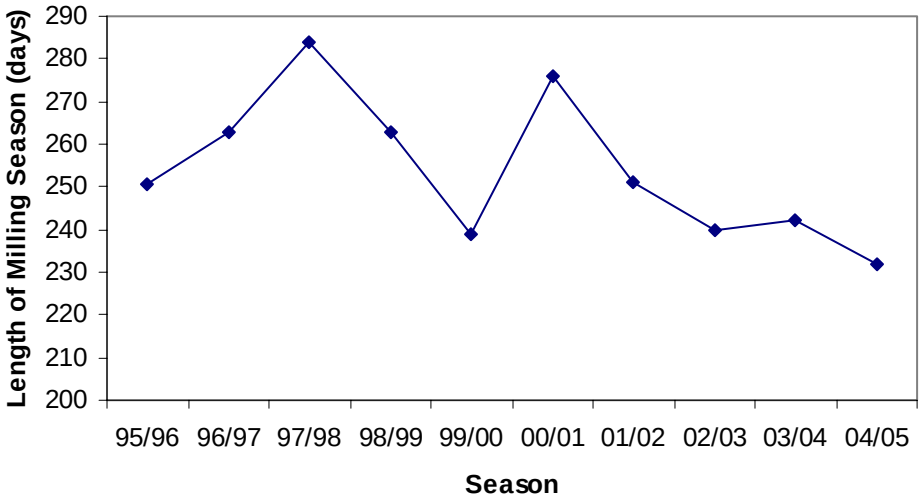

Figure 6. Length of Milling Season in South Africa from 1995-1996 to 2004-2005.

Time efficiencies

The time accounts for the 2004-2005 season in southern Africa are shown in Table 3. These values show that the South African mills had a good season, with better time account figures than all other southern African countries, although very similar to the values of the 2003-2004 season. In contrast to the excellent 2003-2004 season, the Malawi mills suffered from a shortage of cane and a higher proportion of other stops, particularly at Dwanga, in 2004-2005, thereby reducing the OTE and increasing LTA. The low OTE in Zimbabwe can also be attributed largely to no cane stops.

Table 3. Time account in southern Africa for 2004-2005.

Parameter	South Africa	Swaziland	Zimbabwe	Malawi	Zambia
Overall time efficiency (%)	82.40	80.30	78.33	78.90	79.30
Other stops (%)	4.48	8.10	5.76	6.08	8.61
No cane stops (%)	7.22	7.27	11.91	10.98	7.89
Lost time % available	5.16	9.19	7.10	7.06	9.80

Despite the smaller crop, the average crush rate in South Africa (Figure 7) was substantially higher than in the previous seasons, as the smaller crop was predicted and the season was reduced to the shortest since the 1994-1995 season. The closing of the Entumeni mill, the smallest in South Africa, at the end of 2003, had only a marginal effect in increasing the average crush rate in 2004-2005. Again, all mills boiled off in late November to mid December as planned. The dry conditions and proper planning ensured that no-cane stops were kept reasonably low throughout the season.

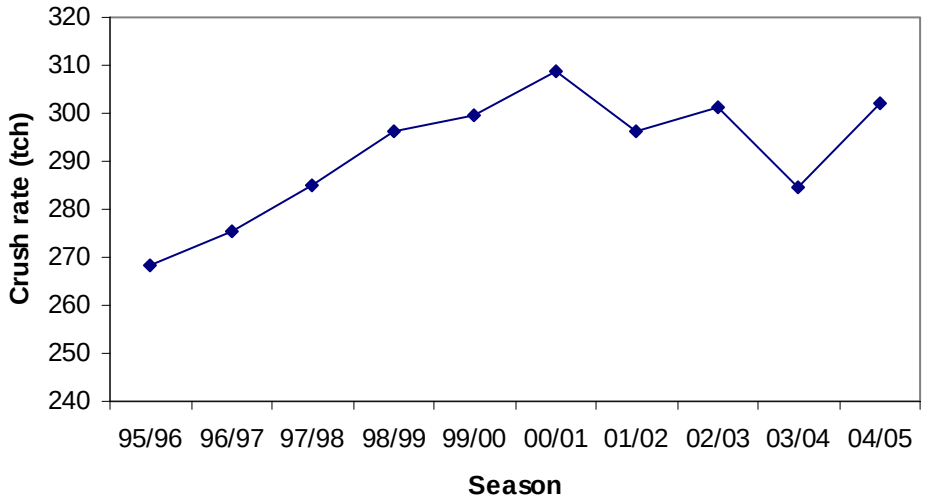

Figure 7. Average tons cane per hour (tch) crushed in South Africa.

The excellent decrease evident in the lost time % available (LTA) from 1997 to 2002 in Figure 8 has changed to an upward trend from the past two seasons. The increase in LTA in the 2004-2005 season was largely due to start-up problems with the installation of two new high throughput de-watering mills at Union Co-op, and at Umfolozi for the following: boilers (low steam and tripping), main carrier (choke and repair to slats), and diffuser dry feed carrier (repairs to chain and slats). The individual mill values of LTA are shown in Figure 9.

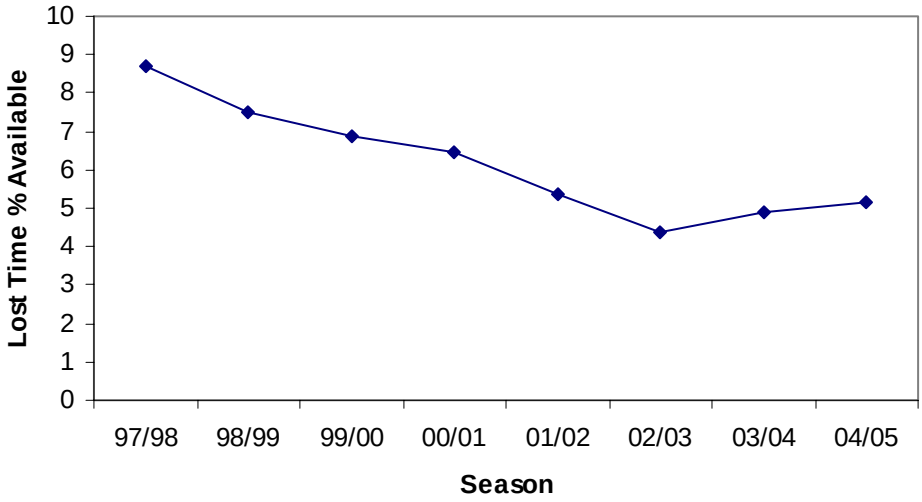

Figure 8. Lost Time % Available in South Africa.

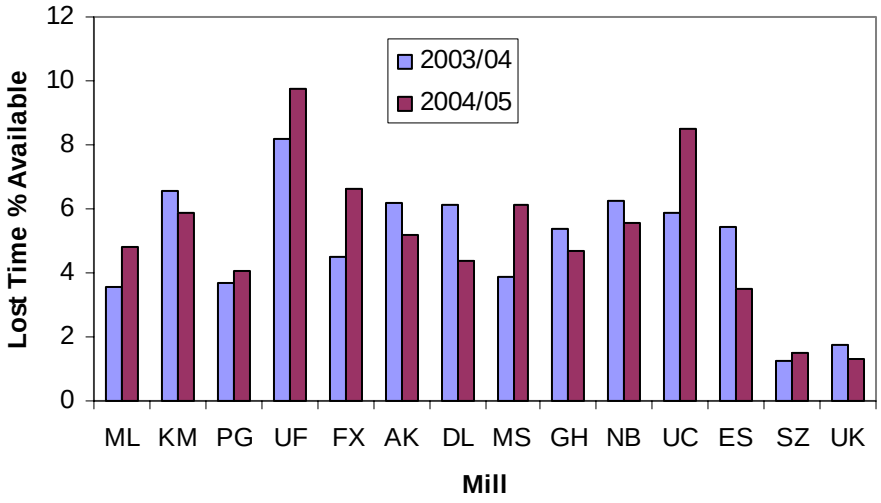

Figure 9. Lost Time % Available at South African mills for the 2003-2004 and 2004-2005 seasons.

Extraction and clarification

Extraction in the South African industry improved further from the 2003-2004 value of 97.87 to 97.98%, aided by the good crush rates and time efficiencies. Three factories in particular (PG - diffuser, DL - milling tandem and NB - milling tandem) showed strong improvements, not only in actual extraction figures but also in Corrected Reduced Extraction (CRE) figures (Table B1), which is an indication that the increases were due to better operation rather than just improved cane quality. Darnall showed the best increase as a result of good attention to detail in terms of mill settings and operation, while Pongola ascribed the improvement to better cane preparation. The differences in extraction and CRE between the 2004-2005 and the 2003-2004 seasons for South African mills are shown in Figure 10, from which the great improvement in extraction performance at Darnall is evident. In the 2004-2005 season, six mills (ML, KM, FX, AK, MS and UK) routed clarifier mud back to the diffusers for the entire season, while Pongola and Eston did so for one week and two weeks, respectively.

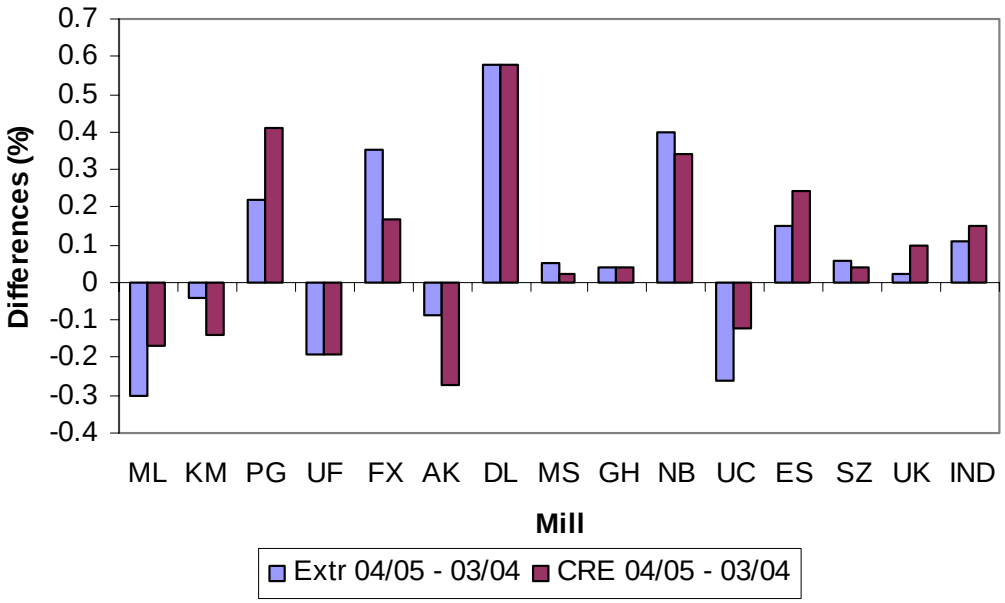

Figure 10. Differences in Extraction and Corrected Reduced Extraction between the 2004-2005 and 2003-2004 seasons in South African mills.

In other countries, pol-based extraction ranged from a poor value of 94.36% at Nakambala's No. 1 milling tandem, to a reasonable value of 97.84% at Triangle's diffuser. Although imbibition rates are comparable with those applied in most South African mills and bagasse moistures are similar, pol % bagasse values are markedly higher for most southern African extraction lines, when compared with South African extraction lines. Only at Triangle was clarifier mud returned to the diffuser.

Boiling House performance

Boiling house performance remained good at most factories, with a season average Boiling House Recovery (BHR) for the South African industry for 2004-2005 of 88%. However, the BHR dropped noticeably at several factories as a result of low mixed juice purities, with Union Co-op's value dropping from 91.65% in 2003-2004 to 89.53% in 2004-2005. However, the Corrected Reduced BHR (CRB) at Union Co-op showed a much smaller drop, from 87.77 to 87.05%, indicating that most of the drop in BHR could be ascribed to poorer cane quality. By contrast, Komati, Felixton and Amatikulu showed good improvements in BHR, but only Komati showed a substantial improvement in CRB from 86.47 to 88.05%, meaning that its better boiling house performance was not due to improved cane quality but to better operation. Darnall and Umzimkulu maintained excellent BHR values, with Darnall achieving the industry's highest value for 2004-2005 of 90.25% (Figure 11).

The slight decrease in the industry average BHR was the result of slightly higher losses of sucrose to molasses, from 9.48% sucrose in cane in 2003-2004 to 9.65% in 2004-2005, while the Undetermined Loss % sucrose in cane remained virtually unchanged at 1.96%, still below the benchmark of 2.0% (Figure 12). Notable improvements were shown by Komati (from 2.12 to 1.56%), Noodsberg (from 2.46 to 1.68%), Umzimkulu (from 1.27 to 1.13%) and Darnall (from 1.40% to an industry best this season of 0.92%).

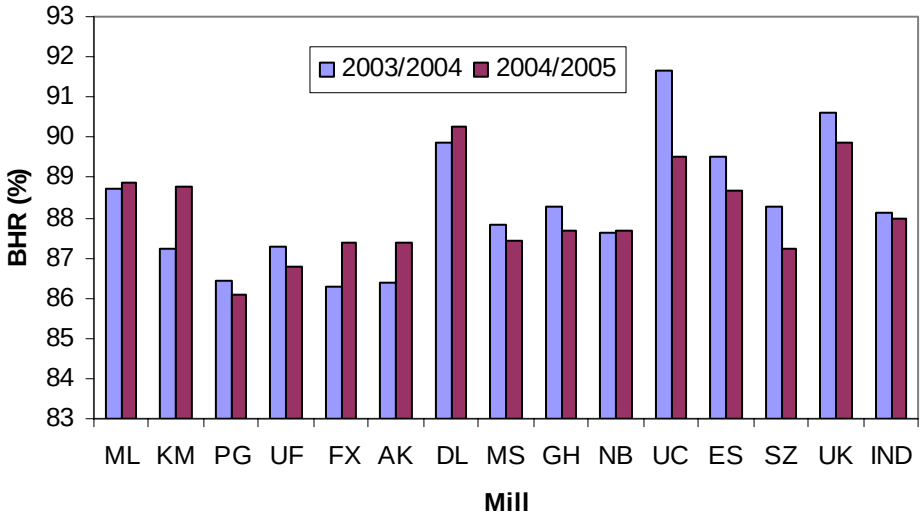

Figure 11. Boiling house recoveries for South African mills for the 2003-2004 and 2004-2005 seasons.

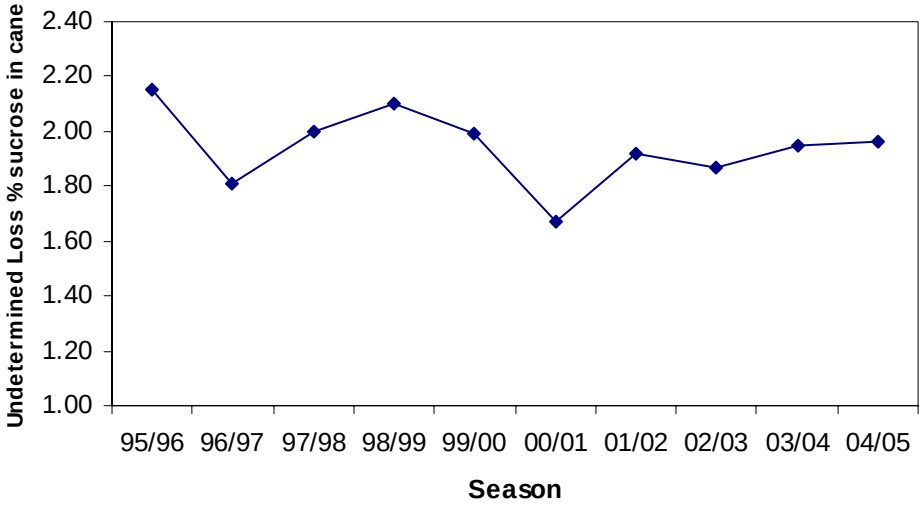

Figure 12. Undetermined loss in South Africa.

The industry average target purity difference (TPD) in final molasses fell slightly from 5.1 units in 2003-2004 to 4.7 units in 2004-2005 (Table C1), this improvement being largely the result of better TPDs towards the end of the 2004-2005 season compared to the 2003-2004 season. The higher sucrose loss to molasses was caused by a higher molasses production, rising from 4.03 tons of molasses at 85 Brix per 100 tons of cane in 2004-2004 to 4.16 tons in 2004-2005.

Molasses factor is the ratio of the mass of sucrose in molasses to the mass of non-sucrose in mixed juice. Due to an increase in crushing rate this season (as mentioned previously) and the lower mixed juice purity arising from lower cane purities, there was a sharp increase in tons of non-sucrose in mixed juice per hour, while the tons of sucrose in mixed juice per hour remained fairly steady (Figure 13). Despite this, good molasses exhaustion resulted in a low molasses factor (Figure 14) for the season, reversing the previous upward trend. The higher non-sucrose loading, though, led to the increase in molasses production as mentioned above.

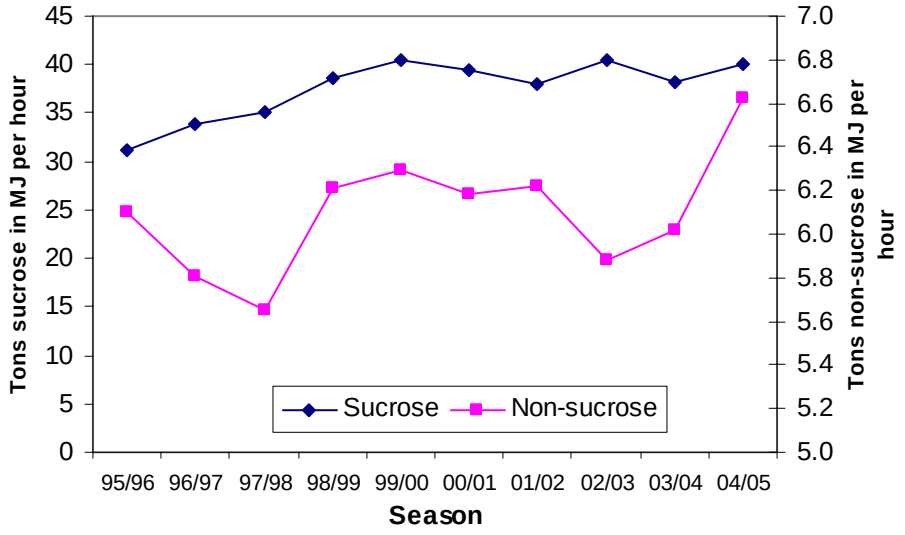

Figure 13. Sucrose and non-sucrose loadings in South Africa.

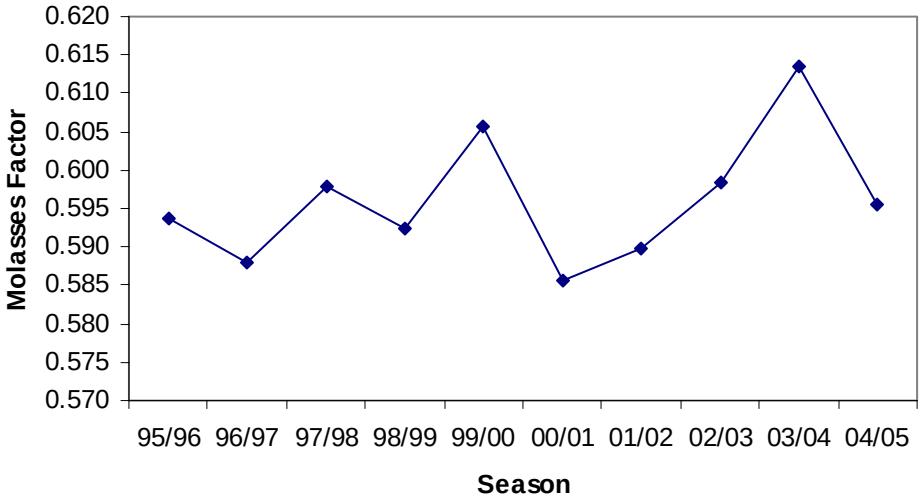

Figure 14. Molasses Factor in South Africa.

Pol-based BHR in other southern African mills ranged from 87.13% at Hippo Valley to 91.41% at Simunye, the latter being a good achievement assisted by a very good undetermined loss value of 0.60% of pol in cane. Undetermined pol loss values in other mills were generally above 2%, and there is scope for improvement here. Dwangwa and Nakambala achieved commendable pol-based BHR values of above 90% as a result of low final molasses purities leading to low pol losses to molasses.

Cane to sugar ratio

The lower cane quality in 2004-2005 led to a higher cane to sugar ratio in South Africa of 8.53 compared to the value of 8.42 achieved in 2003-2004 (Figure 15). In Swaziland, the cane to sugar ratio also increased slightly, while it remained constant in Zimbabwe. The value in Malawi returned to a higher level of 8.04 following the excellent value of 7.77 in 2003-2004, while the single mill in Zambia, Nakambala, returned an excellent figure of 7.75 in its first year of reporting to the SMRI.

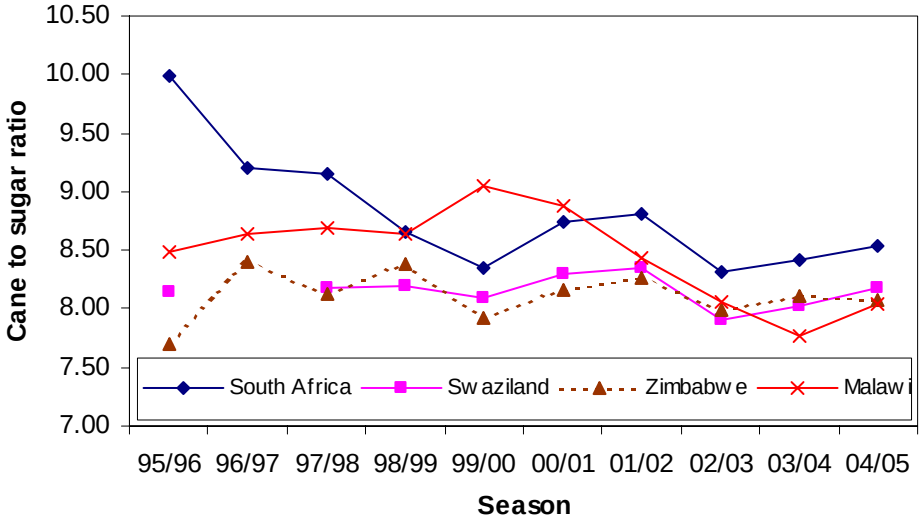

Figure 15. Cane to sugar ratio in southern Africa for recent seasons. Data was not available for Swaziland for the 1996-1997 season. The value for Zambia for 2004-2005 was 7.75.

Sugar quality

The average colour of Very High Pol (VHP) sugar produced by the South African industry in 2004-2005 came down from the high values of the 2003-2004 season, as shown in Figure 16, but at a value of 1526 ICUMSA units is still marginally above the specified value for VHP sugar of 1500 units. The affinated sugar colour also decreased to the lowest value since the 2000-2001 season. This effort must be maintained in light of increasing competition on the world market. Sugar quality problems were experienced at both Zimbabwe mills during the year, with colour formation in bulk stored sugar being severe, particularly at Hippo Valley, and some colour formation problems were also reported from the South African Sugar Terminal. These problems are usually related to long-term storage of high colour and high moisture sugar and it is well known that poor quality raw sugars will deteriorate faster than good quality raws.

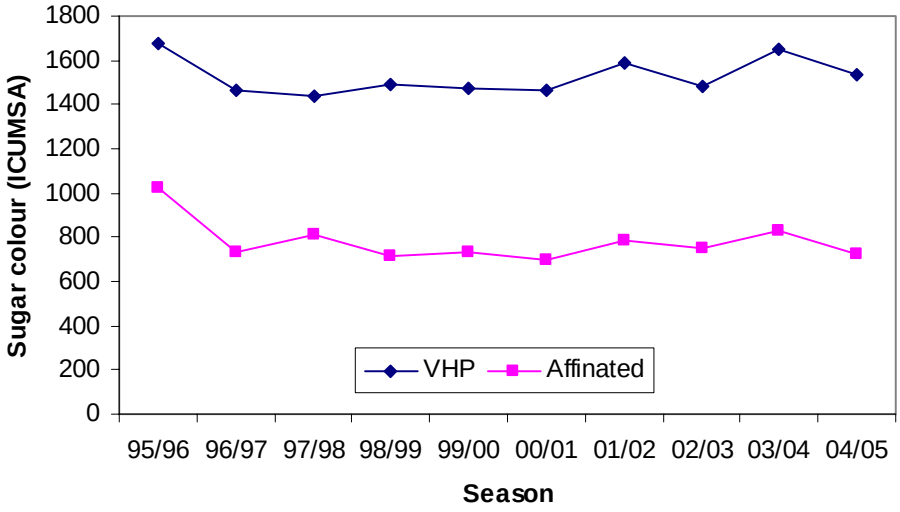

Figure 16. VHP and affinated sugar colours in South Africa.

Conclusions

The 2004-2005 season showed the effects of the continued dry conditions in southern Africa, with cane quality still poor. Mill performance was generally better than in 2003-2004, with more consistent operation through better planning and increased focus on good operation at some mills. There is no doubt that the South African industry has been under great pressure due to dry conditions, and economic and world market factors, and continued attention from all sectors of the industry will be necessary to ensure its sustainability. Other countries in southern Africa are facing similar challenges, with the proposed changes in preferential markets and tariffs in Europe being of particular concern.

Acknowledgements

This Annual Review is made possible by the valuable contributions of the following people and organisations, and their assistance is gratefully acknowledged: SA Sugar Association Cane Testing Service, SA Sugar Terminals and Mill laboratories, Sugar Milling Research Institute laboratories and staff, and the staff of the various mills and milling groups for sharing their experiences.

APPENDIX: DATA TABLES

Table A, which contained detailed data on sugar quality and production, at the request of the Industry, has not been included since the 62nd review published in 1987.

Table B1: Cane crushed and sugar made, cane composition and time accounts, performances and losses – South African mills (Season 2004-2005)

Table B2: Cane crushed and sugar made, cane composition and time accounts, performances and losses – Swaziland, Malawi and Zimbabwe mills (Season 2004-2005)

Table C1: Analysis of bagasse, juices, filter cake, syrup and final molasses – South African Mills (Season 2004-2005)

Table C2: Analysis of bagasse, juices, filter cake, syrup and final molasses – Swaziland, Malawi and Zimbabwe mills (Season 2004-2005)

Table D1: Massecuites, exhaustions, clarifying agents and additional fuels – South African mills (Season 2004-2005)

Table D2: Massecuites, exhaustions, clarifying agents and additional fuels – Swaziland, Malawi and Zimbabwe mills (Season 2004-2005)

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

Table F: Average manufacturing results by monthly periods for South African mills (Season 2004-2005)

Table G: Cane varieties and rainfall (Season 2004-2005)

Table H: Transport summary – South African mills (Season 2004-2005)

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

TABLE B1
CANE CRUSHED AND SUGAR MADE,CANE COMPOSITION,THROUGHPUTS AND TIME ACCOUNTS,PERFORMANCES AND LOSSES
SOUTH AFRICAN FACTORIES (SEASON 2004 - 2005)

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	186939	-	-	235929	151832	125097	-	-	238626	193223	144487	-	-	155766
Refined % total sugar	-	-	-	-	66.08	48.09	-	-	-	-	-	-	-	-
Moisture all sugar	0.06	-	-	0.09	0.04	0.07	-	-	0.13	0.10	0.10	-	-	0.13
Pol all sugar	99.30	-	-	99.39	99.76	99.63	-	-	99.38	99.44	99.40	-	-	99.29
Tons cane crushed total	1551272			1978631	1370009	1067594			2015262	1690400	1261744			1393182
Tons cane crushed per tandem		985937	992694				1008619	1006643				581448	811734	
Season started on	19-Apr-04	-	-	22-Apr-04	23-Mar-04	19-May-04	-	-	05-May-04	21-Apr-04	05-May-04	-	-	05-May-04
Season completed on	29-Dec-04	-	-	17-Dec-04	23-Dec-04	25-Dec-04	-	-	06-Dec-04	22-Dec-04	20-Dec-04	-	-	12-Dec-04
Length of season (days)	254	-	-	239	275	220	-	-	215	245	229	-	-	221
TIME ACCOUNT														
Overall time efficiency %	87.88	77.29	81.99	79.63	83.47	81.17	80.90	74.87	77.88	83.43	78.80	80.28	85.44	82.86
Scheduled stops% gross available time	1.34	6.96	3.73	5.35	4.65	3.10	7.59	8.93	8.26	7.94	8.15	4.14	3.85	3.99
Lack of cane % gross " " "	6.16	10.41	8.46	9.44	6.97	5.89	6.29	9.88	8.09	3.91	8.70	8.17	6.90	7.53
Other stops % gross " " "	4.47	4.89	5.03	4.96	3.54	8.79	4.95	6.15	5.55	4.54	3.62	7.13	3.71	5.42
Foreign matter % gross" " "	0.15	0.45	0.78	0.62	1.36	1.05	0.26	0.18	0.22	0.18	0.73	0.28	0.10	0.19
Lost time % available crush.time	4.84	5.95	5.79	5.86	4.07	9.78	5.77	7.59	6.65	5.16	4.40	8.16	4.16	6.14
Force majeure stops (hours)	0.5	1.3	0.9	1.1	0	78.8	0	0	0	16.1	0	0	0.25	0.13
THROUGHPUTS PER CRUSHING HOUR														
Tons cane	296.58	230.46	220.58	450.78	254.78	254.56	238.66	257.14	495.10	344.89	290.65	137.34	180.28	318.94
Tons fibre	41.56	31.68	30.03	61.67	34.56	35.01	36.47	39.79	76.13	52.20	42.10	20.86	28.00	49.08
Tons brix in mixed juice(adj.)	46.49	36.19	34.36	70.51	38.27	39.44	37.65	40.40	77.94	52.47	42.76	20.71	27.33	48.25
Tons sucrose in mixed juice(adj.)	39.93	30.85	29.36	60.21	32.73	34.25	32.22	34.52	66.75	44.87	36.66	17.42	22.91	40.33
Tons non-suc. in mixed juice(adj.)	6.56	5.34	5.00	10.34	5.54	5.19	5.42	5.87	11.28	7.61	6.11	3.29	4.42	7.75
Tons of sugar produced	35.74	-	-	53.75	28.24	29.83	-	-	58.62	39.42	33.28	-	-	35.66
COMPOSITION OF CANE CRUSHED														
Sucrose % cane	13.76	13.63	13.54	13.59	13.17	13.80	13.73	13.65	13.69	13.30	12.92	12.86	12.88	12.87
Pol % cane	13.62	13.50	13.40	13.45	13.04	13.72	13.65	13.58	13.62	13.22	12.82	12.75	12.78	12.76
Fibre % cane	14.01	13.71	13.65	13.68	13.71	14.29	15.28	15.48	15.38	15.14	15.53	15.30	15.45	15.39
Brix % cane	16.27	16.28	16.13	16.20	15.58	16.14	16.39	16.33	16.36	15.78	15.35	15.48	15.59	15.54
Ash % cane	1.66	1.17	1.17	1.17	1.87	1.76	1.76	1.75	1.76	1.17	3.08	-	-	-
ERC % cane	11.86	11.67	11.60	11.63	11.34	11.99	11.72	11.64	11.68	11.41	11.04	10.89	10.87	10.88
ERC % sucrose in cane	86.19	85.57	85.71	85.64	86.09	86.85	85.38	85.24	85.31	85.74	85.49	84.70	84.35	84.49
RV % cane	12.55	12.37	12.30	12.33	11.99	12.64	12.43	12.35	12.39	12.08	11.70	11.58	11.57	11.57
Merc % cane	12.03	11.76	11.70	11.73	11.50	12.10	11.78	11.69	11.73	11.51	11.18	10.98	10.95	10.96
EXTRACTION														
Extraction (sucrose based)	97.82	98.19	98.32	98.26	97.57	97.49	98.35	98.33	98.34	97.78	97.63	98.63	98.63	98.63
Corrected reduced extraction	97.46	97.86	98.00	97.93	97.15	97.03	98.27	98.27	98.27	97.68	97.48	98.61	98.64	98.63
Imbibition % fibre	352	335	330	332	289	331	392	378	385	358	350	403	415	411
DRI	-	-	-	-	6	-	-	-	-	-	-	-	-	-
Preparation index	92	93	92	92	-	-	92	91	91	92	90	91	91	91
Pol factor	98.90	100.73	100.31	100.52	99.74	99.98	99.79	99.05	99.42	100.01	99.41	99.42	100.09	99.81
Brix factor	100.72	102.31	101.68	102.00	101.26	101.52	102.41	101.88	102.14	101.27	100.67	100.52	101.70	101.20
RECOVERIES														
Boiling house recovery (suc.)	88.89	-	-	88.78	86.06	86.77	-	-	87.40	87.37	90.25	-	-	87.42
C. R. B.	87.02	-	-	88.05	85.04	85.07	-	-	86.71	86.30	88.90	-	-	87.77
Overall recovery (sucrose)	86.95	-	-	87.23	83.97	84.60	-	-	85.94	85.43	88.11	-	-	86.23
Ton cane per ton sugar	8.30	-	-	8.39	9.02	8.53	-	-	8.45	8.75	8.73	-	-	8.94
Ton cane per ton 96 pol sugar	8.02	-	-	8.10	8.68	8.22	-	-	8.16	8.45	8.43	-	-	8.65
Value Recovery %	100.75	-	-	101.10	98.17	97.70	-	-	100.16	99.22	102.15	-	-	101.35
Crystal Recovery Efficiency (XRE)	101.33	-	-	103.07	98.70	98.89	-	-	102.33	100.72	103.81	-	-	103.27
BALANCES														
Suc. lost % suc.in cane														
- lost in bagasse	2.18	-	-	1.74	2.43	2.51	-	-	1.66	2.22	2.37	-	-	1.37
- lost in filter cake	-	-	-	-	0.13	0.49	-	-	-	-	0.26	-	-	-
- lost in final molasses	9.72	-	-	9.46	10.61	9.12	-	-	9.97	10.20	8.34	-	-	10.40
- undetermined losses	1.15	-	-	1.56	2.87	3.28	-	-	2.42	2.15	0.92	-	-	2.00
Non sucrose ratio	1.25	-	-	0.98	1.08	1.08	-	-	1.02	0.98	1.00	-	-	0.99
Fructose ratio FM/MJ	1.05	-	-	0.86	0.92	1.01	-	-	0.89	0.88	0.86	-	-	0.85
Glucose ratio FM/MJ	0.92	-	-	0.57	0.73	0.69	-	-	0.62	0.63	0.66	-	-	0.67

*** Cane diffuser**

TABLE B1 (continued)
CANE CRUSHED AND SUGAR MADE,CANE COMPOSITION,THROUGHPUTS AND TIME ACCOUNTS,PERFORMANCES AND LOSSES
SOUTH AFRICAN FACTORIES (SEASON 2004 - 2005)

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	-	-	123154	128100	75908	135630	-	-	227564	116166	2238421
Refined % total sugar	-	-	100.00	100.00	-	-	-	-	-	-	-
Moisture all sugar	-	-	0.02	0.02	0.07	0.10	-	-	0.10	0.09	0.09
Pol all sugar	-	-	99.93	99.93	99.47	99.45	-	-	99.38	99.37	99.48
Tons cane crushed total			1094490	1064757	629994	1074963			1946180	956282	19094760
Tons cane crushed per tandem	378875	715615					947459	998721			
Season started on	-	-	06-May-04	22-Apr-04	17-Mar-04	25-Mar-04	-	-	19-Apr-04	04-May-04	17-Mar-04
Season completed on	-	-	28-Nov-04	09-Nov-04	20-Nov-04	13-Nov-04	-	-	16-Dec-04	20-Nov-04	29-Dec-04
Length of season (days)	-	-	206	201	248	233	-	-	241	200	232
TIME ACCOUNT											
Overall time efficiency %	79.93	84.42	82.18	79.64	80.37	87.56	84.13	87.61	85.89	81.26	82.40
Scheduled stops% gross available time	3.98	5.33	4.65	5.11	8.31	3.86	4.43	4.53	4.48	7.07	5.44
Lack of cane % gross " " "	12.07	4.98	8.53	10.17	3.79	5.23	10.34	5.88	8.09	10.09	7.22
Other stops % gross " " "	3.19	4.88	4.03	4.69	7.46	3.15	0.98	1.68	1.34	1.11	4.48
Foreign matter % gross" " "	0.84	0.39	0.61	0.40	0.08	0.20	0.12	0.29	0.20	0.48	0.46
Lost time % available crush.time	3.83	5.46	4.68	5.57	8.49	3.47	1.15	1.89	1.53	1.34	5.16
Force majeure stops (hours)	5.2	0	2.6	0	0	6.2	0	6.4	3.2	0	108.6
THROUGHPUTS PER CRUSHING HOUR											
Tons cane	96.40	172.51	270.96	277.57	131.84	219.91	198.92	197.06	395.93	244.72	301.95
Tons fibre	14.37	25.69	40.36	36.37	18.66	32.97	30.80	30.82	61.62	38.44	44.11
Tons brix in mixed juice(adj.)	14.74	25.54	40.57	43.94	20.41	35.49	30.77	30.63	61.40	38.10	46.63
Tons sucrose in mixed juice(adj.)	12.60	21.90	34.50	38.06	17.65	31.12	26.42	26.32	52.74	32.87	40.01
Tons non-suc. in mixed juice(adj.)	2.15	3.64	5.82	5.88	2.77	4.38	4.35	4.31	8.67	5.23	6.62
Tons of sugar produced	-	-	30.49	33.39	15.88	27.75	-	-	46.30	29.73	35.40
COMPOSITION OF CANE CRUSHED											
Sucrose % cane	13.30	13.01	13.11	14.06	13.73	14.50	13.49	13.57	13.53	13.64	13.52
Pol % cane	13.21	12.93	13.03	13.96	13.64	14.41	13.39	13.46	13.42	13.53	13.42
Fibre % cane	15.16	15.77	15.56	14.18	14.29	15.01	15.61	15.78	15.70	15.71	14.84
Brix % cane	15.75	15.42	15.53	16.46	16.08	16.75	15.93	16.03	15.98	16.06	16.01
Ash % cane	1.63	1.61	1.62	1.49	1.28	1.72	-	-	-	1.50	1.66
ERC % cane	11.42	11.15	11.25	12.21	11.91	12.70	11.61	11.66	11.63	11.76	11.63
ERC % sucrose in cane	85.87	85.70	85.76	86.83	86.74	87.59	86.00	85.95	85.98	86.22	85.96
RV % cane	12.09	11.81	11.90	12.88	12.57	13.36	12.27	12.33	12.30	12.43	12.30
Merc % cane	11.55	11.28	11.37	12.41	12.10	12.87	11.74	11.80	11.77	11.88	11.73
EXTRACTION											
Extraction (sucrose based)	98.24	97.55	97.79	97.52	97.49	97.61	98.42	98.46	98.44	98.44	97.98
Corrected reduced extraction	98.13	97.46	97.69	96.88	97.12	97.34	98.39	98.44	98.41	98.42	97.79
Imbibition % fibre	355	342	346	304	330	447	388	397	393	518	369
DRI	-	-	-	7	7	7	9	9	9	7	7
Preparation index	91	91	91	-	93	-	-	-	-	-	92
Pol factor	100.01	98.98	99.34	98.75	98.66	99.22	99.09	99.51	99.31	99.27	99.52
Brix factor	101.07	99.96	100.35	99.81	99.94	100.20	100.66	101.21	100.94	100.58	101.05
RECOVERIES											
Boiling house recovery (suc.)	-	-	87.68	87.68	89.53	88.68	-	-	87.25	89.87	88.00
C. R. B.	-	-	87.19	85.89	87.05	85.30	-	-	85.63	88.19	86.74
Overall recovery (sucrose)	-	-	85.74	85.50	87.29	86.56	-	-	85.88	88.47	86.23
Ton cane per ton sugar	-	-	8.89	8.31	8.30	7.93	-	-	8.55	8.23	8.53
Ton cane per ton 96 pol sugar	-	-	8.54	7.99	8.01	7.65	-	-	8.26	7.95	8.23
Value Recovery %	-	-	100.67	99.16	100.07	98.60	-	-	99.63	101.90	100.07
Crystal Recovery Efficiency (XRE)	-	-	101.92	99.81	101.01	99.40	-	-	100.69	103.61	101.58
BALANCES											
Suc. lost % suc.in cane											
- lost in bagasse	-	-	2.21	2.48	2.51	2.39	-	-	1.56	1.56	2.02
- lost in filter cake	-	-	0.20	1.04	0.08	0.01	-	-	0.15	-	0.14
- lost in final molasses	-	-	10.07	9.30	8.62	8.80	-	-	10.11	8.85	9.65
- undetermined losses	-	-	1.77	1.68	1.50	2.24	-	-	2.29	1.13	1.96
Non sucrose ratio	-	-	1.04	1.02	0.97	1.05	-	-	1.06	1.00	1.04
Fructose ratio FM/MJ	-	-	0.89	0.90	0.83	0.92	-	-	0.96	0.86	0.91
Glucose ratio FM/MJ	-	-	0.64	0.71	0.51	0.66	-	-	0.70	0.65	0.68

* Cane diffuser

TABLE B 2
CANE CRUSHED AND SUGAR MADE,CANE COMPOSITION,THROUGHPUTS AND TIME ACCOUNTS,PERFORMANCES AND LOSSES
SWAZILAND, MALAWI ,ZIMBABWE AND ZAMBIA FACTORIES
(SEASON 2004 - 2005)

SYMBOLS OF FACTORIES	MH-A *	MH-B	MH-AVE	UB-A *	UB-B	UB-AVE	SM	NH *	DW *	HV-A *	HV-B *	HV-AVE	TR-A *	TR-B	TR-AVE	NK-A	NK-B	NK-AVE
TONS SUGAR MADE AND ESTIMATED	-	-	156616	-	-	209818	231070	152355	104351	-	-	200419	-	-	222134	-	-	232058
Refined % total sugar	-	-	75.72	-	-	44.37	-	42.93	32.74	-	-	11.99	-	-	22.66	-	-	8.98
Moisture % all sugar	-	-	0.08	-	-	0.19	0.09	0.08	0.06	-	-	0.15	-	-	0.20	-	-	0.06
Pol % all sugar	-	-	99.64	-	-	99.34	99.32	99.45	99.33	-	-	99.17	-	-	99.01	-	-	99.40
Tons cane crushed total			1249597			1769643	1864722	1293164	771216			1626016			1789012			1798877
Tons cane crushed per tandem	582723	666874		960480	809163					823568	802448		1341880	447132		563749	1235128	
Season started on	-	-	21-Apr-04	-	-	22-Apr-04	19-Apr-04	19-Apr-04	03-May-04	-	-	21-Apr-04	-	-	31-Mar-04	-	-	08-Apr-04
Season completed on	-	-	26-Dec-04	-	-	17-Dec-04	26-Dec-04	26-Nov-04	27-Dec-04	-	-	26-Nov-04	-	-	02-Dec-04	-	-	04-Dec-04
Number of crushing days	-	-	249	-	-	239	251	220	238	-	-	219	-	-	246	-	-	240
TIME ACCOUNT																		
Overall time efficiency %	72.27	79.34	75.82	80.89	83.94	82.42	82.67	80.89	77.12	88.10	87.53	87.81	88.98	46.07	68.85	74.13	84.31	79.30
Scheduled stops% gross available time	4.67	3.83	4.25	3.28	3.13	3.21	3.91	2.93	4.49	3.27	2.78	3.02	3.70	6.23	4.89	3.35	3.19	3.27
Lack of cane % gross " " "	9.37	8.09	8.72	7.16	7.03	7.09	5.99	13.57	8.40	4.49	6.07	5.28	2.63	36.54	18.54	11.52	4.37	7.89
Other stops % gross " " "	13.57	8.72	11.14	7.24	4.60	5.91	7.26	2.48	9.69	4.10	3.56	3.83	4.69	11.06	7.68	9.91	7.35	8.61
Foreign matter % gross " " "	0.11	0.02	0.07	1.43	1.30	1.36	0.17	0.14	0.29	0.05	0.06	0.05	0.00	0.10	0.05	1.10	0.77	0.93
Lost time % available crush.time	15.81	9.90	12.81	8.21	5.20	6.69	8.08	2.97	11.16	4.45	3.91	4.18	5.01	19.36	10.03	11.79	8.02	9.80
Force majeure stops (hours)	0.0	0.0	0.0	26.7	17.1	21.9	23.1	0.5	1.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0
THROUGHPUTS PER CRUSHING HOUR																		
Tons cane	135.92	140.65	276.81	211.07	170.25	380.43	383.55	307.01	175.46	180.01	175.33	355.34	256.03	186.36	468.30	136.93	255.85	402.22
Tons fibre	18.36	19.43	37.84	25.10	20.49	45.49	45.75	40.26	27.13	27.30	26.53	53.82	37.92	26.14	68.44	18.39	34.54	54.21
Tons brix in mixed juice	22.05	22.86	44.96	33.10	27.44	60.42	59.93	47.47	29.30	28.81	28.78	57.59	40.71	29.82	74.59	21.78	40.83	64.12
Tons pol in mixed juice	19.10	19.77	38.90	28.28	23.28	51.45	51.65	40.92	25.84	24.93	24.92	49.85	35.05	25.73	64.25	19.35	36.31	57.00
Tons non-pol. in mixed juice	2.95	3.09	6.05	4.83	4.16	8.97	8.28	6.55	3.45	3.88	3.86	7.74	5.66	4.09	10.34	2.43	4.52	7.12
Tons of sugar produced	-	-	34.69	-	-	45.11	47.53	36.17	23.74	-	-	43.80	-	-	58.15	-	-	51.89
COMPOSITION OF CANE CRUSHED																		
Pol % cane	14.50	14.35	14.42	13.89	14.02	13.95	13.91	13.80	15.16	14.36	14.72	14.54	13.99	14.35	14.08	14.98	14.93	14.94
Fibre % cane	14.51	14.24	14.37	12.94	12.59	12.78	13.45	13.27	15.46	15.51	15.50	15.51	15.16	14.93	15.10	14.24	14.30	14.28
Brix % cane	16.99	16.81	16.90	16.59	16.80	16.69	16.42	16.39	17.50	16.99	17.33	17.16	16.78	17.23	16.89	17.31	17.18	17.22
Ash % cane	-	-	-	1.47	1.03	1.27	1.50	1.34	-	-	-	-	0.75	0.75	0.75	-	-	-
ERC % cane	12.59	12.46	12.52	11.91	11.99	11.95	12.01	11.87	13.30	12.35	12.72	12.53	11.91	12.23	11.99	13.14	13.13	13.13
ERC % pol in cane	86.80	86.82	86.81	85.72	85.53	85.63	86.36	86.00	87.71	86.01	86.39	86.20	85.13	85.17	85.14	87.74	87.98	87.91
EXTRACTION																		
Extraction (pol based)	96.88	97.93	97.44	96.43	97.55	96.94	96.83	96.60	97.16	96.43	96.56	96.49	97.84	96.19	97.42	94.36	95.08	94.85
Corrected reduced extraction	96.13	97.50	96.87	95.01	96.59	95.74	95.60	95.73	96.88	96.12	96.20	96.16	97.63	95.50	97.12	92.81	93.77	93.47
Imbibition % cane	47.81	47.05	47.40	42.63	41.17	41.96	41.01	33.19	55.99	47.33	50.11	48.70	36.31	35.07	36.00	43.12	39.62	40.72
Imbibition % fibre	354	341	347	359	342	351	344	253	362	312	331	322	245	250	246	321	293	302
Preparation index	91	92	91	93	94	93	91	91	90	92	92	92	91	91	91	-	-	-
Pol factor	99.58	98.87	99.20	-	-	-	99.34	98.33	100.39	94.38	96.73	95.54	98.13	99.13	98.38	97.96	97.84	97.88
Brix factor	102.31	101.52	101.89	-	-	-	100.26	100.36	101.60	97.77	99.70	98.72	100.18	101.75	100.58	99.34	98.79	98.96
RECOVERIES																		
Boiling house recovery (pol)	-	-	88.86	-	-	87.09	91.41	87.90	91.25	-	-	87.13	-	-	89.61	-	-	90.48
Overall recovery (pol)	-	-	86.58	-	-	84.43	88.51	84.91	88.66	-	-	84.07	-	-	87.30	-	-	85.82
Ton cane per ton sugar	-	-	7.98	-	-	8.43	8.07	8.49	7.39	-	-	8.11	-	-	8.05	-	-	7.75
Ton cane per ton 96 pol sugar	-	-	7.69	-	-	8.15	7.80	8.19	7.14	-	-	7.85	-	-	7.81	-	-	7.49
BALANCES																		
Pol lost % pol in cane																		
- lost in bagasse	-	-	2.56	-	-	3.06	3.17	3.40	2.84	-	-	3.51	-	-	2.58	-	-	5.15
- lost in filter cake	-	-	0.12	-	-	0.54	0.39	0.16	0.08	-	-	0.06	-	-	0.18	-	-	0.37
- lost in final molasses	-	-	8.16	-	-	9.46	7.34	8.97	6.46	-	-	9.62	-	-	7.88	-	-	5.96
- undetermined losses	-	-	2.57	-	-	2.53	0.60	2.56	1.96	-	-	2.74	-	-	2.06	-	-	2.70
Non pol ratio	-	-	1.08	-	-	1.00	0.99	0.84	1.05	-	-	1.06	-	-	1.01	-	-	1.01

* Cane diffuser

TABLE C1
ANALYSIS OF BAGASSE,JUICES,FILTER CAKE,SYRUP AND FINAL MOLASSES
SOUTH AFRICAN FACTORIES (SEASON 2004 - 2005)

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	1.00	0.91	0.85	0.88	1.15	1.23	0.67	0.68	0.68	0.95	0.98	0.54	0.55	0.55
Moisture % bagasse	51.42	47.15	46.77	46.96	49.18	48.79	52.69	51.89	52.29	49.43	51.68	51.98	50.34	51.03
Fibre % bagasse	46.60	50.73	51.16	50.95	48.81	48.92	45.48	46.27	45.87	48.74	46.27	46.78	48.34	47.69
Ash % bagasse	3.09	-	-	1.37	3.95	4.59	-	-	-	2.96	-	-	-	2.90
LCV in kJ per kg bagasse ##	6990	-	-	8223	7295	7251	-	-	-	7431	-	-	-	7127
MIXED JUICE														
Mixed juice(adj.) % cane	119.38	119.09	118.30	118.70	111.49	117.39	126.51	125.20	125.86	123.57	119.44	128.87	132.67	131.09
Brix % mixed juice(adj.)	13.13	13.19	13.17	13.18	13.47	13.20	12.47	12.55	12.51	12.31	12.32	11.70	11.43	11.54
Sucrose purity (MJ adj.)	85.89	85.24	85.44	85.34	85.53	86.84	85.59	85.46	85.53	85.50	85.72	84.12	83.81	83.94
Apparent purity(MJ adj.)	84.99	84.39	84.57	84.48	84.70	86.34	85.08	85.00	85.04	84.95	85.08	83.38	83.10	83.21
Purity difference(MJ adj. - DAC)	-0.27	0.16	0.34	0.25	-0.30	-0.01	-0.38	-0.57	-0.47	0.14	0.50	0.12	-0.18	-0.06
(Glucose + fructose) % sucrose	5.51	-	-	5.37	5.67	4.29	-	-	4.55	4.65	5.24	-	-	5.48
Suspended solids % MJ(unadj.)	0.14	0.06	0.06	0.06	0.14	0.46	0.15	0.15	0.15	0.35	0.88	0.12	0.14	0.13
Pol/sucrose ratio (mj unadj.)	0.9895	0.9900	0.9898	0.9899	0.9903	0.9943	0.9940	0.9946	0.9943	0.9935	0.9925	0.9912	0.9915	0.9913
CLARIFIED JUICE														
Brix % clarified juice	13.38	-	-	12.97	12.71	12.35	-	-	11.94	12.17	11.90	-	-	11.76
Apparent purity	84.42	-	-	84.02	84.36	85.58	-	-	84.06	84.34	84.31	-	-	82.51
Purity difference(CJ - MJ)	-0.57	-	-	-0.46	-0.34	-0.76	-	-	-0.98	-0.61	-0.77	-	-	-0.70
Average pH	7.1	-	-	7.0	7.2	7.3	-	-	7.1	7.1	7.1	-	-	7.0
CLARIFIER MUD														
Tons clarifier mud	57778	62517	18644	81161	728	-	69722	65513	135235	85844	-	11600	87389	98989
Pol % clarifier mud	11.11	10.68	10.63	10.67	10.58	-	10.71	10.74	10.72	8.60	-	9.72	10.22	10.16
Brix % clarifier mud	13.51	13.12	13.12	13.12	12.64	-	12.95	12.99	12.97	10.46	-	11.96	12.55	12.48
Insoluble solids % clarifier mud	4.75	1.73	1.73	1.73	9.62	-	2.94	2.95	2.95	8.87	-	2.56	2.56	2.56
FILTER CAKE														
Pol % filter cake	-	-	-	-	1.13	2.05	-	-	-	-	0.83	-	-	-
Moisture % filter cake	-	-	-	-	71.47	70.00	-	-	-	-	-	-	-	-
Filter cake % cane	-	-	-	-	1.57	3.32	-	-	-	-	4.00	-	-	-
Filter wash index	98.1	-	-	101.6	106.0	106.9	-	-	104.8	101.2	103.5	-	-	98.1
Purity difference(CJ - filtrate)	-	-	-	-	2.48	3.81	-	-	-	-	1.13	-	-	-
SYRUP														
Brix % syrup	62.60	-	-	67.35	65.53	61.96	-	-	65.34	67.20	65.45	-	-	68.55
Apparent purity	83.97	-	-	83.76	84.73	84.54	-	-	84.31	84.72	84.88	-	-	82.83
Purity difference(Syrup - MJ)	-1.02	-	-	-0.72	0.03	-1.80	-	-	-0.73	-0.23	-0.20	-	-	-0.38
Average pH	6.0	-	-	6.0	6.3	6.3	-	-	6.0	6.1	6.2	-	-	6.1
FINAL MOLASSES														
Refractometer brix	85.70	-	-	81.94	85.78	83.73	-	-	85.20	86.10	86.60	-	-	84.02
Pol/refractometer brix purity	30.60	-	-	32.30	34.66	34.01	-	-	35.39	36.97	31.23	-	-	33.84
Sucrose/refractometer brix purity	33.22	-	-	36.98	37.52	36.71	-	-	37.51	39.18	34.44	-	-	36.41
Conductivity ash %	14.45	-	-	16.69	14.79	14.57	-	-	15.35	14.64	16.90	-	-	15.00
(Glucose + fructose)/ash ratio	1.11	-	-	0.74	0.94	0.83	-	-	0.75	0.81	0.82	-	-	0.85
Fructose %	8.51	-	-	7.42	7.78	7.24	-	-	6.85	7.09	8.06	-	-	7.26
Glucose %	7.51	-	-	4.99	6.10	4.80	-	-	4.59	4.78	5.85	-	-	5.48
TPD based on molasses (made)	6.5	-	-	2.6	6.0	4.5	-	-	4.5	6.0	1.2	-	-	3.8
TPD based on mixed juice	6.7	-	-	4.0	7.3	5.3	-	-	5.4	7.2	2.9	-	-	4.8
Final molasses @ 85 brix % cane	4.74	-	-	4.09	4.38	4.04	-	-	4.28	4.07	3.68	-	-	4.33
Pol/sucrose ratio	0.9209	-	-	0.8736	0.9239	0.9265	-	-	0.9434	0.9434	0.9067	-	-	0.9294

* Cane diffuser

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

TABLE C1 (continued)
ANALYSIS OF BAGASSE,JUICES,FILTER CAKE,SYRUP AND FINAL MOLASSES
SOUTH AFRICAN FACTORIES (SEASON 2004 - 2005)

SYMBOLS OF FACTORIES	GH-A *	GH-B	GH-AVE	NB	UC *	ES *	SZ-A *	SZ-B *	SZ-AVE	UK *	INDUSTRY
Pol % bagasse	0.78	1.05	0.95	1.24	1.04	1.13	0.71	0.69	0.70	0.7	0.90
Moisture % bagasse	49.18	49.01	49.07	50.98	55.33	49.09	46.89	47.22	47.06	49.26	49.93
Fibre % bagasse	49.31	48.98	49.09	46.77	42.87	48.91	51.57	51.20	51.38	49.2	48.21
Ash % bagasse	-	-	2.32	3.16	2.58	4.89	-	-	2.90	4.10	2.55
LCV in kJ per kg bagasse ##	-	-	7621.74	7059.6	6279.7	7143.3	-	-	7940.2	7266.3	7397
MIXED JUICE											
Mixed juice(adj.) % cane	122.67	120.46	121.23	111.88	113.65	136.74	130.08	131.52	130.82	149.8	123.71
Brix % mixed juice(adj.)	12.47	12.29	12.35	14.15	13.62	11.80	11.89	11.82	11.86	10.39	12.48
Sucrose purity (MJ adj.)	85.45	85.76	85.65	86.6	86.45	87.7	85.85	85.9	85.88	86.3	85.81
Apparent purity(MJ adj.)	84.82	85.19	85.06	86.0	85.89	87.1	85.15	85.2	85.20	85.56	85.14
Purity difference(MJ adj. - DAC)	0.07	0.49	0.34	0.27	-0.06	0.27	-0.19	-0.18	-0.18	0.2	0.01
(Glucose + fructose) % sucrose	-	-	5.13	4.87	4.64	3.92	-	-	4.77	4.28	5.03
Suspended solids % MJ(unadj.)	0.20	0.73	0.54	0.97	0.12	0.23	0.10	0.10	0.10	0.2	0.28
Pol/sucrose ratio (mj unadj.)	1	0.99	0.99	1.0	1.0	1.0	0.99	0.99	1.0	1.0	0.9922
CLARIFIED JUICE											
Brix % clarified juice	-	-	12.09	14.29	14.20	11.94	-	-	11.04	9.7	12.26
Apparent purity	-	-	85.10	86.45	85.34	86.86	-	-	85.35	85.05	84.69
Purity difference(CJ - MJ)	-	-	0.04	0.44	-0.55	-0.26	-	-	0.15	-0.5	-0.45
Average pH	-	-	7.11	7.2	6.8	7.2	-	-	7.1	6.9	7.1
CLARIFIER MUD											
Tons clarifier mud	-	-	-	152.00	-	37996.00	-	-	-	72726.0	570609
Pol % clarifier mud	-	-	-	7.24	-	9.78	-	-	-	5.81	9.65
Brix % clarifier mud	-	-	-	8.55	-	11.70	-	-	-	7.1	11.74
Insoluble solids % clarifier mud	-	-	-	9.9	-	8.7	-	-	-	4.1	4.3
FILTER CAKE											
Pol % filter cake	-	-	0.84	2.26	1.50	2.70	-	-	1.73	-	1.56
Moisture % filter cake	-	-	65.67	75.00	72.32	72.16	-	-	72.62	-	71.60
Filter cake % cane	-	-	3.11	6.45	0.69	0.03	-	-	1.20	-	1.25
Filter wash index	-	-	102.16	99.0	95.94	98.8	-	-	107.39	106.72	101.83
Purity difference(CJ - filtrate)	-	-	0.88	0.7	4.0	-	-	-	1.7	-	1.58
SYRUP											
Brix % syrup	-	-	64.42	69.19	66.83	62.25	-	-	63.48	64.4	65.32
Apparent purity	-	-	84.70	86.04	85.63	86.76	-	-	85.64	85.08	84.72
Purity difference(Syrup - MJ)	-	-	-0.36	0.03	-0.26	-0.36	-	-	0.44	-0.5	-0.42
Average pH	-	-	6.06	6.1	6.2	6.1	-	-	6.1	6.1	6.1
FINAL MOLASSES											
Refractometer brix	-	-	84.44	80.69	82.33	81.09	-	-	82.39	84.00	83.97
Pol/refractometer brix purity	-	-	34.77	35.41	34.51	36.60	-	-	34.98	35.41	34.24
Sucrose/refractometer brix purity	-	-	37.28	37.9	37.41	38.6	-	-	37.62	36.8	36.94
Conductivity ash %	-	-	15.26	12.2	13.09	11.9	-	-	13.65	13.9	14.64
(Glucose + fructose)/ash ratio	-	-	0.79	1.04	0.84	0.93	-	-	0.88	0.84	0.86
Fructose %	-	-	7.19	7.65	7.19	6.74	-	-	7.24	7.01	7.39
Glucose %	-	-	4.81	5.06	3.82	4.37	-	-	4.75	4.72	5.20
TPD based on molasses (made)	-	-	4.12	6.29	4.88	6.76	-	-	4.98	4.43	4.7
TPD based on mixed juice	-	-	5.83	7.32	7.10	7.73	-	-	6.12	5.34	5.8
Final molasses @ 85 brix % cane	-	-	4.17	4.06	3.72	3.88	-	-	4.28	3.86	4.16
Pol/sucrose ratio	-	-	0.9326	0.9342	0.9225	0.9476	-	-	0.9299	0.9625	0.9269

* Cane diffuser

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

TABLE C2

ANALYSIS OF BAGASSE,JUICES,FILTER CAKE,SYRUP AND FINAL MOLASSES
SWAZILAND, MALAWI , ZIMBABWE AND ZAMBIA FACTORIES
(SEASON 2004 - 2005)

SYMBOLS OF FACTORIES	MH-A *	MH-B	MH-AVE	UB-A *	UB-B	UB-AVE	SM	NH *	DW *	HV-A *	HV-B *	HV-AVE	TR-A *	TR-B	TR-AVE	NK-A	NK-B	NK-AVE
FINAL BAGASSE																		
Pol % bagasse	1.58	1.03	1.28	1.85	1.31	1.60	1.67	1.71	1.44	1.47	1.50	1.48	0.94	1.75	1.14	2.78	2.57	2.64
Moisture % bagasse	50.03	50.40	50.23	52.33	51.61	52.00	51.81	48.76	45.59	53.75	52.65	53.21	51.30	51.14	51.26	51.15	48.45	49.33
Fibre % bagasse	47.27	47.67	47.49	44.31	45.79	44.98	45.17	47.86	51.74	43.42	44.65	44.02	45.97	44.94	45.72	44.23	47.26	46.27
Bagasse % cane	28.57	28.98	28.79	26.83	26.29	26.58	26.40	27.40	29.89	34.93	33.88	34.41	32.22	31.21	31.97	30.37	28.56	29.13
Ash % bagasse	-	-	-	-	-	3.06	3.36	-	-	-	-	-	-	-	-	-	-	-
LCV in kJ per kg bagasse #			-			6842	6827	-	-			-			-			-
MIXED JUICE																		
Mixed juice % cane	119.24	118.07	118.62	115.80	114.88	115.38	114.60	105.79	126.11	112.40	116.22	114.29	104.22	103.86	104.13	112.75	111.06	111.59
Brix % mixed juice	13.61	13.77	13.69	13.54	14.03	13.77	13.63	14.62	13.24	14.24	14.12	14.18	15.26	15.41	15.30	14.11	14.37	14.29
Apparent purity	86.61	86.48	86.54	85.42	84.84	85.15	86.18	86.20	88.21	86.54	86.59	86.56	86.09	86.27	86.14	88.83	88.93	88.90
Purity difference(MJ - DAC)	-1.09	-1.17	-1.14	-	-	-	0.70	0.27	0.52	-1.01	-0.96	-0.99	0.98	0.75	0.92	1.09	1.22	1.18
Suspended solids % mixed juice	0.85	0.36	0.59	0.91	0.48	0.71	1.33	0.15	-	0.31	0.32	0.32	0.45	0.87	0.55	0.71	0.72	0.72
CLARIFIED JUICE																		
Brix % clarified juice	-	-	13.87	-	-	13.97	13.62	14.21	12.75	-	-	14.58	-	-	15.40	-	-	13.87
Apparent purity	-	-	87.10	-	-	85.15	85.75	86.91	87.97	-	-	86.21	-	-	85.22	-	-	88.06
Purity difference(CJ - MJ)	-	-	0.56	-	-	0.00	-0.43	0.71	-0.24	-	-	-0.35	-	-	-0.92	-	-	-0.84
Average pH	-	-	7.1	-	-	7.2	7.0	7.1	6.6	-	-	6.8	-	-	7.1	-	-	7.1
CLARIFIER MUD																		
Tons clarifier mud	-	-	-	-	-	-	-	-	-	-	-	-	33628	-	33628	-	-	-
Pol % clarifier mud	-	-	-	-	-	-	-	-	-	-	-	-	8.29	-	8.29	-	-	-
Brix % clarifier mud	-	-	-	-	-	-	-	-	-	-	-	-	9.93	-	9.93	-	-	-
Insoluble solids % clarifier mud	-	-	-	-	-	-	-	-	-	-	-	-	5.16	-	5.16	-	-	-
FILTER CAKE																		
Pol % filter cake	-	-	0.64	-	-	2.96	1.38	1.53	0.58	-	-	2.59	-	-	1.05	-	-	1.30
Moisture % filter cake	-	-	65.47	-	-	-	71.44	75.53	73.14	-	-	72.19	-	-	-	-	-	79.01
Filter cake % cane	-	-	2.68	-	-	2.54	3.88	1.46	2.00	-	-	0.35	-	-	2.47	-	-	4.28
Filter wash index	-	-	98.7	-	-	98.5	100.1	102.9	103.8	-	-	97.3	-	-	99.3	-	-	103.0
Purity difference(CJ - filtrate)	-	-	1.12	-	-	1.41	2.34	2.89	-	-	-	3.79	-	-	2.09	-	-	1.29
SYRUP																		
Brix % syrup	-	-	67.26	-	-	64.90	67.57	64.03	63.85	-	-	54.12	-	-	66.67	-	-	67.78
Apparent purity	-	-	86.75	-	-	84.66	86.91	88.53	88.04	-	-	86.31	-	-	85.53	-	-	88.65
Purity difference(Syrup - MJ)	-	-	0.21	-	-	-0.49	0.73	2.33	-0.17	-	-	-0.25	-	-	-0.61	-	-	-0.25
Average pH	-	-	6.0	-	-	6.1	6.8	6.4	6.1	-	-	6.2	-	-	6.1	-	-	6.3
FINAL MOLASSES																		
Refractometer brix	-	-	86.80	-	-	84.44	85.43	85.39	84.66	-	-	84.90	-	-	87.09	-	-	90.96
Pol/refractometer brix purity	-	-	33.53	-	-	36.43	32.99	41.53	33.06	-	-	38.53	-	-	34.18	-	-	34.03
Purity difference(true-target)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reducing sugars % ##	-	-	18.86	-	-	-	17.17	-	-	-	-	15.19	-	-	-	-	-	-
Sulphated ash %	-	-	-	-	-	-	13.26	-	-	-	-	13.33	-	-	-	-	-	-
Reducing sugars/ash ratio	-	-	-	-	-	-	1.29	-	-	-	-	1.14	-	-	-	-	-	-
Final molasses at 85 brix % cane	-	-	4.13	-	-	4.26	3.64	3.51	3.49	-	-	4.27	-	-	3.82	-	-	3.08

* Cane diffuser

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

Reducing sugars determined by Lane & Eynon method.

TABLE D1
MASSECUITES,EXHAUSTIONS,CLARIFYING AGENTS AND ADDITIONAL FUELS.
SOUTH AFRICAN FACTORIES (SEASON 2004-2005)

SYMBOLS OF FACTORIES	ML	KM	PG	UF	FX	AK	DL	MS	GH	NB	UC	ES	SZ	UK	INDUSTRY
A - MASSECUITE															
m3 per ton brix in mixed juice(adj.)	1.28	-	1.05	1.08	0.96	0.95	0.91	0.96	1.08	1.19	1.00	1.01	1.00	0.97	0.92
Refractometer brix of massecuite	93.01	92.65	91.88	92.42	93.06	92.54	93.36	92.48	93.35	92.80	92.17	93.43	93.79	92.94	92.91
Purity of massecuite	85.36	84.30	85.09	85.46	86.53	85.45	85.46	83.64	85.53	86.25	86.08	86.17	84.96	85.61	85.49
Purity of A - molasses	70.39	63.33	71.32	68.44	69.88	67.38	63.96	63.66	67.03	68.62	69.19	69.25	64.64	64.68	67.71
Purity drop	14.97	20.97	13.77	17.02	16.65	18.07	21.50	19.98	18.50	17.63	16.89	16.92	20.32	20.93	17.78
Exhaustion	59.23	67.84	56.42	63.10	63.88	64.83	69.81	65.73	65.60	65.14	63.68	63.86	67.64	69.22	64.40
Pty of A-massecuite - purity syrup	1.39	0.54	0.35	0.92	2.22	0.73	0.58	0.81	0.83	0.21	0.45	-0.59	-0.68	0.53	0.77
Pty of remelt	85.44	82.38	85.45	87.69	90.73	85.41	84.57	82.75	84.10	84.64	86.23	84.46	84.08	86.50	85.33
B - MASSECUITE															
m3 per ton brix in mixed juice(adj.)	0.57	-	0.40	0.38	0.36	0.32	0.20	0.27	0.36	0.56	0.34	0.31	0.30	0.38	0.33
Refractometer brix of massecuite	94.83	94.94	94.34	94.47	95.61	94.19	94.71	93.37	95.42	95.12	94.97	95.76	95.76	94.77	94.92
Purity of massecuite	69.76	64.48	71.54	68.64	72.63	68.32	66.34	63.99	66.91	69.23	69.88	70.19	65.48	68.57	68.91
Purity of B - molasses	51.80	42.06	52.09	44.92	49.40	50.24	43.52	45.32	45.02	47.93	45.55	46.59	43.33	46.59	47.84
Purity drop	17.96	22.42	19.45	23.72	23.23	18.08	22.82	18.67	21.89	21.30	24.33	23.60	22.15	21.98	21.08
Exhaustion	53.41	60.01	56.74	62.74	63.21	53.18	60.90	53.36	59.50	59.09	63.94	62.95	59.69	60.02	58.63
C - MASSECUITE															
m3 per ton brix in mixed juice(adj.)	0.10	-	0.45	0.24	0.29	0.26	0.27	0.28	0.28	0.27	0.18	0.22	0.25	0.32	0.23
Refractometer brix of massecuite	97.27	96.89	96.80	97.06	97.35	97.38	96.95	96.34	97.78	97.20	97.94	97.67	97.58	97.74	97.25
Purity of massecuite	55.17	51.54	55.02	51.82	56.55	56.19	52.23	54.04	52.88	54.84	50.30	54.04	53.09	56.76	54.46
Purity of C - molasses	30.60	32.30	34.66	34.01	35.39	36.97	31.23	33.84	34.77	35.41	34.51	36.60	34.98	35.41	34.24
Crystal content	34.44	27.53	30.15	26.19	31.89	29.70	29.61	29.42	27.15	29.24	23.62	26.87	27.18	32.31	29.90
Exhaustion	64.18	55.13	56.62	52.07	57.92	54.27	58.47	56.50	52.50	54.86	47.94	50.90	52.46	58.23	56.46
TOTAL VOLUME ALL RAW MASSECUITES															
m3 per ton brix in mixed juice(adj.)	1.95	-	1.90	1.69	1.62	1.52	1.38	1.51	1.72	2.02	1.53	1.55	1.55	1.67	1.49
WHITE SUGAR MASSECUITES															
kg sugar per m3 massecuite	429	-	-	544	-	-	-	-	508	454	-	-	-	-	541
Tons limestone per 1000 tons white sugar	-	-	72.39	-	-	-	-	-	32.24	-	-	-	-	-	62.36
Tons coke per 1000 tons white sugar	-	-	0.87	-	-	-	-	-	3.48	-	-	-	-	-	5.68
Tons phosphoric acid per 1000 tons white suga	-	-	-	-	-	-	-	-	-	788.00	-	-	-	-	788.00
Tons sulphur per 1000 tons white sugar	0.22	-	0.35	5.63	-	-	-	-	0.24	140.52	-	-	-	-	63.97
Phosphoric acid ppm mixed juice(unadj.)	-	-	-	-	-	-	-	-	-	-	29.22	98.22	4.83	34.91	9.63
Flocculant ppm mixed juice(unadj.)	4.14	2.26	4.00	-	3.58	3.30	1.82	4.25	3.38	5.53	4.61	8.21	5.28	2.18	3.83
Tons lime per 1000 tons cane	-	0.24	0.35	0.63	0.66	0.55	0.58	0.82	-	0.68	0.58	0.63	0.54	0.58	0.48
Enzyme ppm sugar	-	-	-	-	-	-	23.98	1.77	1.84	-	-	7.30	33.38	12.17	6.24
ADDITIONAL FUELS PER 1000 TONS CANE															
Tons of coal	26.33	0.40	6.20	9.31	17.16	2.82	3.08	32.79	11.77	16.68	2.61	1.28	25.95	0.06	12.21
Tons of wood	0.19	-	0.00	-	-	0.03	0.23	0.03	-	-	0.24	0.35	0.18	-	0.08
Converted into bagasse **	105.53	1.59	24.82	37.23	68.63	11.31	12.59	131.21	47.08	66.73	10.73	5.53	104.02	0.25	48.95

** 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 D2

MASSECUITES,EXHAUSTIONS,CLARIFYING AGENTS AND ADDITIONAL FUELS

SWAZILAND, MALAWI , ZIMBABWE AND ZAMBIA FACTORIES (SEASON 2004 - 2005)

SYMBOLS OF FACTORIES	MH	UB	SM	NH	DW	HV	TR	NK
A - MASSECUITE								
m3 per ton brix in mixed juice	1.28	1.04	1.05	1.30	1.19	1.10	-	1.02
Refractometer brix of massecuite	93.19	93.15	92.83	94.03	91.43	91.75	92.80	93.24
Purity of massecuite	88.49	85.21	86.49	87.14	87.67	87.61	84.99	89.05
Purity of A - molasses	73.41	70.26	71.93	73.85	71.32	71.91	68.49	73.92
Purity drop	15.08	14.95	14.56	13.29	16.35	15.70	16.50	15.13
Exhaustion	64.09	58.99	59.97	58.32	65.03	63.80	61.61	65.15
Purity of A-massecuite - pty syrup	1.74	0.55	-0.42	-1.39	-0.37	1.30	-0.54	0.40
Purity of remelt	86.19	86.92	86.64	84.65	87.67	85.79	83.71	83.19
B - MASSECUITE								
m3 per ton brix in mixed juice	0.49	0.37	0.41	0.31	0.62	-	-	0.39
Refractometer brix of massecuite	94.23	94.62	94.30	93.91	92.94	92.54	94.67	95.12
Purity of massecuite	73.93	69.30	71.89	73.02	68.60	73.15	69.63	73.81
Purity of B - molasses	53.18	48.64	49.18	54.65	49.01	53.63	49.84	52.82
Purity drop	20.75	20.66	22.71	18.37	19.59	19.52	19.79	20.99
Exhaustion	59.95	58.05	62.16	55.47	56.00	57.55	56.66	60.28
C - MASSECUITE								
m3 per ton brix in mixed juice	0.27	0.25	0.25	0.24	0.24	-	-	0.18
Refractometer brix of massecuite	97.38	97.87	97.24	96.40	94.68	94.81	97.47	97.58
Purity of massecuite	56.20	54.87	55.48	57.45	51.99	61.01	55.64	54.00
Purity of C - molasses	33.53	36.43	32.99	41.53	33.06	38.53	34.18	34.03
Crystal content	33.21	28.39	32.64	26.25	26.77	34.67	31.78	29.54
Exhaustion	60.69	52.87	60.50	47.40	54.39	59.95	58.60	56.07
TOTAL VOLUME ALL RAW MASSECUITES								
m3 per ton brix in mixed juice	2.04	1.66	1.72	1.85	2.05	-	-	1.60
WHITE SUGAR MASSECUITES								
kg sugar per m3 massecuite	-	552	-	514	466	-	-	-
Tons phosphoric acid/1000 tons white sugar	-	-	-	0.61	-	-	-	0.75
Tons sulphur/1000 tons white sugar	0.17	0.09	-	-	0.12	0.50	-	0.82
Phos. acid ppm mixed juice	-	-	-	-	-	-	-	-
Flocculant ppm mixed juice	1.2	-	0.7	3.9	2.3	1.8	2.5	1.5
Tons lime per 1000 tons cane	2.6	1.0	0.4	1.1	4.0	0.8	0.6	0.5
Enzyme ppm sugar	-	-	-	-	-	-	-	-
ADDITIONAL FUELS PER 1000 TONS CANE								
Tons of coal	33.18	19.20	5.31	-	-	5.87	6.21	-
Tons of wood	-	-	-	-	4.14	0.07	-	-
Converted into bagasse **	132.70	76.81	21.25	-	4.97	23.56	24.82	-

** 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 E

COMPARATIVE MANUFACTURING DATA OF RECENT YEARS (SOUTH AFRICAN FACTORIES)

	2004/05	2003/04	2002/03	2001/02	2000/01
Throughput and time efficiency					
Tons cane per hour	301.95	284.40	301.36	296.25	308.86
Tons fibre per hour	44.11	41.35	43.85	43.61	45.43
Overall time efficiency	82.40	82.72	83.97	80.46	79.47
Cane					
Sucrose % cane	13.52	13.70	13.71	13.11	13.08
Fibre % cane	14.84	14.81	14.80	14.97	14.98
Mixed juice					
Sucrose purity (MJ adj.)	85.81	86.36	87.31	85.92	86.46
(Glucose + Fructose)/ash in M.J.(unadj.)	1.03	0.98	0.98	1.11	1.14
Milling					
Imbibition % fibre	369	375	366	369	348
Extraction (sucrose based)	97.98	97.87	97.96	97.74	97.79
Pol % bagasse	0.90	0.96	0.92	0.95	0.95
Moisture % bagasse	49.93	50.34	50.08	50.81	49.95
Bagasse % cane	30.30	30.46	30.31	31.14	30.56
LCV bagasse kJ/kg	7397	7233	7261	6989	7108
Available kJ in bag./kg brix in M.J.(adj)	14515	14192	14308	14594	14689
Recoveries					
Boiling house recovery (sucrose based)	88.00	88.14	89.11	88.18	88.97
Overall recovery (sucrose based)	86.23	86.26	87.29	86.19	86.99
Tons cane per ton sugar	8.53	8.42	8.32	8.81	8.74
Filter cake					
Pol % filter cake	1.56	1.71	1.80	1.79	1.51
Filter cake % cane	1.25	1.40	1.36	1.32	1.29
Final molasses					
Brix % final molasses	83.97	84.79	85.09	84.44	84.26
Sucrose/refractometer brix purity	36.94	37.92	37.24	37.08	37.21
Final molasses @ 85 brix % cane	4.16	4.03	3.73	3.93	3.70
Average sugar polarisation	99.48	99.53	99.54	99.48	99.47
Sucrose lost % sucrose in cane					
Lost in bagasse	2.02	2.13	2.04	2.26	2.21
Lost in filter cake	0.14	0.17	0.18	0.18	0.15
Lost in final molasses	9.65	9.48	8.62	9.45	8.96
Undetermined losses	1.96	1.95	1.87	1.92	1.67
Lost in boiling house	11.75	11.61	10.67	11.55	10.79
Total losses	13.77	13.74	12.71	13.81	13.00
m3 massecuite per ton Bx in M.J.					
A - massecuite	0.92	0.95	0.90	1.06	1.07
B - massecuite	0.33	0.36	0.32	0.40	0.38
C - massecuite	0.23	0.22	0.20	0.26	0.26
Total	1.49	1.53	1.42	1.73	1.71
Exhaustion of massecuites					
A - massecuite	64.40	63.99	64.49	63.81	63.56
B - massecuite	58.63	57.76	60.09	58.75	59.90
C - massecuite	56.46	54.57	56.60	55.94	56.53
Brix of syrup	65.32	65.96	65.79	64.30	64.09

TABLE F
AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS FOR SOUTH AFRICAN FACTORIES (SEASON 2004 - 2005)

End of month period		3 APR 2004	1 MAY 2004	29 MAY 2004	26 JUN 2004	31 JUL 2004	28 AUG 2004	2 OCT 2004	30 OCT 2004	27 NOV 2004	1 JAN 2005
Tons of sugar made and	Month	8971	60733	229696	300673	355138	312838	365128	279192	230009	96074
estimated	To-date	8971	69704	299369	600042	955180	1268018	1633146	1912338	2142347	2238421
Tons cane crushed	Month	104301	591590	2084262	2543820	2906694	2581203	3023736	2326255	1968609	964290
	To-date	104301	695891	2780153	5323973	8230667	10811870	13835606	16161861	18130470	19094760
Tons cane crushed per hour	Month	168.73	236.21	298.82	313.91	308.95	311.09	307.95	301.30	301.95	309.99
actual crushing	To-date	168.73	222.85	275.32	289.95	296.39	299.77	301.52	301.49	301.54	301.95
Sucrose % cane	Month	12.08	12.01	12.73	13.55	13.99	13.82	13.79	13.81	13.58	12.39
	To-date	12.08	12.02	12.55	13.03	13.37	13.48	13.54	13.58	13.58	13.52
Fibre % cane	Month	15.14	14.55	14.13	13.80	14.16	14.67	15.02	15.54	16.13	16.59
	To-date	15.14	14.64	14.26	14.04	14.08	14.22	14.40	14.56	14.73	14.84
RV % cane	Month	10.94	10.81	11.51	12.33	12.76	12.64	12.60	12.59	12.27	11.05
	To-date	10.94	10.83	11.33	11.81	12.14	12.26	12.34	12.37	12.36	12.30
Tons cane per ton sugar	Month	11.63	9.74	9.07	8.46	8.18	8.25	8.28	8.33	8.56	10.04
	To-date	11.63	9.98	9.29	8.87	8.62	8.53	8.47	8.45	8.46	8.53
Extraction	Month	96.77	97.58	97.93	98.02	97.99	98.06	98.02	98.08	97.99	97.57
(sucrose based)	To-date	96.77	97.46	97.82	97.92	97.95	97.98	97.98	98.00	98.00	97.98
Imbibition % fibre	Month	325	361	387	373	367	366	367	368	364	359
	To-date	325	355	379	376	373	371	370	370	369	369
Pol % bagasse	Month	1.11	0.94	0.89	0.94	0.97	0.90	0.90	0.85	0.83	0.87
	To-date	1.11	0.97	0.91	0.93	0.94	0.93	0.93	0.91	0.90	0.90
Moisture % bagasse	Month	55.04	51.54	50.91	50.28	49.79	49.48	49.30	49.42	49.61	50.71
	To-date	55.04	52.12	51.23	50.79	50.44	50.21	50.00	49.92	49.88	49.93
Boiling house recovery	Month	73.11	87.13	87.92	88.53	88.64	88.97	88.91	88.18	87.35	81.87
(sucrose based)	To-date	73.11	85.04	87.26	87.89	88.17	88.36	88.49	88.44	88.32	88.00
Overall recovery	Month	70.75	85.02	86.10	86.78	86.86	87.25	87.15	86.48	85.59	79.89
(sucrose based)	To-date	70.75	82.87	85.36	86.07	86.36	86.58	86.70	86.67	86.55	86.23
Mixed juice sucrose purity	Month	85.70	84.36	84.84	85.44	85.97	86.62	86.93	86.23	85.17	83.50
	To-date	85.70	84.56	84.78	85.11	85.42	85.71	85.98	86.02	85.93	85.81
Pol/sucrose ratio in mixed juice	Month	0.9898	0.9855	0.9866	0.9876	0.9902	0.9967	0.9957	0.9934	0.9952	0.9931
	To-date	0.9898	0.9862	0.9865	0.9871	0.9882	0.9903	0.9915	0.9918	0.9922	0.9922
Sucrose/refractometer brix purity	Month	39.10	38.91	35.82	35.58	36.41	36.75	37.55	37.08	37.77	38.88
in final molasses	To-date	39.10	38.93	36.50	36.18	36.26	36.37	36.62	36.69	36.81	36.94
Sucrose lost in final molasses	Month	8.10	11.19	9.93	9.29	9.22	8.96	9.00	9.49	10.40	13.54
% sucrose in cane	To-date	8.10	10.72	10.19	9.77	9.57	9.42	9.32	9.35	9.46	9.65
Undetermined lost sucrose %	Month	17.87	1.24	1.77	1.82	1.77	1.69	1.72	1.96	1.88	4.01
sucrose in cane	To-date	17.87	3.74	2.15	1.96	1.89	1.84	1.81	1.83	1.84	1.96
Pol/sucrose ratio FM	Month	0.9470	0.9105	0.8924	0.8627	0.8896	0.9457	0.9638	0.9543	0.9666	0.9609
	To-date	0.9470	0.9147	0.8980	0.8813	0.8843	0.8986	0.9126	0.9188	0.9245	0.9269

TABLE G

CANE VARIETIES AND RAINFALL
(SEASON 2004 - 2005)
PERCENTAGE BY MASS

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	NCo 310	NCo 376	MIXED VARIETY	UNKNOWN AND OTHER	% BURNT	* RAINFALL mm
ML	-	-	17.8	-	0.3	43.7	-	2.1	2.2	4.8	21.1	-	-	0.1	-	1.5	-	-	1.5	5.0	99.8	185
KM	-	-	28.9	-	0.2	42.9	-	2.2	0.8	0.8	13.7	0.1	-	0.3	0.0	0.2	-	-	1.9	8.1	99.7	180
PG	-	-	17.8	-	0.5	14.3	-	1.6	6.1	0.2	29.5	4.4	-	0.7	0.0	0.3	-	-	7.3	17.3	73.2	701
UF	-	1.5	1.6	-	6.1	22.4	0.8	2.6	-	-	-	0.1	7.4	0.1	5.7	-	0.4	13.6	9.5	28.2	98.8	315
FX	-	2.9	2.2	0.1	4.9	11.3	0.3	0.5	2.9	0.2	3.5	0.6	18.1	0.7	5.1	0.4	-	17.2	3.4	25.7	80.6	380
AK	-	23.3	0.5	5.6	3.4	-	1.7	-	-	-	0.4	-	6.8	-	4.1	-	-	9.9	7.5	36.9	93.8	435
DL	-	17.0	0.2	9.0	3.1	6.2	2.7	-	-	-	0.0	-	11.0	-	2.3	-	-	11.9	1.3	35.4	86.8	428
MS	-	16.1	0.2	14.4	2.6	2.9	0.8	-	-	-	0.3	-	2.0	-	2.2	-	-	28.1	14.0	16.3	75.9	553
GH	-	18.9	0.5	4.6	4.3	4.7	1.5	-	-	-	0.1	0.2	5.4	-	2.8	-	-	19.7	3.6	33.8	88.1	895
NB	0.6	68.5	-	20.4	0.1	0.2	1.4	0.1	0.1	-	0.7	0.2	0.4	-	1.5	0.1	-	-	0.4	5.2	96.8	426
UC	0.6	55.4	-	33.3	0.1	0.7	2.7	0.1	0.5	-	1.1	0.5	0.1	-	1.0	-	-	-	0.6	3.3	99.9	299
ES	-	61.3	-	9.3	-	-	0.1	0.1	-	-	-	0.1	0.5	0.1	0.6	0.8	-	0.1	0.2	26.8	86.1	311
SZ	-	34.9	0.3	5.6	-	-	0.3	-	-	-	-	-	1.1	-	1.8	-	0.2	5.5	8.3	41.9	70.5	532
UK	-	27.5	0.7	2.7	-	-	1.3	-	-	-	-	-	1.6	-	1.6	-	-	9.1	1.9	53.6	92.3	740
Average SA Mills	0.1	19.9	6.2	5.9	1.9	12.9	0.8	0.7	1.0	0.5	5.8	0.4	4.4	0.2	2.1	0.3	0.1	8.4	4.7	23.8	87.7	
MH	-	-	4.5	-	-	38.5	-	-	10.6	-	3.3	0.1	-	-	-	-	-	42.3	0.7	-	-	346
UB	-	-	3.3	-	-	11.5	-	-	25.4	0.2	16.7	-	-	0.1	-	0.1	-	34.2	8.5	-	-	686
SM	-	-	3.5	-	0.2	23.6	-	0.1	11.6	-	3.9	-	-	0.2	-	0.2	-	54.3	2.5	-	-	302
NH	-	-	44.5	-	-	0.8	-	0.1	3.8	-	17.8	-	-	0.2	0.6	-	-	-	12.7	19.6	-	163
DW	-	-	4.6	-	-	30.4	-	-	-	-	8.4	0.2	-	-	-	-	-	31.0	1.7	23.7	-	1465
HV	-	-	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37.0	-	35.0	-	41
TR	-	-	47.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.4	0.8	10.8	-	85
NK	-	-	15.2	-	1.1	26.4	-	1.2	3.2	-	16.2	-	-	-	-	-	-	3.8	3.8	28.0	-	389

* Rainfall during the crushing season

TABLE H

TRANSPORT SUMMARY SOUTH AFRICAN FACTORIES

(SEASON 2004 - 2005)

PERCENT OF CANE TRANSPORTED

MILLS	ML	KM	PG	UF	FX	AK	DL	MS	GH	NB	UC	ES	SZ	UK	AVERAGE
SOUTH AFRICAN RAILWAYS					21.5										2.3
TRAMS				74.6											4.2
UNKNOWN													0.01		
ARTICULATED TRUCK DRIVEN VEHICLES															
- Interlink		1.3	10.6	25.4	59.4	72.6	38.9	90.0	74.9	33.8	20.3	63.5	85.6	88.4	47.7
- Tri-Axle							10.9		3.8	0.4	1.5	9.9			1.6
- Hilo	2.2	1.6	28.3		0.6	0.2	2.8		4.5	3.3	0.5	8.3	7.9	2.3	4.5
RIGID CHASSIS VEHICLES															
- Truck	83.5	69.9	4.6			0.4				17.5	38.6		6.4	2.6	17.4
- Lorry		3.4					0.3			2.8	13.0		0.1	2.1	1.1
TRACTOR DRIVEN VEHICLES															
- Hilo	2.0		19.3			7.3	28.3	0.9		29.3	1.5	17.4			6.8
- Rig	0.2		0.1		18.4	13.6	15.6	1.5	3.9	12.6	3.4	0.9		0.3	5.4
- Interlink	12.1	23.9	37.1		0.1	6.0	3.3	7.6	13.0	0.3	21.3			4.3	9.1

TABLE J

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

PERIOD (SEASON)	Percent Cane		Cane / sugar Ratio		Extraction	Pol % fibre in	Percent Bagasse		Imbibition Percent		Mixed Juice		F. Molasses Suc/Bx Pty	Boiling House Recovery	Overall Recovery
	Pol	Fibre	Tel Quel	96 Pol Sugar	Pol based	Bagasse	Pol	Moisture	Cane	Fibre	Purity Pol based	Reducing Sugar/ Pol ratio	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***				***Sucrose based***						***Sucrose based***	***(GL+FR)/ 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**
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
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**