EIGHTY-FIRST ANNUAL REVIEW OF THE MILLING SEASON IN SOUTHERN AFRICA (2005-2006)

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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, Zambia and Tanzania are included. The 2005-2006 season showed some improvement over the 2004-2005 season in terms of cane quality and cane supply. South African mill performances generally improved over 2004-2005, with better time efficiencies and lower undetermined losses. The cane crop in South Africa was slightly over 21 million tons and 2.514 million tons of sugar was made at a cane-to-sugar ratio of 8.37, an improvement over the 2004-2005 value of 8.42.

Introduction

This paper reviews the 2005-2006 milling season in southern Africa, including data from mills in South Africa, Swaziland, Zimbabwe, Malawi, Zambia and Tanzania that are Full (South African) or Affiliate (non-South African) Members of the SMRI.[1,2] Note that as Royal Swazi Sugar Corporation is no longer a member of the SMRI, all Swaziland data for 2005-2006 in this review refers to Ubombo data only. 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 A to H in the Appendix.

Cane crop

Cane varieties

The varietal distribution for southern African mills is shown in Table F for the 2005-2006 season. Few changes occurred in South Africa since the 2004-2005 season, with the largest changes (up to 10%) being moving away from varieties N12 and N19 in favour of N25 and N32 at Malelane and Komati. For the first time, Pongola reported a significant percentage of

[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 Mumias (Kenya), Xinavane (Mozambique) and Mafambisse (Mozambique) became Affiliate Members of the SMRI during 2005, but as a full season's data is not yet available from them, their figures have not been included in this review.

N36 being crushed (7.5%), together with a noticeable decrease in 'Unknown and Other' varieties (from 17.3% down to 6.3%). In other areas, the percentage of NCo376 has continued to decrease, from an industry average of 8.4% in 2004-2005 to 7.0% in 2005-2006. This trend also continued at Ubombo and Hippo Valley, while NCo376 remains the mainstay at the Tanzanian mills at Kilombero.

Burning

The overall percentage of cane burnt in South Africa remained much the same as in the previous two seasons at around 88% (Table F), with little change at individual mills.

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 10 seasons in Figures 1 a-c. Cane quality in terms of ERC was slightly higher in 2005-2006, compared to 2004-2005, while the Ash level was slightly poorer. The mixed juice purity continued to drop to the lowest value in the past nine years. The juice purities were particularly low towards the end of the season at the Mpumalanga mills (ML and KM), as a result of continued drought stress caused by low rainfall (Figure 2) and a shortage of irrigation water.

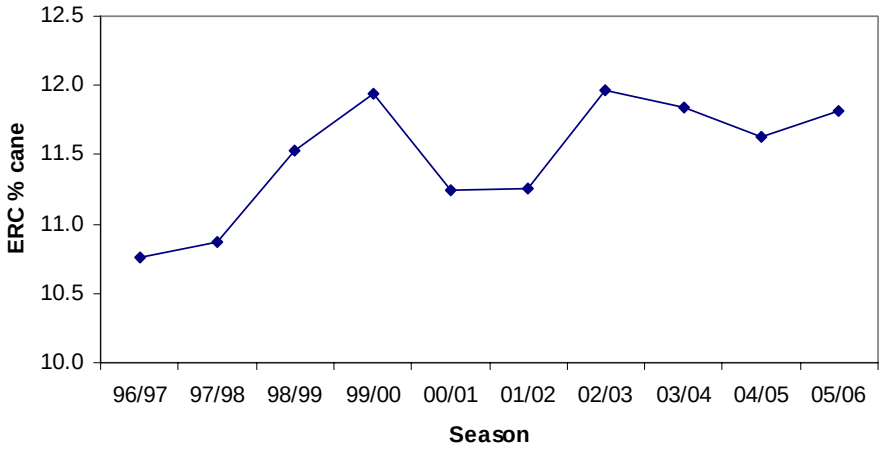

Figure 1a. ERC % cane in South Africa.

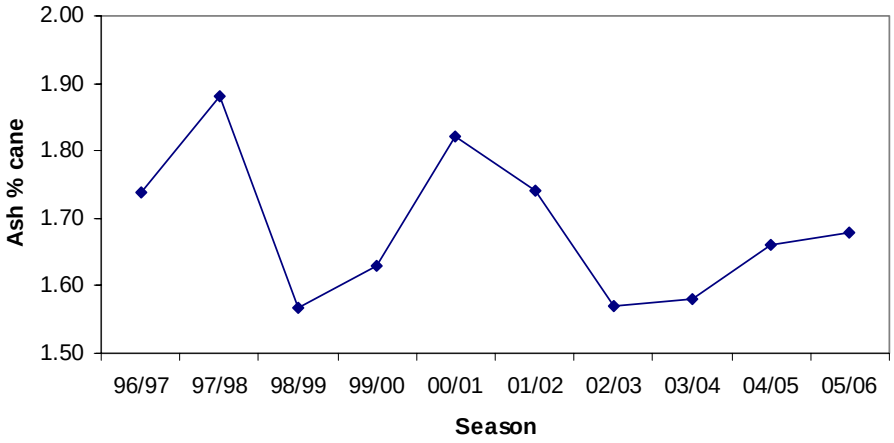

Figure 1b. Ash % cane in South Africa.

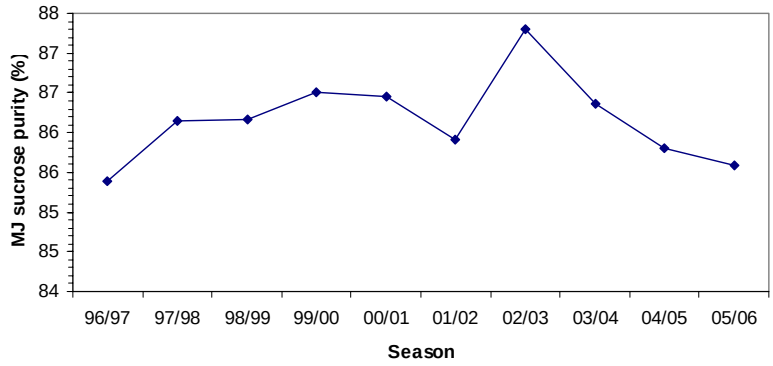

Figure 1c. Mixed juice sucrose purity in South Africa.

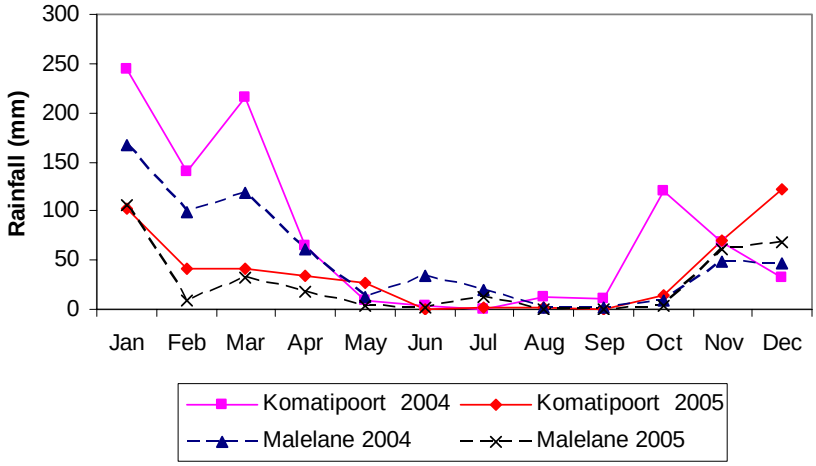

Figure 2. Monthly rainfall at Komatipoort and Malelane in 2004 and 2005.

The monthly values of Recoverable Value (RV) % cane for the past two seasons (Figure 3) shows that the 2005-2006 season's curve had returned to the expected shape, with a peak in mid-season, compared to the flatter curve in 2004-2005. The average RV% cane was little changed from the previous season's value, the South African industry average rising from 12.46 to 12.49%. Comparison of individual mill values over the past two seasons (Figure 4) shows that RV% cane improved slightly at most mills, including Malelane and Komati, while dropping only at Felixton and Umzimkulu. Cane quality in the Midlands areas recovered from the poor RV% cane values (for the area) recorded in 2004-2005, although the prevalence of sour rot in the area limited the extent of the recovery at Noodsberg.

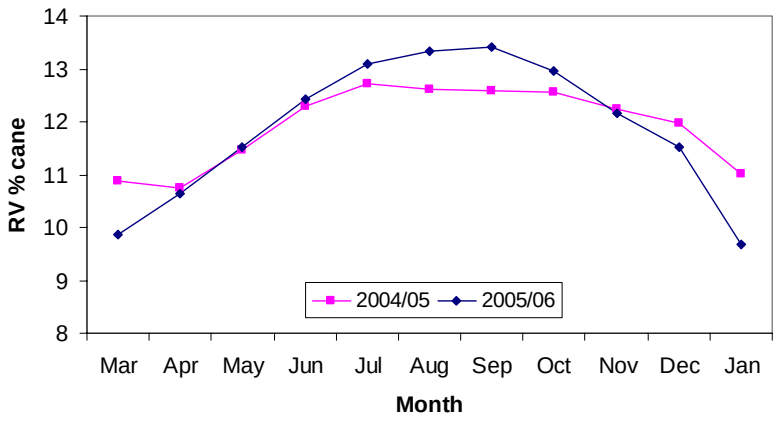

Figure 3. Monthly RV % cane in South Africa for the 2004-2005 and 2005-2006 seasons.

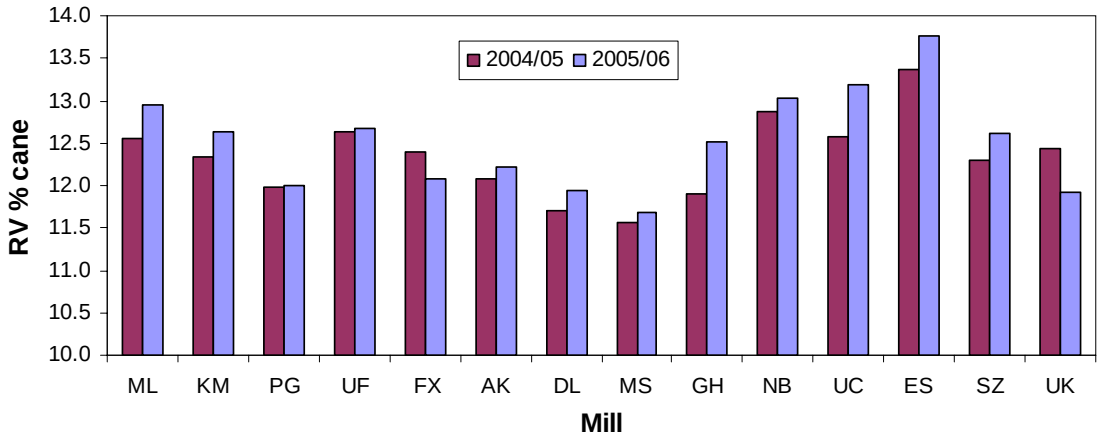

Figure 4. RV % cane for South African mills for the 2004-2005 and 2005-2006 seasons.

In Swaziland, Zimbabwe and Zambia, cane quality has continued to decline, as shown in Figure 5.

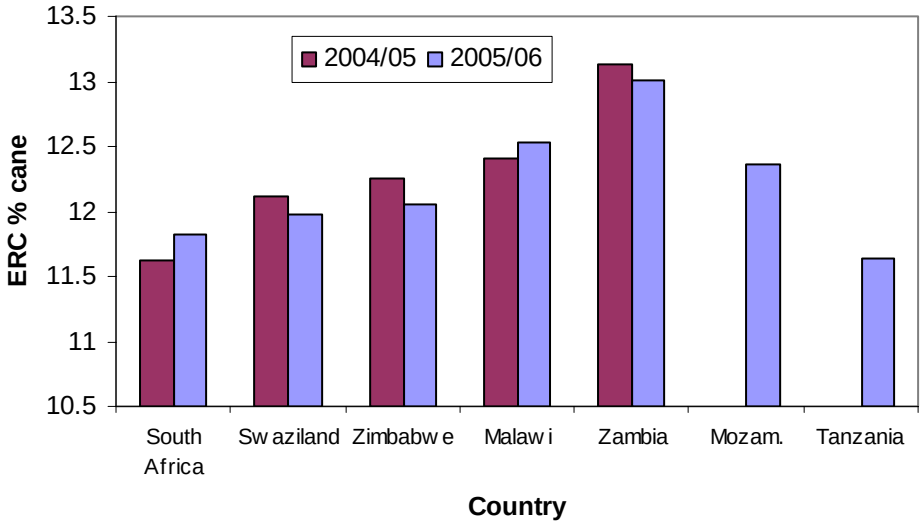

Figure 5. ERC % cane in southern Africa for the 2004-2005 and 2005-2006 seasons.

Cane tonnage

Better summer rains at the beginning of 2005 resulted in the total South African crop size improving by 10% over the low value in 2004-2005 to 21.052 million tons of cane in 2005-2006 (Figure 6). The South African average crush rate in 2005-2006 was very similar to that of the 2004-2005 season, being 301.88 and 301.95 tons cane per hour, respectively.

Factory Performance

Length of milling season

The 2005-2006 season in South Africa started at UCL Co. Ltd. on 14 March 2005 and ended at the same factory on 26 February 2006. UCL undertook a trial crush between 21 February 2006 to 26 February 2006 and the tonnage of cane crushed during this period was also

included in the 2005-2006 season. The overall length of the season was 251 days, which was 19 days longer than the 2004-2005 season as a result of the larger crop (Figure 7). The shortest factory season was at Gledhow (213 days), with the longest at the UCL Co. Ltd factory (286 days). The Lengths of Milling Season in other southern African countries were 245 days in Swaziland (UB), 249 days in Zimbabwe, 205 days in Malawi, 224 days in Zambia (NK) and 186 days in Mozambique (MA).

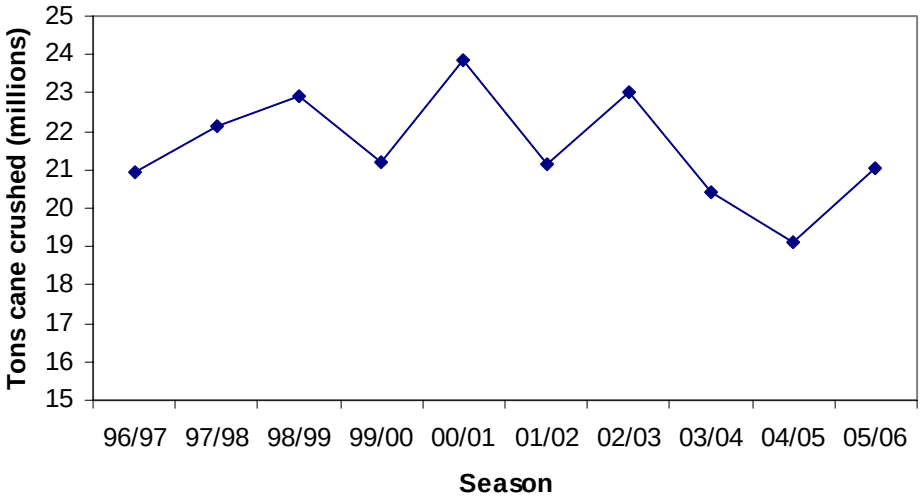

Figure 6. Cane tonnages in South Africa.

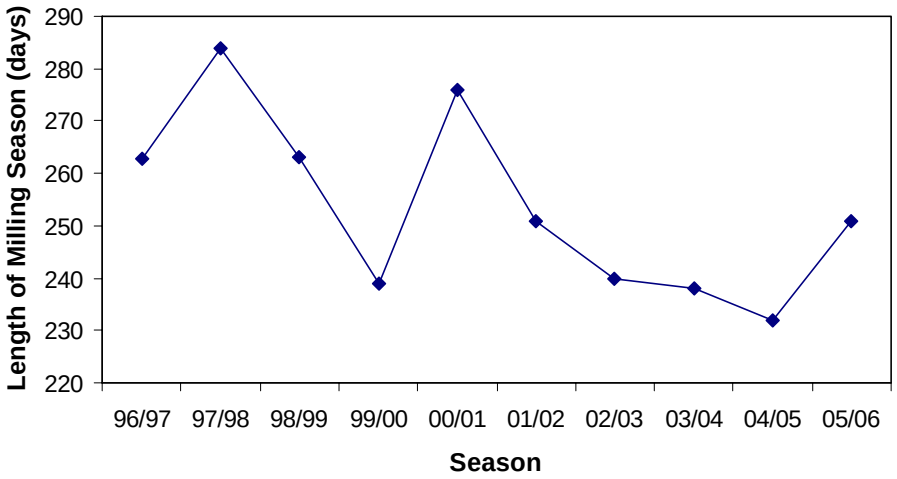

Figure 7: Length of Milling Season in South Africa since 1996-1997.

Time efficiencies

The time accounts for the 2005-2006 season in southern Africa are shown in Table 1. The industrial average time efficiency in South Africa improved slightly from 82.40% in 2004-2005 to 82.90% in 2005-2006 due largely to a decrease in no-cane and other stops. This resulted in a favourable decrease in lost time % available from 5.16% in 2004-2005 to 5.03% in 2005-2006. Once again the dry conditions and proper planning ensured that the no-cane

stops were kept low throughout the season. Overall time efficiencies for Swaziland (UB), Malawi, Zambia, Tanzania and Mozambique were better than the South African industrial average, whilst Zimbabwe was still struggling with the combined effect of no-cane and other stops. Malawi has improved its time efficiency from 78.90% in the 2004-2005 season to a remarkable 89.91% in the 2005-2006 season.

Table 1. Time account in southern Africa for 2005-2006.

Parameter	South Africa	Swaziland (UB)	Zimbabwe	Malawi	Zambia (NK)	Tanzania (MW,RU)	Mozam. (MA)
Overall time efficiency (%)	82.90	83.60	79.40	89.91	88.42	84.75	83.36
Scheduled stops (%)	5.52	4.49	4.68	3.37	3.98	4.06	4.11
Other stops (%)	4.39	4.32	8.11	3.16	5.54	4.58	3.60
No cane stops (%)	6.56	6.30	7.50	3.47	1.18	6.31	8.89
Foreign matter stops (%)	0.63	1.30	0.31	0.09	0.89	0.30	0.03
Lost time % available	5.03	7.00	9.55	3.39	5.89	5.13	4.14

The lost time % available values for the individual South African factories for the past two seasons are shown in Figure 8. Amatikulu decreased their lost time % available from 5.16% in 2004-2005 to an excellent 2.20% in 2005-2006, and Umfolozi decreased theirs from 9.78% to 5.58%. Sezela and Umzimkulu have continued to keep the lost time % available to below 2.0%. However, there was a sharp increase in lost time % available at Komati and Noodsberg. Komati suffered from electrical problems with a substation transformer and a main cane knife motor, and a ruptured turbo-alternator steam bellows. At Noodsberg mechanical repairs were done on milling tandem conveyors and feeders, and there were tube leaks in a boiler mainbank.

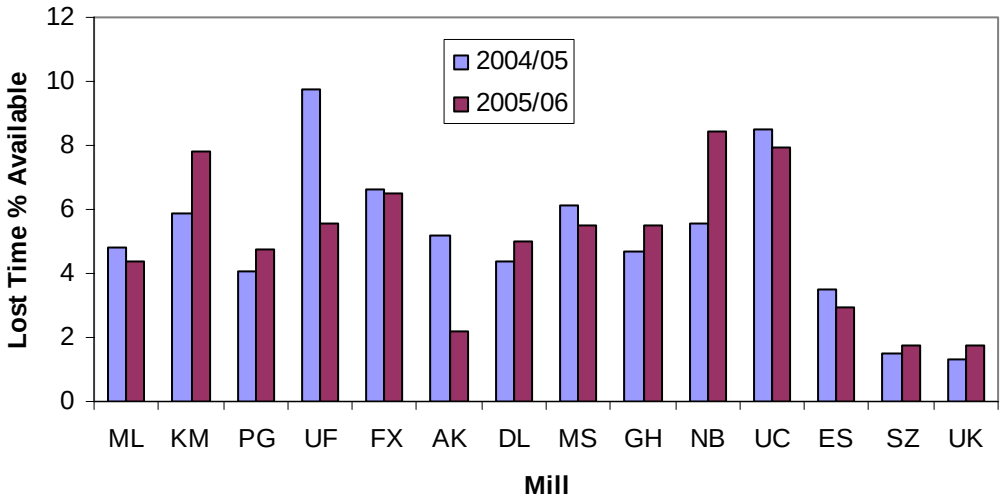

Figure 8. Lost Time % Available at South African mills for the 2004-2005 and 2005-2006 seasons.

Extraction and clarification

Extraction in the South African industry improved further from the 2004-2005 value of 97.98% to an excellent value of 98.03%; the first time in South Africa that the industry season average extraction has exceeded 98%. This was due to continued good performance by the mills (Corrected Reduced Extraction (CRE) remained steady, Figure 9), and a noticeable drop in fibre % cane (from 14.84 to 14.66%, equal to the lowest value in the past ten years). Umfolozi and Gledhow stood out in terms of substantial improvements in CRE from 2004-2005 to 2005-2006, of 0.39% and 0.28%, respectively. Maidstone continued to improve its extraction to a value of 98.69%, an industry best this season. In the 2005-2006 season, six factories (ML, KM, FX, AK, MS and UK) routed clarifier mud back to the diffusers throughout the entire season, while Pongola, Eston and Noodsberg operated with partial recycling.

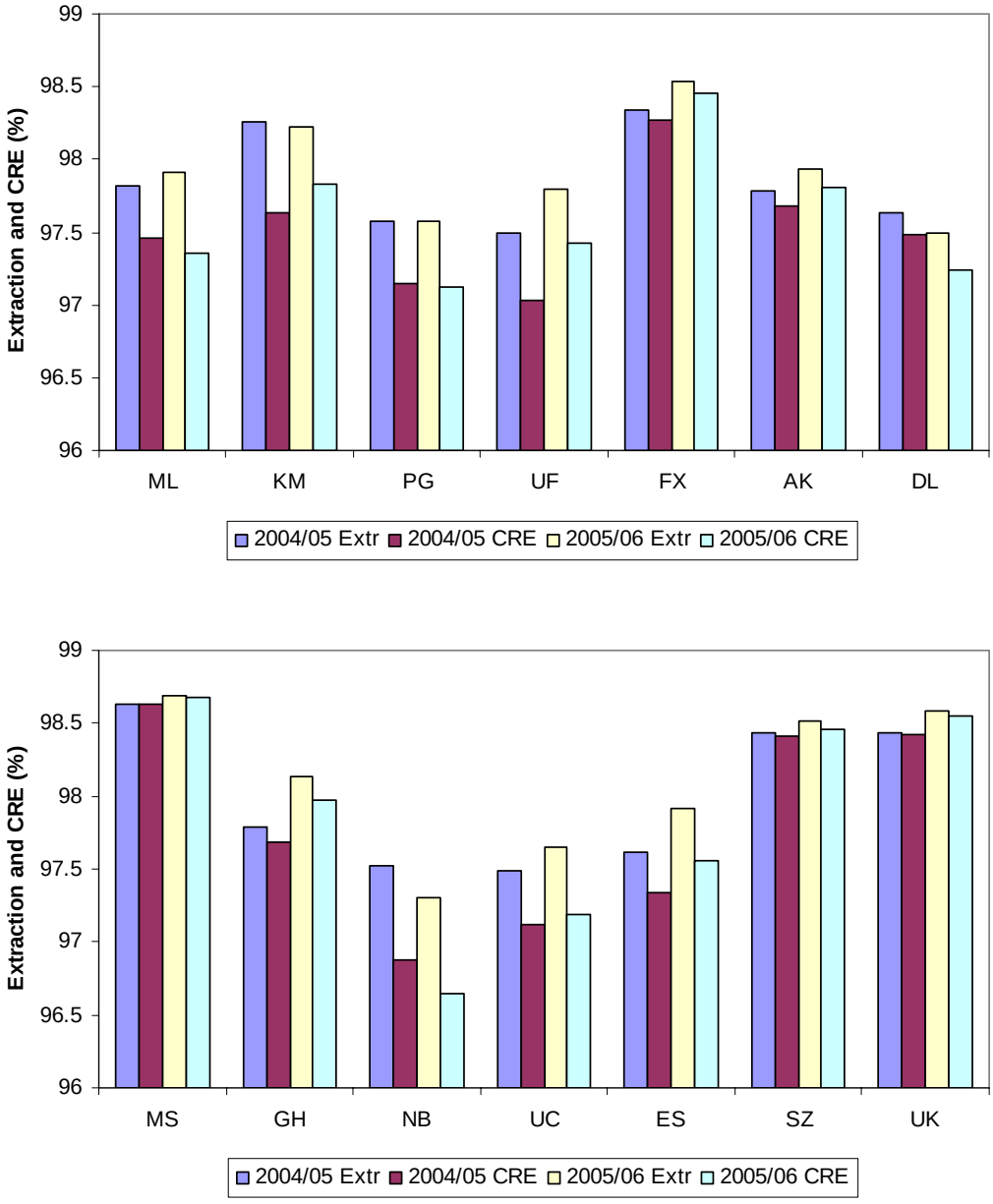

Figure 9. Extraction and Corrected Reduced Extraction for the 2004-2005 and 2005-2006 seasons in South African mills.

In the other southern African countries, pol-based extraction ranged from a very poor 91.56% at Ruembe in Tanzania to a reasonable value of 97.79% at Hippo Valley in Zimbabwe. Triangle has shown steady improvements to its extraction values in comparison to the 2004-2005 season.

Boiling house performance

Boiling house performance in 2005-2006 in South Africa improved from 2004-2005, with a season average Boiling House Recovery (BHR) for the South African industry for 2005-2006 of 88.25%. As shown in Figure 10, the increase in BHR was due to an improved Corrected Reduced BHR (CRB); the value of 87.01% for the season average being the highest in the past 10 years. In terms of improved CRB, Umfolozi, Amatikulu and Maidstone all showed increases exceeding 1%, with Maidstone now topping the industry, while only at Noodsberg did CRB drop by more than 1%. UCL Co. Ltd. once again achieved the highest BHR, with a season average of 90.81%, 1.16% ahead of the next two mills, Darnall and Umzimkulu.

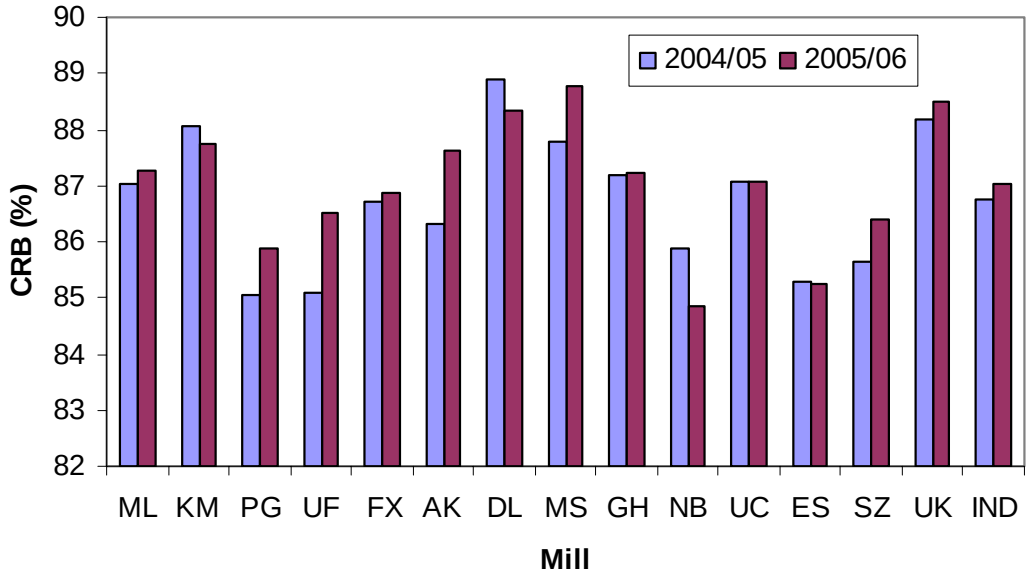

Figure 10. Corrected Reduced Boiling house recoveries (CRB) for South African mills for the 2004-2005 and 2005-2006 seasons

The good boiling house performance was achieved despite the continued fall in mixed juice sucrose purity to the lowest value since the 1996-1997 season. The monthly trends of reducing sugar % Brix in mixed juice for the past four years (Figure 11), chosen to include 2002-2003 (an exceptional year in terms of mixed juice purity), show the unusually high levels of reducing sugars in juice in the second half of the season. These were well above those of the excellent 2002-2003 season, and mostly higher than those of the 2003-2004 and 2004-2005 seasons, which were much poorer due to the dry conditions that prevailed. Hence, the juice purities were low in 2005-2006, but the higher proportion of the impurity was reducing sugars, which was favourable in terms of improved molasses exhaustibility. Mpumalanga mills (ML and KM) were particularly hard hit, as the low rainfall meant that insufficient irrigation water was available, and cane quality suffered as a consequence in 2005-2006. The cane is only expected to recover fully by the 2007-2008 season, assuming that good rains continue to fall this season.

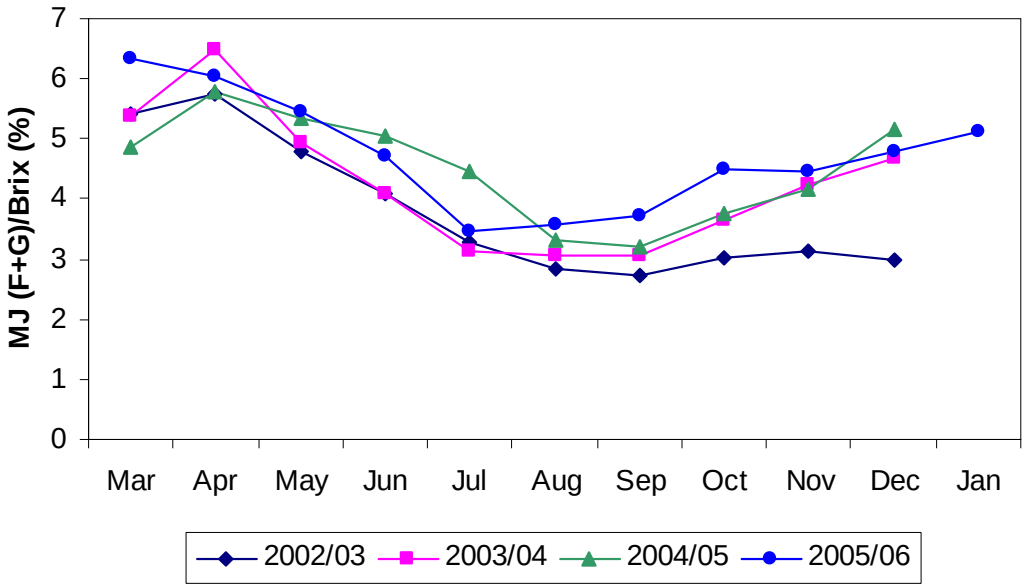

Figure 11. Monthly Mixed Juice reducing sugar % Brix for South Africa from 2002-2003 to 2005-2006.

The Undetermined Loss % sucrose in cane dropped noticeably to a good value of 1.76% (Figure 12). Although the industry average for the season dropped, the changes were not uniform across the industry, with most mills showing improvements over the 2004-2005 season, while some (KM, DL, GH and NB) fared worse, as can be seen in Figure 13.

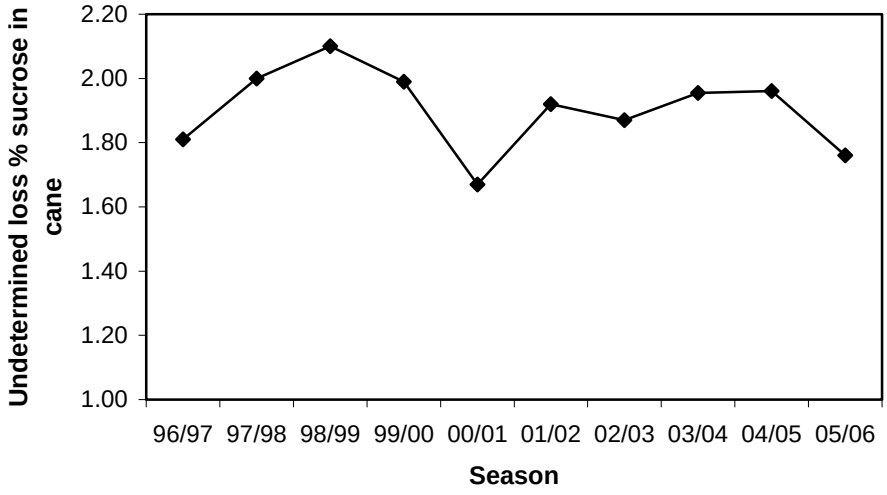

Figure 12. Undetermined loss in South Africa.

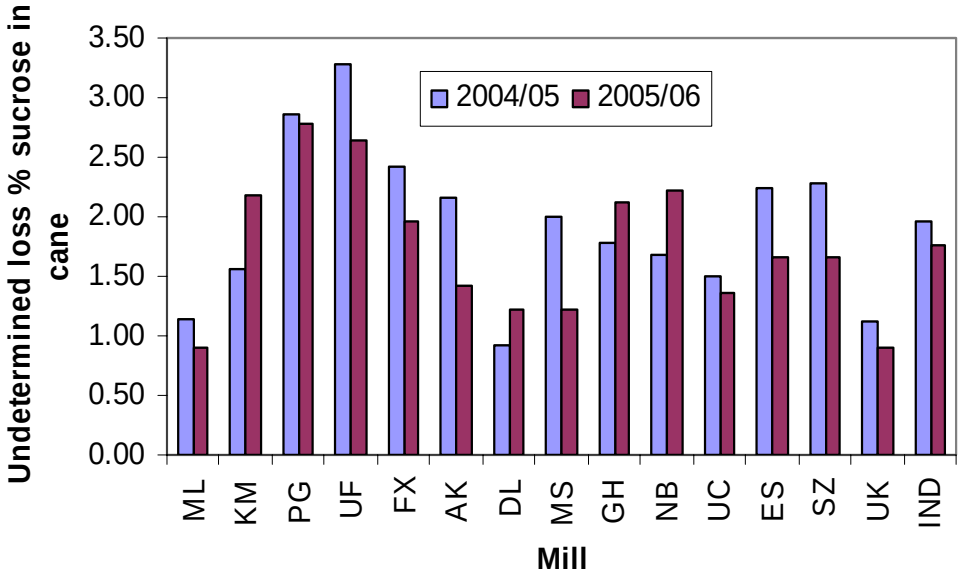

Figure 13. Undetermined loss % sucrose in cane at South African mills for 2004-2005 and 2005-2006.

The industry average target purity difference (TPD) in final molasses remained at 4.7 units in 2005-2006 (Appendix Table B1), the same as for the 2004-2005 season. However, the actual final molasses gravity purity (sucrose/Brix) was, at 36.7%, the lowest since the 1989-1990 season. The loss of sucrose to molasses remained almost unchanged from the 2004-2005 value (9.60% of sucrose in cane, compared to 9.65% in 2004-2005, see Appendix Table A1), although the quantity of molasses rose from 4.16 tons of molasses at 85 Brix per 100 tons of cane in 2004-2005 to 4.23 tons in 2005-2006. This was again the result of the high non-sucrose throughput, which, as shown in Figure 14, rose again to the highest value in the past 10 years. This resulted from a large increase in non-sucrose in cane, a slight increase in cane throughput and an increase in non-sucrose extraction (Figure 15). Sucrose throughput also increased as a result of the slight increase in cane throughput and the slight increase in extraction.

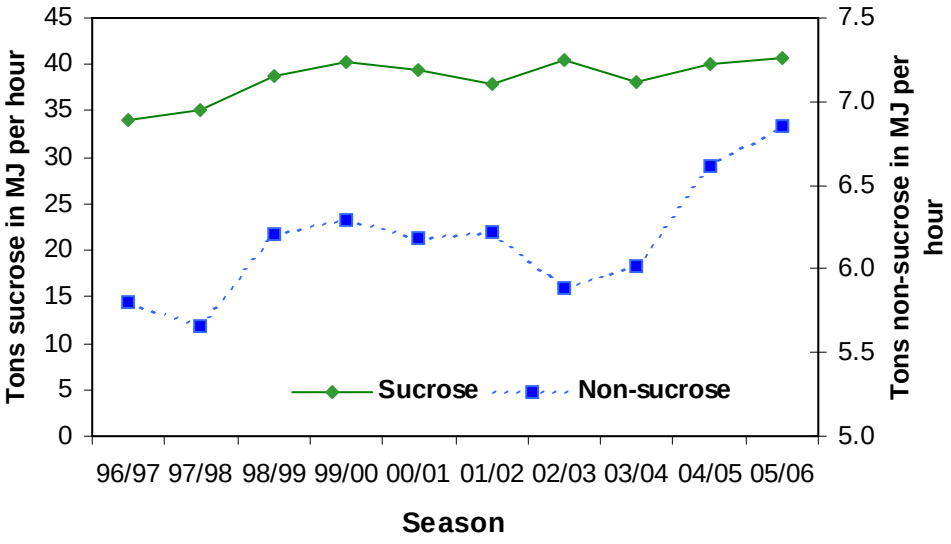

Figure 14. Sucrose and non-sucrose loadings in South Africa.

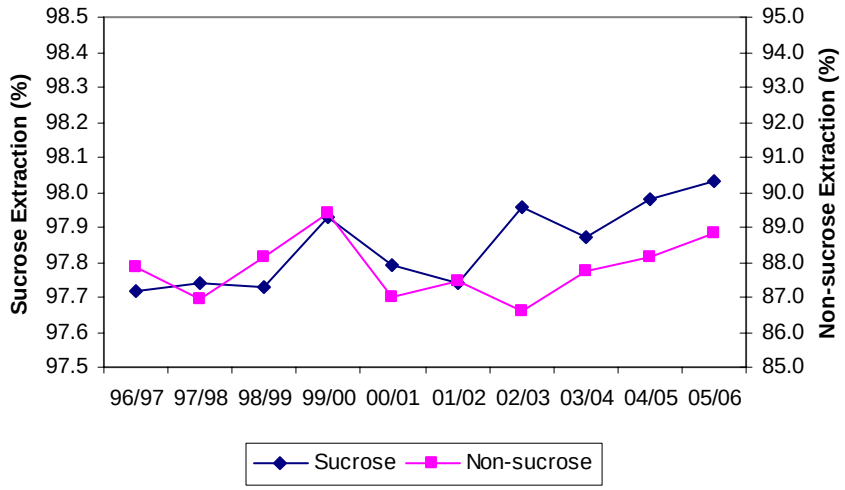

Figure 15. Sucrose and non-sucrose extraction in South Africa.

As previously stated, both the nature and quantity of the non-sucrose have an influence on the losses to molasses. The high reducing sugar content aided molasses exhaustion, so that the sucrose losses to molasses were not as severe as they might have been had the proportion of reducing sugars been lower for the same non-sucrose throughput. Consequently, the molasses factor (the ratio of the mass of sucrose in molasses to the mass of non-sucrose in mixed juice) dropped to the lowest value in the past 10 years (Figure 16).

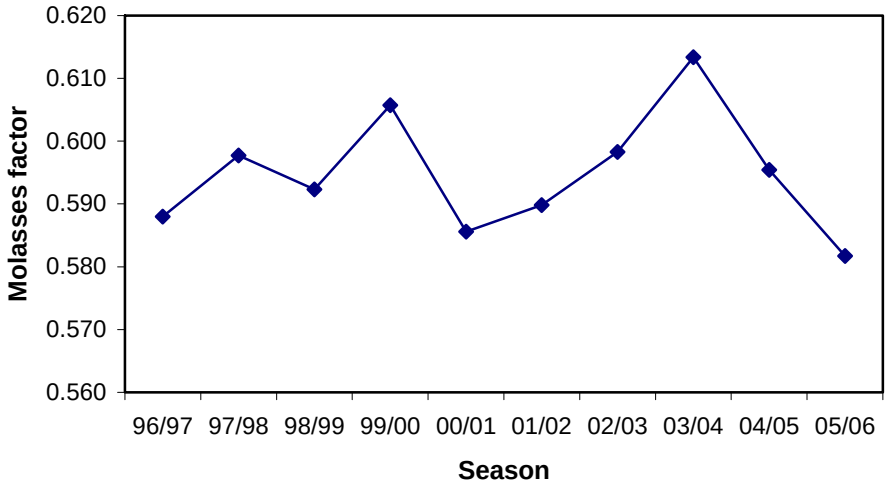

Figure 16. Molasses Factor in South Africa.

Other southern African mills achieved a broad range of pol-based BHR values, ranging from 86% at Hippo Valley to excellent values of 92.37% at Nakambala and 92.11% at Dwangwa. The various sources of loss of pol in cane are shown for the Affiliated mills in Figure 17. Table A2 shows that the mills in Zimbabwe and Zambia, and Ruembe in Tanzania, all had particularly low pol and Brix factors, well outside the acceptable ranges for the South African industry. This could be the result of physical losses in the caneyard or extraction lines, or of unrepresentative weighing, sampling and analysis, and the overall recovery figures must be viewed with caution in these cases due to uncertainty in this regard.

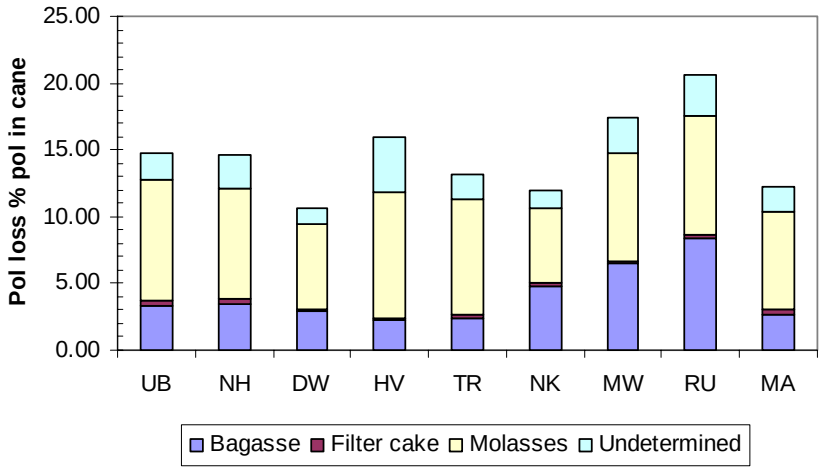

Figure 17. Sources of pol loss in southern African mills for 2005-2006.

Overall recovery parameters

Overall Recovery (OR) in South Africa for the past five seasons is shown in Figure 18, along with Value Recovery. Value Recovery (VR) is an indication of the 'financial' performance of the mills, in terms of the value paid for in the cane (in terms of tons RV in cane) that was recovered to sugar and molasses. It should be noted that the factors used in these calculations are based on rolling three-year average factors, and include factors derived from sugar and molasses prices. In addition, OR considers only the sucrose in sugar, while VR places a value on the sucrose in molasses as well. Hence, VR and OR will not generally follow the same trends, and in particular, the lower the MJ purity, the greater the divergence between VR and OR is likely to be. In particular, VR for 2005-2006 was the highest since the introduction of the RV payment method, largely because the industry's performance was good despite the average cane quality and poor mixed juice purity, as previously discussed.

The Affiliated mills returned a range of pol-based overall recoveries between from 79.38% at Ruembe and 89.36% at Dwangwa, the latter being an excellent value.

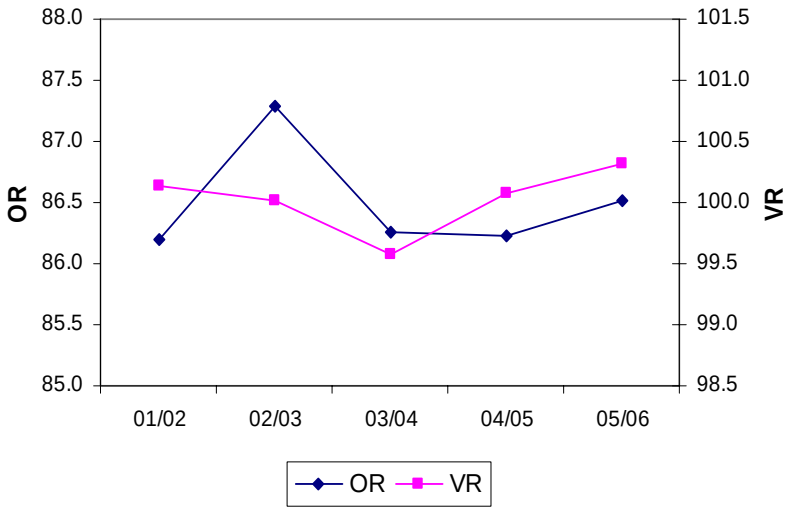

Figure 18. Overall Recovery (OR) and Value Recovery (VR) in South Africa from 2001-2002 to 2005-2006.

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). It can be seen that South Africa's cane to sugar ratio was closer to those of our nearest neighbours, Mozambique and Swaziland, for the 2005-2006 season, whereas it has historically been noticeably higher. This was the result of a relatively good season in South Africa, a further poor season in Zimbabwe, and the exclusion of the Royal Swazi Sugar Corporation mills from the Swaziland figures, these mills historically having a lower cane to sugar ratio than Ubombo. The Tanzanian mills, despite having the poorest cane quality in the region, still show considerable scope for improvement; their cane to sugar ratio being bettered by the South African industry average for every year since the 1997-1998 season. Dwangwa in Malawi had an excellent season, with a cane to sugar ratio of 7.38.

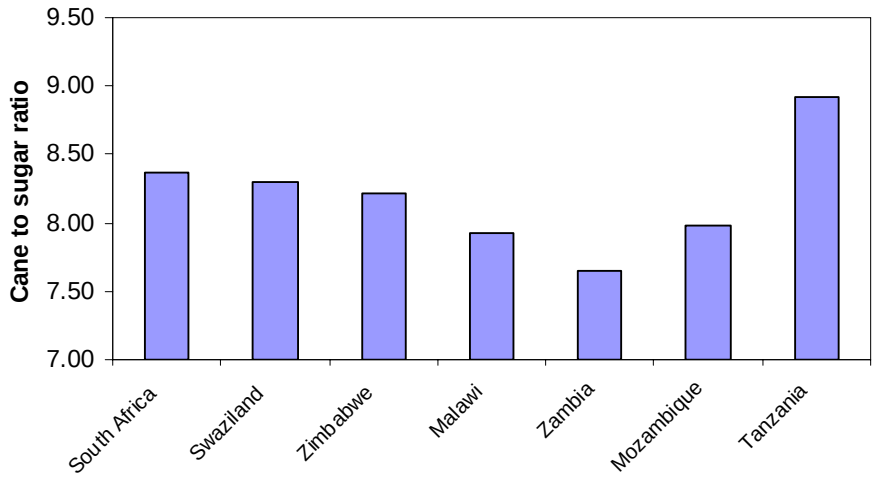

Figure 19. Cane to sugar ratio in southern Africa for 2005-2006.

Sugar quality

The trends in the Very High Pol (VHP) sugar quality with respect to colour are shown in Figure 20. It must be noted that both the VHP and the affinated sugar colours (1425 and 675 ICUMSA units, respectively) for the 2005-2006 season were the lowest in the past 11 seasons. Credit is due to the milling industry for their efforts in striving to maintain or improve the quality of sugar production even when the quality of cane was poor.

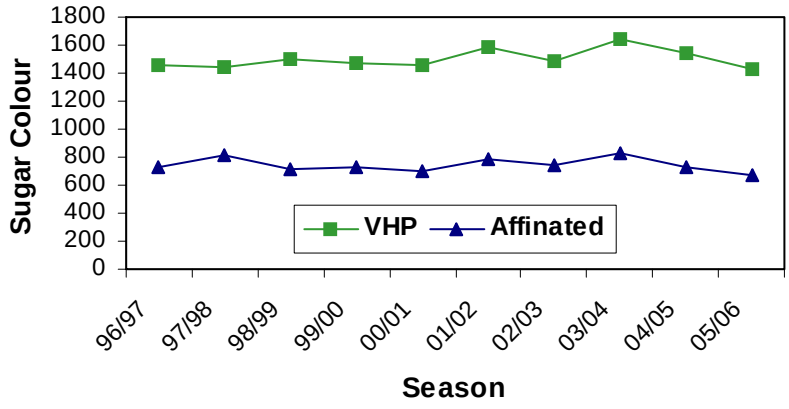

Figure 20. VHP and affinated sugar colours in South Africa

Conclusions

The 2005-2006 season was a definite improvement over the previous two, with better rainfall contributing to a larger crop and generally better cane quality. Mill performance was good, showing a slight improvement over 2004-2005, but the unusually high non-sucrose content of the cane, particularly in terms of reducing sugars, curbed overall performance in what might otherwise have been a very good season. The quality of the sugar produced was the most positive result of the season, and the industry should strive to maintain or better this in the current and coming seasons. The mills in neighbouring countries have variously experienced very good to poor cane quality, and factory performances ranging from good to poor. In general, though, cane quality and factory performances in respect of non-SA mills have not been at the high levels seen in previous years.

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., SA Sugar Association Cane Testing Service, South African Sugarcane Research Institute, SA 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 for sharing their experiences.

APPENDIX: DATA TABLES

Table A1: Cane crushed and sugar made, cane composition and time accounts, performances and losses – South African mills (Season 2005-2006)

Table A2: Cane crushed and sugar made, cane composition and time accounts, performances and losses – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2005-2006)

Table B1: Analysis of bagasse, juices, filter cake, syrup and final molasses – South African Mills (Season 2005-2006)

Table B2: Analysis of bagasse, juices, filter cake, syrup and final molasses – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2005-2006)

Table C1: Massecuites, exhaustions, clarifying agents and additional fuels – South African mills (Season 2005-2006)

Table C2: Massecuites, exhaustions, clarifying agents and additional fuels – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2005-2006)

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

Table E: Average manufacturing results by monthly periods for South African mills (Season 2005-2006)

Table F: Cane varieties and rainfall (Season 2005-2006)

Table G: Transport summary – South African factories (Season 2005-2006)

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 MILLS (SEASON 2005 - 2006)

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	205659	-	-	255398	158673	144332	-	-	264354	189045	156900	-	-	149613
Refined % total sugar	-	-	-	-	76.14	-	-	-	-	-	-	-	-	-
Moisture all sugar	0.06	-	-	0.09	0.03	0.10	-	-	0.09	0.12	0.10	-	-	0.14
Pol all sugar	99.30	-	-	99.33	99.81	99.34	-	-	99.41	99.43	99.36	-	-	99.28
Tons cane crushed total	1646458			2090988	1419079	1197851			2287595	1613631	1353382			1309502
Tons cane crushed per tandem		1075965	1015023				1133184	1154411				540910	768592	
Season started on	18-Apr-2005	-	-	21-Apr-2005	15-Mar-2005	23-Apr-2005	-	-	20-Apr-2005	13-Apr-2005	13-Apr-2005	-	-	13-Apr-2005
Season completed on	17-Jan-2006	-	-	24-Dec-2005	20-Dec-2005	15-Dec-2005	-	-	17-Dec-2005	12-Dec-2005	18-Dec-2005	-	-	23-Nov-2005
Length of season (days)	274	-	-	247	280	236	-	-	241	243	249	-	-	224
TIME ACCOUNT														
Overall time efficiency %	86.43	81.26	82.79	82.03	84.39	82.24	80.96	77.36	79.16	82.33	78.22	72.70	81.17	76.94
Scheduled stops% gross available time	1.77	5.97	2.91	4.43	4.55	2.95	9.93	9.66	9.79	7.96	7.93	5.89	6.22	6.05
Lack of cane % gross " " "	7.58	4.77	5.94	5.36	4.55	9.10	3.69	6.91	5.30	7.47	8.58	17.43	7.24	12.33
Other stops % gross " " "	3.97	6.66	7.23	6.95	4.18	4.86	5.10	5.93	5.52	1.85	4.11	3.68	5.24	4.46
Foreign matter % gross" " "	0.25	1.35	1.13	1.24	2.32	0.84	0.32	0.14	0.23	0.39	1.16	0.31	0.14	0.22
Lost time % available crush.time	4.39	7.57	8.03	7.81	4.72	5.58	5.93	7.12	6.52	2.20	4.99	4.82	6.06	5.48
Force majeure stops (hours)	64.2	0.0	0.0	0.0	12.5	18.2	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0
THROUGHPUTS PER CRUSHING HOUR														
Tons cane	294.73	229.49	210.23	439.44	250.19	253.14	244.10	260.60	504.32	336.56	288.87	139.41	177.04	318.56
Tons fibre	39.36	31.15	28.62	59.74	33.79	35.29	36.90	39.05	75.91	50.60	41.11	21.12	27.65	49.14
Tons brix in mixed juice(adj.)	49.03	37.74	34.42	72.12	37.84	39.60	38.29	40.52	78.75	51.98	43.34	21.34	26.92	48.57
Tons sucrose in mixed juice(adj.)	41.33	31.65	28.88	60.49	32.24	34.29	32.39	34.26	66.61	44.34	37.12	18.00	22.62	40.88
Tons non-suc. in mixed juice(adj.)	7.70	6.09	5.54	11.63	5.60	5.31	5.89	6.25	12.14	7.64	6.23	3.34	4.30	7.69
Tons of sugar produced	36.81	-	-	53.67	27.97	30.50	-	-	58.28	39.43	33.49	-	-	36.40
COMPOSITION OF CANE CRUSHED														
Sucrose % cane	14.32	14.05	13.97	14.01	13.21	13.85	13.45	13.36	13.40	13.45	13.18	13.07	12.96	13.00
Pol % cane	14.21	13.94	13.86	13.90	13.11	13.77	13.37	13.29	13.33	13.38	13.08	12.99	12.88	12.92
Fibre % cane	13.36	13.53	13.67	13.59	13.70	14.45	15.11	14.99	15.05	15.03	15.29	15.26	15.54	15.42
Brix % cane	17.27	17.00	16.92	16.96	15.71	16.21	16.20	16.09	16.15	15.97	15.67	15.71	15.67	15.69
Ash % cane	1.50	1.03	1.03	1.03	1.87	2.54	1.66	1.64	1.65	1.18	2.80	-	-	-
ERC % cane	12.20	11.94	11.85	11.90	11.34	12.04	11.42	11.34	11.38	11.55	11.29	11.10	10.95	11.01
ERC % sucrose in cane	85.18	84.93	84.84	84.88	85.87	86.90	84.89	84.90	84.89	85.86	85.66	84.95	84.47	84.67
RV % cane	12.95	12.68	12.60	12.64	12.00	12.68	12.12	12.04	12.08	12.21	11.95	11.78	11.63	11.69
Merc % cane	12.43	12.11	12.03	12.07	11.50	12.12	11.47	11.40	11.43	11.63	11.41	11.13	10.96	11.03
EXTRACTION														
Extraction (sucrose based)	97.91	98.13	98.32	98.22	97.57	97.79	98.66	98.42	98.54	97.93	97.49	98.80	98.61	98.69
Corrected reduced extraction	97.36	97.71	97.96	97.83	97.12	97.42	98.59	98.33	98.46	97.81	97.24	98.76	98.63	98.68
Imbibition % fibre	370.82	306.99	330.43	318.38	320.17	410.68	384.10	391.78	387.96	377.63	341.12	412.53	435.10	425.94
DRI	-	-	-	-	6	9	-	-	-	-	-	-	-	-
Preparation index	92	93	93	93	-	-	91	91	91	92	90	92	93	93
Pol factor	99.43	100.12	99.85	99.99	99.56	100.42	98.83	97.83	98.33	100.14	99.46	99.34	99.58	99.48
Brix factor	101.14	101.66	101.36	101.51	101.19	102.09	101.82	100.75	101.28	101.71	100.73	100.62	101.34	101.04
RECOVERIES														
Boiling house recovery (suc.)	88.44	-	-	88.13	86.61	88.36	-	-	86.98	88.42	89.65	-	-	88.39
C. R. B.	87.28	-	-	87.73	85.87	86.53	-	-	86.86	87.61	88.34	-	-	88.79
Overall recovery (sucrose)	86.59	-	-	86.57	84.51	86.41	-	-	85.71	86.59	87.39	-	-	87.23
Ton cane per ton sugar	8.01	-	-	8.19	8.94	8.30	-	-	8.65	8.54	8.63	-	-	8.75
Ton cane per ton 96 pol sugar	7.74	-	-	7.91	8.60	8.02	-	-	8.36	8.24	8.33	-	-	8.46
Value Recovery %	101.26	-	-	101.16	99.00	98.93	-	-	100.45	100.44	101.30	-	-	102.40
Crystal Recovery Efficiency (XRE)	101.67	-	-	102.40	99.75	100.62	-	-	102.48	102.19	102.94	-	-	104.82
BALANCES														
Suc. lost % suc.in cane														
- lost in bagasse	2.09	-	-	1.78	2.43	2.21	-	-	1.46	2.07	2.51	-	-	1.31
- lost in filter cake	-	-	-	-	0.12	0.36	-	-	-	-	0.27	-	-	-
- lost in final molasses	10.42	-	-	9.47	10.16	8.41	-	-	10.86	9.91	8.61	-	-	10.24
- undetermined losses	0.89	-	-	2.19	2.78	2.62	-	-	1.97	1.42	1.22	-	-	1.21
Non sucrose ratio	1.14	-	-	0.99	1.06	1.01	-	-	1.00	0.99	1.04	-	-	1.05
Fructose ratio FM/MJ	1.00	-	-	0.86	0.88	0.87	-	-	0.81	0.85	0.88	-	-	0.89
Glucose ratio FM/MJ	0.88	-	-	0.62	0.72	0.59	-	-	0.57	0.61	0.66	-	-	0.70

*** Cane diffuser** **### UC did not crush from week 44 to week 51.**

TABLE A1 (continued)

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

SOUTH AFRICAN MILLS (SEASON 2005 - 2006)

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	-	-	139928	182198	100698	170550	-	-	260975	136831	2515154
Refined % total sugar	-	-	100.00	100.00	-	-	-	-	-	-	-
Moisture all sugar	-	-	0.02	0.02	0.06	0.10	-	-	0.10	0.08	0.08
Pol all sugar	-	-	99.93	99.93	99.56	99.45	-	-	99.48	99.52	99.49
Tons cane crushed total			1184415	1512304	792473	1306058			2164690	1173842	21052268
Tons cane crushed per tandem	400525	783890					1039362	1125328			
Season started on	-	-	5-May-2005	31-Mar-2005	14-Mar-2005	31-Mar-2005	-	-	4-Apr-2005	13-Apr-2005	14-Mar-2005
Season completed on	-	-	4-Dec-2005	23-Dec-2005	26-Feb-2006	19-Dec-2005	-	-	20-Dec-2005	11-Dec-2005	26-Feb-2006
Length of season (days)	-	-	213	267	286	263	-	-	260	242	251
TIME ACCOUNT											
Overall time efficiency %	77.62	85.49	81.57	82.05	82.90	89.25	86.65	88.90	87.78	83.31	82.90
Scheduled stops% gross available time	3.27	4.65	3.96	5.34	7.21	4.12	4.74	4.69	4.71	6.82	5.52
Lack of cane % gross " " "	13.66	5.39	9.52	4.64	2.46	3.77	6.58	4.79	5.68	7.69	6.56
Other stops % gross " " "	5.20	4.35	4.77	7.56	7.15	2.71	1.81	1.31	1.56	1.47	4.39
Foreign matter % gross" " "	0.25	0.12	0.19	0.40	0.28	0.15	0.21	0.32	0.27	0.71	0.63
Lost time % available crush.time	6.27	4.84	5.53	8.44	7.94	2.94	2.05	1.45	1.74	1.74	5.03
Force majeure stops (hours)	0.0	0.0	0.0	0.0	10.1	18.1	0.0	6.4	3.2	0.0	130.0
THROUGHPUTS PER CRUSHING HOUR											
Tons cane	102.74	181.71	288.45	288.30	140.86	232.31	195.72	202.92	398.80	242.78	301.88
Tons fibre	15.22	26.34	42.12	38.47	19.60	33.74	30.20	31.45	61.68	37.05	43.49
Tons brix in mixed juice(adj.)	16.16	28.11	44.88	45.76	22.30	38.71	30.80	31.95	62.77	36.55	47.51
Tons sucrose in mixed juice(adj.)	13.89	24.27	38.68	39.78	19.62	33.93	26.61	27.62	54.25	31.42	40.66
Tons non-suc. in mixed juice(adj.)	2.27	3.85	6.20	5.98	2.68	4.78	4.19	4.33	8.52	5.13	6.85
Tons of sugar produced	-	-	34.08	34.73	17.90	30.34	-	-	48.08	28.30	36.07
COMPOSITION OF CANE CRUSHED											
Sucrose % cane	13.78	13.69	13.72	14.18	14.27	14.92	13.80	13.82	13.81	13.13	13.74
Pol % cane	13.73	13.66	13.68	14.09	14.19	14.81	13.70	13.71	13.71	13.02	13.65
Fibre % cane	15.04	15.39	15.27	14.42	14.07	14.62	15.58	15.66	15.62	15.26	14.66
Brix % cane	16.24	16.14	16.17	16.53	16.43	17.23	16.18	16.20	16.19	15.54	16.29
Ash % cane	1.42	1.73	1.63	1.68	1.29	1.84	-	-	-	1.56	1.68
ERC % cane	11.90	11.82	11.85	12.37	12.55	13.10	11.95	11.97	11.96	11.28	11.82
ERC % sucrose in cane	86.36	86.30	86.32	87.19	87.98	87.84	86.62	86.61	86.62	85.95	86.00
RV % cane	12.56	12.48	12.51	13.02	13.18	13.76	12.60	12.62	12.61	11.92	12.49
Merc % cane	11.99	11.91	11.94	12.56	12.72	13.27	12.04	12.05	12.05	11.34	11.93
EXTRACTION											
Extraction (sucrose based)	98.13	97.52	97.73	97.30	97.65	97.91	98.52	98.51	98.51	98.58	98.03
Corrected reduced extraction	97.97	97.26	97.50	96.65	97.19	97.56	98.46	98.46	98.46	98.55	97.79
Imbibition % fibre	346.46	343.53	344.54	286.03	292.16	484.51	450.80	425.64	437.69	483.16	380.30
DRI	-	-	-	8	7	7	9	10	10	7	8
Preparation index	91	91	91	-	93	-	-	-	-	-	92
Pol factor	99.54	99.49	99.50	99.04	98.96	99.20	99.45	99.52	99.49	99.20	99.42
Brix factor	100.39	100.34	100.36	100.39	100.53	99.88	100.95	101.01	100.98	100.91	101.03
RECOVERIES											
Boiling house recovery (suc.)	-	-	88.03	87.24	90.81	88.91	-	-	88.16	89.65	88.25
C. R. B.	-	-	87.21	84.84	87.08	85.25	-	-	86.40	88.48	87.01
Overall recovery (sucrose)	-	-	86.03	84.89	88.68	87.06	-	-	86.85	88.38	86.52
Ton cane per ton sugar	-	-	8.46	8.30	7.87	7.66	-	-	8.29	8.58	8.37
Ton cane per ton 96 pol sugar	-	-	8.13	7.97	7.59	7.39	-	-	8.00	8.28	8.08
Value Recovery %	-	-	100.27	98.06	100.28	98.92	-	-	100.09	102.21	100.33
Crystal Recovery Efficiency (XRE)	-	-	101.86	98.69	101.39	99.72	-	-	101.55	104.37	101.77
BALANCES											
Suc. lost % suc.in cane											
- lost in bagasse	-	-	2.27	2.70	2.35	2.09	-	-	1.49	1.42	1.97
- lost in filter cake	-	-	0.23	1.06	0.06	0.08	-	-	0.13	-	0.16
- lost in final molasses	-	-	9.35	9.13	7.54	9.11	-	-	9.87	9.31	9.61
- undetermined losses	-	-	2.12	2.22	1.37	1.66	-	-	1.66	0.90	1.76
Non sucrose ratio	-	-	1.01	0.97	0.96	1.03	-	-	1.05	0.99	1.03
Fructose ratio FM/MJ	-	-	0.86	0.83	0.79	0.86	-	-	0.94	0.86	0.89
Glucose ratio FM/MJ	-	-	0.59	0.63	0.49	0.57	-	-	0.65	0.67	0.67

*** Cane diffuser** **### UC did not crush from week 44 to week 51.**

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 2005 - 2006)

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	-	-	231986	161788	107738	-	-	193960	-	-	235517	-	-	247674	63790	73151	74764
Refined % total sugar	-	-	44.85	38.55	36.55	-	-	12.99	-	-	25.86	-	-	9.18	0.00	0.00	0.00
Moisture % all sugar	-	-	0.18	0.09	0.06	-	-	0.13	-	-	0.21	-	-	0.07	0.13	0.09	0.15
Pol % all sugar	-	-	99.29	99.48	99.36	-	-	99.23	-	-	98.94	-	-	99.49	99.04	99.48	99.07
Tons cane crushed total			1923959	1339455	795065			1589648			1940479			1893609	562119	658922	597044
Tons cane crushed per tandem	1102601	821358				792135	797513		1311326	629153		679002	1214607				
Season started on	-	-	18-Apr-05	08-Apr-05	25-Apr-05	-	-	02-Apr-05	-	-	22-Mar-05	-	-	08-Apr-05	20-May-05	14-Mar-05	19-May-05
Season completed on	-	-	19-Dec-05	27-Oct-05	21-Nov-05	-	-	27-Nov-05	-	-	05-Dec-05	-	-	18-Nov-05	21-Feb-06	26-Feb-06	21-Nov-05
Number of crushing days	-	-	245	202	210	-	-	239	-	-	258	-	-	224	277	349	186
TIME ACCOUNT																	
Overall time efficiency %	86.13	81.06	83.60	90.54	88.84	89.08	90.16	89.63	86.90	55.34	71.03	87.00	89.84	88.42	83.18	86.09	83.36
Scheduled stops% gross available time	4.39	4.58	4.49	3.33	3.42	2.78	3.38	3.09	3.40	8.55	5.99	3.52	4.44	3.98	3.30	4.72	4.11
Lack of cane % gross " " "	3.03	5.62	4.32	3.69	3.11	3.37	1.05	2.19	1.34	22.23	11.84	2.21	0.15	1.18	8.68	4.28	8.89
Other stops % gross " " "	5.11	7.49	6.30	2.44	4.37	4.77	5.17	4.97	7.72	13.60	10.68	7.11	3.96	5.54	4.24	4.88	3.60
Foreign matter % gross " " "	1.33	1.26	1.30	0.00	0.25	0.01	0.24	0.13	0.63	0.29	0.46	0.17	1.60	0.89	0.61	0.03	0.03
Lost time % available crush.time	5.60	8.45	7.00	2.62	4.69	5.08	5.42	5.26	8.16	19.73	13.07	7.55	4.23	5.89	4.85	5.36	4.14
Force majeure stops (hours)	21.0	31.1	26.1	0	0	0	0	0	0	0	0	6	1	4	19	8	5
THROUGHPUTS PER CRUSHING HOUR																	
Tons cane	223.25	177.47	402.20	310.85	179.69	159.99	153.81	313.66	252.97	188.49	455.42	145.83	252.35	399.95	101.58	123.81	160.25
Tons fibre	27.23	22.44	49.82	41.03	27.83	23.65	22.73	46.36	33.37	23.52	59.02	19.96	34.56	54.77	16.21	19.08	19.49
Tons brix in mixed juice	35.13	29.22	64.54	48.97	30.10	25.59	25.28	50.86	41.13	28.77	72.58	23.05	40.13	63.46	15.25	18.52	25.38
Tons pol in mixed juice	29.80	24.60	54.56	42.19	26.27	22.24	21.93	44.16	34.86	24.22	61.39	20.46	35.63	56.34	12.93	15.77	22.06
Tons non-pol. in mixed juice	5.33	4.62	9.98	6.78	3.84	3.35	3.35	6.70	6.26	4.56	11.19	2.59	4.50	7.12	2.32	2.75	3.32
Tons of sugar produced	-	-	48.50	37.55	24.35	-	-	38.27	-	-	55.27	-	-	52.31	11.53	13.74	20.07
COMPOSITION OF CANE CRUSHED																	
Pol % cane	13.89	14.25	14.04	14.07	15.07	14.22	14.58	14.40	14.07	13.30	13.82	14.79	14.79	14.79	13.61	13.91	14.15
Fibre % cane	13.18	13.19	13.19	13.32	15.63	15.15	15.16	15.15	13.73	13.56	13.68	14.55	14.58	14.57	16.82	16.41	12.91
Brix % cane	16.66	17.22	16.90	16.55	17.64	16.60	17.05	16.83	17.07	16.31	16.82	17.02	17.05	17.04	16.50	16.79	16.50
Ash % cane	-	-	-	1.32	-	-	-	-	0.68	0.68	0.68	-	-	-	-	-	1.67
ERC % cane	11.87	12.12	11.98	12.20	13.09	12.37	12.67	12.52	11.91	11.16	11.67	13.02	13.01	13.01	11.46	11.78	12.36
ERC % pol in cane	85.49	85.06	85.30	86.76	86.86	86.99	86.93	86.96	84.69	83.92	84.45	88.04	87.94	87.98	84.24	84.65	87.34
EXTRACTION																	
Extraction (pol based)	96.13	97.25	96.62	96.49	97.02	97.76	97.83	97.79	97.96	96.62	97.54	94.89	95.45	95.25	93.51	91.56	97.31
Corrected reduced extraction	94.74	96.34	95.44	95.56	96.74	97.51	97.55	97.53	97.44	95.65	96.89	93.68	94.38	94.13	93.63	91.25	96.29
Imbibition % cane	32.27	37.53	34.51	35.72	57.13	42.26	47.07	44.68	34.88	28.07	32.67	44.83	42.88	43.58	41.85	47.36	31.88
Imbibition % fibre	265	297	279	271	369	286	319	302	264	225	252	328	313	318	262	307	262
Preparation index	-	-	-	91	-	92	92	92	91	91	90	-	-	-	78	77	90
Pol factor	98.85	100.90	99.73	99.53	100.28	95.51	96.25	95.88	96.03	92.01	94.74	97.86	97.92	97.90	98.34	96.63	99.38
Brix factor	100.30	102.49	101.24	100.70	102.13	96.81	97.52	97.17	98.49	95.05	97.38	98.72	98.95	98.87	100.17	98.87	99.84
RECOVERIES																	
Boiling house recovery (pol)	-	-	88.25	88.53	92.11	-	-	86.00	-	-	89.09	-	-	92.37	88.31	86.70	90.13
Overall recovery (pol)	-	-	85.26	85.41	89.36	-	-	84.10	-	-	86.90	-	-	87.98	82.59	79.38	87.70
Ton cane per ton sugar	-	-	8.29	8.28	7.38	-	-	8.20	-	-	8.24	-	-	7.65	8.81	9.01	7.99
Ton cane per ton 96 pol sugar	-	-	8.02	7.99	7.13	-	-	7.93	-	-	7.99	-	-	7.38	8.54	8.69	7.74
BALANCES																	
Pol lost % pol in cane																	
- lost in bagasse	-	-	3.38	3.51	2.98	-	-	2.21	-	-	2.46	-	-	4.75	6.49	8.44	2.69
- lost in filter cake	-	-	0.36	0.30	0.08	-	-	0.22	-	-	0.18	-	-	0.33	0.12	0.24	0.39
- lost in final molasses	-	-	9.03	8.33	6.31	-	-	9.46	-	-	8.73	-	-	5.50	8.19	8.86	7.34
- undetermined losses	-	-	1.96	2.44	1.26	-	-	4.01	-	-	1.74	-	-	1.44	2.62	3.08	1.88
Non pol ratio	-	-	0.97	0.92	0.93	-	-	1.09	-	-	0.96	-	-	1.03	0.99	1.06	0.96

*** Cane diffuser**

TABLE B1
ANALYSIS OF BAGASSE,JUICES,FILTER CAKE,SYRUP AND FINAL MOLASSES
SOUTH AFRICAN MILLS (SEASON 2005 - 2006)

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	1.01	0.98	0.88	0.93	1.13	1.08	0.55	0.65	0.60	0.91	1.13	0.49	0.55	0.52
Moisture % bagasse	52.62	47.08	46.97	47.03	50.30	48.54	52.19	52.42	52.31	49.09	49.31	51.71	50.94	51.26
Fibre % bagasse	45.22	50.84	51.00	50.92	47.63	49.45	46.22	45.92	46.07	49.20	48.42	47.03	47.63	47.38
Ash % bagasse	3.26	-	-	1.13	3.07	4.68	-	-	-	3.11	-	-	-	-
LCV in kJ per kg bagasse ##	6704	-	-	8255	7222	7296	-	-	-	7476	-	-	-	-
MIXED JUICE														
Mixed juice(adj.) % cane	120.13	115.06	118.32	116.64	114.89	129.06	125.57	126.29	125.93	126.59	119.15	130.32	135.42	133.31
Brix % mixed juice(adj.)	13.85	14.29	13.84	14.07	13.16	12.12	12.49	12.31	12.40	12.20	12.59	11.74	11.23	11.44
Sucrose purity (MJ adj.)	84.30	83.86	83.89	83.88	85.19	86.60	84.60	84.56	84.58	85.30	85.64	84.37	84.03	84.17
Apparent purity(MJ adj.)	83.61	83.18	83.21	83.19	84.55	86.10	84.07	84.10	84.08	84.83	84.97	83.84	83.50	83.64
Purity difference(MJ adj. - DAC)	-0.07	-0.09	0.04	-0.03	-0.27	-0.29	-0.91	-0.93	-0.92	-0.29	0.45	0.10	-0.11	-0.02
(Glucose + fructose) % sucrose	6.75	-	-	7.07	5.96	4.44	-	-	5.16	4.69	5.28	-	-	4.94
Suspended solids % MJ(unadj.)	0.11	0.06	0.06	0.06	0.17	0.39	0.16	0.16	0.16	0.29	0.89	0.11	0.12	0.12
Pol/sucrose ratio (mj unadj.)	0.9919	0.9918	0.9918	0.9918	0.9924	0.9943	0.9937	0.9945	0.9941	0.9945	0.9922	0.9938	0.9937	0.9938
CLARIFIED JUICE														
Brix % clarified juice	14.28	-	-	13.84	12.71	11.89	-	-	12.16	12.12	12.07	-	-	11.65
Apparent purity	83.26	-	-	82.96	84.76	85.54	-	-	83.50	84.14	84.08	-	-	81.75
Purity difference(CJ - MJ)	-0.35	-	-	-0.23	0.21	-0.56	-	-	-0.58	-0.69	-0.89	-	-	-1.89
Average pH	7.2	-	-	7.0	7.0	7.1	-	-	7.4	7.1	7.1	-	-	7.1
CLARIFIER MUD														
Tons clarifier mud	61942	88573	13773	102346	116	-	72093	70848	142941	91511	-	7558	74562	82120
Pol % clarifier mud	12.03	11.62	10.85	11.51	8.86	-	9.26	9.25	9.25	9.71	-	9.47	9.73	9.70
Brix % clarifier mud	14.71	14.27	13.59	14.18	10.94	-	11.50	11.47	11.48	11.61	-	11.67	11.96	11.93
Insoluble solids % clarifier mud	3.76	1.46	1.46	1.46	3.43	-	3.46	3.45	3.45	6.68	-	2.63	2.63	2.63
FILTER CAKE														
Pol % filter cake	-	-	-	-	0.98	1.61	-	-	-	-	0.87	-	-	-
Moisture % filter cake	-	-	-	-	73.79	70.00	-	-	-	-	-	-	-	-
Filter cake % cane	-	-	-	-	1.58	3.10	-	-	-	-	4.00	-	-	-
Filter wash index	97.0	-	-	101.7	103.6	101.9	-	-	102.0	100.7	104.3	-	-	98.2
Purity difference(CJ - filtrate)	-	-	-	-	1.63	2.23	-	-	-	-	1.01	-	-	-
SYRUP														
Brix % syrup	66.72	-	-	67.79	66.52	60.38	-	-	67.05	66.94	64.77	-	-	68.66
Apparent purity	83.24	-	-	82.77	84.70	84.77	-	-	83.82	84.37	84.47	-	-	83.13
Purity difference(Syrup - MJ)	-0.37	-	-	-0.42	0.15	-1.33	-	-	-0.26	-0.46	-0.50	-	-	-0.51
Average pH	6.1	-	-	5.9	6.3	6.2	-	-	6.2	6.1	6.2	-	-	6.1
FINAL MOLASSES														
Refractometer brix	85.26	-	-	83.22	84.65	85.06	-	-	86.07	87.34	86.85	-	-	86.97
Pol/refractometer brix purity	31.27	-	-	29.81	33.68	33.22	-	-	35.73	35.20	30.91	-	-	33.00
Sucrose/refractometer brix purity	33.95	-	-	34.14	36.29	36.25	-	-	38.18	37.74	34.14	-	-	34.99
Conductivity ash %	13.14	-	-	15.05	14.70	15.68	-	-	15.42	15.35	17.05	-	-	16.33
(Glucose + fructose)/ash ratio	1.35	-	-	1.06	0.96	0.74	-	-	0.73	0.76	0.81	-	-	0.74
Fructose %	9.25	-	-	9.03	7.79	7.16	-	-	6.75	7.17	8.09	-	-	7.06
Glucose %	8.49	-	-	6.91	6.26	4.51	-	-	4.46	4.53	5.65	-	-	5.05
TPD based on molasses (made)	7.6	-	-	3.1	4.7	3.1	-	-	4.8	4.4	0.7	-	-	1.6
TPD based on mixed juice	7.9	-	-	4.4	6.3	4.5	-	-	6.5	5.9	2.6	-	-	2.7
Final molasses @ 85 brix % cane	5.17	-	-	4.57	4.35	3.78	-	-	4.49	4.16	3.91	-	-	4.48
Pol/sucrose ratio	0.9210	-	-	0.8732	0.9280	0.9165	-	-	0.9359	0.9327	0.9055	-	-	0.9431

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

TABLE B1 (continued)
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SOUTH AFRICAN MILLS (SEASON 2005 - 2006)

SYMBOLS OF FACTORIES	GH-A *	GH-B	GH-AVE	NB	UC *	ES *	SZ-A *	SZ-B *	SZ-AVE	UK *	INDUSTRY
FINAL BAGASSE											
Pol % bagasse	0.85	1.15	1.04	1.43	1.12	1.04	0.68	0.68	0.68	0.60	0.91
Moisture % bagasse	49.44	48.75	48.99	47.85	51.23	49.59	46.83	47.07	46.96	48.92	49.57
Fibre % bagasse	48.90	48.99	48.96	49.69	46.75	48.53	51.69	51.43	51.55	49.51	48.55
Ash % bagasse	-	-	2.59	3.99	2.98	4.94	-	-	2.73	4.31	2.41
LCV in kJ per kg bagasse ##	-	-	7582	7549	7048	7034	-	-	7994	7297	7468
MIXED JUICE											
Mixed juice(adj.) % cane	121.03	120.21	120.49	111.31	110.89	140.62	139.71	135.82	137.69	143.19	125.22
Brix % mixed juice(adj.)	13.00	12.87	12.91	14.26	14.28	11.85	11.26	11.59	11.43	10.51	12.57
Sucrose purity (MJ adj.)	85.93	86.32	86.19	86.94	87.98	87.66	86.39	86.45	86.42	85.96	85.59
Apparent purity(MJ adj.)	85.63	86.11	85.94	86.37	87.52	87.03	85.78	85.81	85.79	85.23	85.01
Purity difference(MJ adj. - DAC)	0.33	0.73	0.60	-0.03	-0.20	0.46	-0.21	-0.14	-0.17	0.01	-0.10
(Glucose + fructose) % sucrose	-	-	4.56	4.80	3.84	4.04	-	-	4.24	4.25	5.12
Suspended solids % MJ(unadj.)	0.19	0.74	0.56	0.97	0.14	0.20	0.11	0.12	0.12	0.19	0.28
Pol/sucrose ratio (mj unadj.)	0.9965	0.9975	0.9972	0.9934	0.9948	0.9928	0.9928	0.9926	0.9927	0.9915	0.9933
CLARIFIED JUICE											
Brix % clarified juice	-	-	12.51	14.69	14.63	11.90	-	-	10.82	10.04	12.50
Apparent purity	-	-	85.93	87.09	86.52	86.94	-	-	85.94	84.89	85.68
Purity difference(CJ - MJ)	-	-	-0.01	0.72	-1.00	-0.09	-	-	0.15	-0.34	-0.35
Average pH	-	-	7.1	7.2	7.0	7.1	-	-	6.9	6.9	7.1
CLARIFIER MUD											
Tons clarifier mud	-	-	-	777	-	37083	-	-	-	100785	619621
Pol % clarifier mud	-	-	-	10.68	-	9.98	-	-	-	6.06	9.56
Brix % clarifier mud	-	-	-	12.36	-	11.81	-	-	-	7.25	11.66
Insoluble solids % clarifier mud	-	-	-	6.95	-	6.61	-	-	-	3.35	3.70
FILTER CAKE											
Pol % filter cake	-	-	0.93	2.55	1.36	3.09	-	-	1.54	-	1.63
Moisture % filter cake	-	-	65.88	73.71	72.15	72.39	-	-	73.13	-	71.58
Filter cake % cane	-	-	3.39	5.88	0.68	0.39	-	-	1.20	-	1.33
Filter wash index	-	-	103.2	97.1	97.6	99.6	-	-	105.7	104.7	100.6
Purity difference(CJ - filtrate)	-	-	1.11	1.27	3.29	-	-	-	1.41	-	1.58
SYRUP											
Brix % syrup	-	-	64.94	70.25	67.06	62.59	-	-	63.44	64.62	65.85
Apparent purity	-	-	85.64	86.54	87.22	86.84	-	-	86.22	84.63	84.75
Purity difference(Syrup - MJ)	-	-	-0.30	0.17	-0.30	-0.19	-	-	0.43	-0.60	-0.26
Average pH	-	-	6.0	6.1	6.5	6.1	-	-	6.0	6.0	6.1
FINAL MOLASSES											
Refractometer brix	-	-	83.61	82.72	83.37	81.82	-	-	84.36	85.65	84.83
Pol/refractometer brix purity	-	-	34.84	35.66	34.47	36.73	-	-	35.76	35.36	33.85
Sucrose/refractometer brix purity	-	-	37.11	39.24	37.62	39.84	-	-	38.36	37.44	36.70
Conductivity ash %	-	-	15.09	12.35	13.18	11.97	-	-	14.55	14.77	14.65
(Glucose + fructose)/ash ratio	-	-	0.72	1.00	0.78	0.88	-	-	0.75	0.80	0.87
Fructose %	-	-	6.75	7.63	6.83	6.90	-	-	6.83	6.97	7.55
Glucose %	-	-	4.11	4.68	3.40	3.65	-	-	4.12	4.80	5.25
TPD based on molasses (made)	-	-	4.0	7.4	5.0	7.8	-	-	5.2	4.6	4.7
TPD based on mixed juice	-	-	5.9	8.9	7.4	9.3	-	-	6.5	5.4	6.0
Final molasses @ 85 brix % cane	-	-	4.07	3.88	3.36	4.01	-	-	4.18	3.84	4.23
Pol/sucrose ratio	-	-	0.9389	0.9088	0.9164	0.9218	-	-	0.9323	0.9447	0.9222

*** 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 FACTORIES
(SEASON 2005 - 2006)

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	2.08	1.48	1.82	1.79	1.45	1.02	1.02	1.02	1.01	1.65	1.21	2.52	2.34	2.41	2.58	3.52	1.51
Moisture % bagasse	49.22	49.38	49.29	49.44	47.33	50.79	50.50	50.65	50.63	50.49	50.58	50.28	48.36	49.07	48.96	48.29	48.92
Fibre % bagasse	47.21	47.76	47.45	47.70	49.81	47.27	47.52	47.39	46.50	45.70	46.25	45.66	47.64	46.91	46.66	46.20	48.44
Bagasse % cane	25.83	26.48	26.11	27.67	31.09	31.28	31.09	31.18	28.37	27.31	28.02	29.98	28.75	29.19	34.21	33.35	25.11
Ash % bagasse	-	-	3.30	-	-	-	-	-	-	-	-	-	-	-	-	-	2.63
LCV in kJ per kg bagasse ##	-	-	7352	-	-	-	-	-	-	-	-	-	-	-	-	-	7571
MIXED JUICE																	
Mixed juice % cane	106.43	111.05	108.41	108.05	126.04	110.99	115.98	113.49	106.52	100.76	104.65	114.86	114.13	114.39	107.64	114.01	106.77
Brix % mixed juice	14.78	14.83	14.80	14.58	13.29	14.41	14.17	14.29	15.26	15.15	15.23	13.76	13.93	13.87	13.94	13.12	14.83
Apparent purity	84.83	84.17	84.54	86.16	87.25	86.90	86.77	86.83	84.77	84.16	84.58	88.78	88.78	88.78	84.80	85.17	86.91
Purity difference(MJ - DAC)	0.25	0.12	0.19	0.14	0.28	0.10	0.14	0.12	0.26	-0.08	0.16	1.13	1.13	1.13	0.81	0.41	0.79
Suspended solids % mixed juice	0.93	0.49	0.74	0.11	0.11	0.33	0.33	0.33	0.51	1.07	0.69	0.75	0.77	0.77	0.80	0.88	0.70
CLARIFIED JUICE																	
Brix % clarified juice	-	-	15.10	14.13	12.72	-	-	14.71	-	-	15.07	-	-	13.81	13.71	13.25	14.53
Apparent purity	-	-	84.50	87.09	87.03	-	-	86.40	-	-	84.10	-	-	88.58	85.11	86.15	86.60
Purity difference(CJ - MJ)	-	-	-0.04	0.93	-0.22	-	-	-0.43	-	-	-0.48	-	-	-0.20	0.31	0.98	-0.31
Average pH	-	-	7.1	7.0	6.7	-	-	6.9	-	-	7.2	-	-	7.1	7.0	7.1	6.9
CLARIFIER MUD																	
Tons clarifier mud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pol % clarifier mud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brix % clarifier mud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insoluble solids % clarifier mud		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FILTER CAKE																	
Pol % filter cake	-	-	1.90	2.11	0.60	-	-	3.52	-	-	0.97	-	-	1.17	0.80	0.72	1.57
Moisture % filter cake	-	-	-	73.69	72.78	-	-	69.80	-	-	-	-	-	78.14	63.94	-	70.26
Filter cake % cane	-	-	2.67	2.03	2.00	-	-	0.90	-	-	2.54	-	-	4.22	1.97	4.59	3.51
Filter wash index	-	-	98.0	103.2	104.5	-	-	97.1	-	-	101.0	-	-	100.4	101.7	99.0	102.1
Purity difference(CJ - filtrate)	-	-	1.00	2.28	0.74	-	-	5.10	-	-	1.17	-	-	1.18	1.70	1.36	1.09
SYRUP																	
Brix % syrup	-	-	64.50	65.10	65.00	-	-	49.79	-	-	66.28	-	-	66.87	66.43	65.37	64.02
Apparent purity	-	-	84.30	87.24	86.93	-	-	86.18	-	-	84.60	-	-	88.64	84.71	85.37	86.52
Purity difference(Syrup - MJ)	-	-	-0.24	1.08	-0.32	-	-	-0.65	-	-	0.02	-	-	-0.14	-0.09	0.20	-0.39
Average pH	-	-	6.1	6.3	6.4	-	-	6.4	-	-	6.2	-	-	6.0	6.7	6.2	6.1
FINAL MOLASSES																	
Refractometer brix	-	-	85.65	87.11	86.90	-	-	84.24	-	-	87.82	-	-	90.99	83.72	85.00	81.38
Pol/refractometer brix purity	-	-	35.01	37.47	33.19	-	-	37.65	-	-	34.73	-	-	31.50	33.97	34.96	35.51
Purity difference(true-target)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reducing sugars % #	-	-	20.35	-	-	-	-	17.08	-	-	-	-	-	-	-	-	-
Sulphated ash %	-	-	14.21	-	-	-	-	13.47	-	-	-	-	-	-	-	-	-
Reducing sugars/ash ratio	-	-	1.43	-	-	-	-	1.27	-	-	-	-	-	-	-	-	-
Final molasses at 85 brix % cane	-	-	4.26	3.68	3.37	-	-	4.26	-	-	4.08	-	-	3.04	3.86	4.15	3.44

' **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 MILLS (SEASON 2005-2006)

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.)	1.21	-	1.19	0.97	1.00	1.02	0.93	1.00	1.09	1.19	1.05	0.99	1.00	0.98	0.94
Refractometer brix of massecuite	93.21	92.60	92.53	92.41	92.96	92.72	93.29	93.32	93.17	93.27	91.70	93.60	93.52	92.88	93.03
Purity of massecuite	85.09	82.84	87.14	85.17	84.97	85.08	85.17	83.16	86.35	87.13	86.96	86.20	86.21	84.80	85.66
Purity of A - molasses	70.37	62.41	72.15	67.69	68.49	67.61	63.44	63.02	68.50	69.43	71.48	68.48	67.24	63.77	68.03
Purity drop	14.72	20.43	14.99	17.48	16.48	17.47	21.73	20.14	17.85	17.70	15.48	17.72	18.97	21.03	17.63
Exhaustion	58.38	65.61	61.77	63.52	61.55	63.39	69.79	65.49	65.62	66.45	62.42	65.22	67.17	68.45	64.38
Pty of A-massecuite - purity syrup	1.85	0.07	2.44	0.40	1.15	0.71	0.70	0.03	0.71	0.59	-0.26	-0.64	-0.01	0.17	0.92
Pty of remelt	85.30	82.02	86.23	83.71	87.39	85.81	83.08	84.10	84.39	84.26	86.68	84.65	86.74	86.64	85.09
B - MASSECUITE															
m3 per ton brix in mixed juice(adj.)	0.60	-	0.51	0.35	0.37	0.34	0.19	0.28	0.40	0.54	0.35	0.31	0.32	0.41	0.35
Refractometer brix of massecuite	94.84	94.98	95.01	94.96	95.70	94.90	94.85	94.70	95.38	95.81	94.49	95.47	95.52	94.68	95.18
Purity of massecuite	69.91	63.73	72.32	67.35	70.84	68.38	65.83	63.59	68.39	69.95	71.49	69.14	68.80	67.85	69.23
Purity of B - molasses	51.97	41.21	51.48	44.10	47.24	48.93	42.76	43.67	47.53	47.53	47.16	44.87	45.21	47.12	47.65
Purity drop	17.94	22.52	20.84	23.25	23.60	19.45	23.07	19.92	20.86	22.42	24.33	24.27	23.59	20.73	21.58
Exhaustion	53.43	60.11	59.39	61.76	63.14	55.70	61.22	55.61	58.13	61.09	64.41	63.67	62.58	57.78	59.55
C - MASSECUITE															
m3 per ton brix in mixed juice(adj.)	0.10	-	0.45	0.21	0.29	0.26	0.29	0.29	0.27	0.26	0.16	0.21	0.25	0.31	0.23
Refractometer brix of massecuite	97.37	96.84	96.97	97.22	96.86	97.51	96.83	97.29	97.87	97.91	98.04	97.52	97.18	97.14	97.27
Purity of massecuite	57.19	50.53	54.20	50.23	55.41	55.18	52.40	53.51	53.20	55.11	52.60	52.41	55.44	55.73	54.27
Purity of C - molasses	31.27	29.81	33.68	33.22	35.73	35.20	30.91	33.00	34.84	35.66	34.47	36.73	35.76	35.36	33.85
Crystal content	36.72	28.58	30.00	24.76	29.66	30.07	30.11	29.78	27.58	29.60	27.12	24.17	29.77	30.61	30.02
Exhaustion	65.94	58.42	57.09	50.70	55.27	55.89	59.35	57.21	52.96	54.85	52.59	47.29	55.25	56.54	56.88
TOTAL VOLUME ALL RAW MASSECUITES															
m3 per ton brix in mixed juice(adj.)	1.92	-	2.15	1.53	1.67	1.62	1.41	1.57	1.77	1.99	1.56	1.52	1.56	1.70	1.52
WHITE SUGAR MASSECUITES															
Kg sugar per m3 massecuite	387.14	-	495.03	-	-	-	-	-	536.04	470.99	-	-	-	-	449.29
Tons limestone per 1000 tons white sugar	-	-	50.26	-	-	-	-	-	29.22	-	-	-	-	-	17.85
Tons coke per 1000 tons white sugar	-	-	4.99	-	-	-	-	-	3.09	-	-	-	-	-	1.47
Tons phosphoric acid per 1000 tons white sug	-	-	-	-	-	-	-	-	0.03	1.12	-	-	-	-	0.29
Tons sulphur per 1000 tons white sugar	0.17	-	0.23	-	-	-	-	-	0.23	0.19	-	-	-	-	0.20
Phosphoric acid ppm mixed juice(unadj.)	3.19	-	-	-	-	-	-	-	-	-	-	49.93	5.04	4.67	5.88
Flocculant ppm mixed juice(unadj.)	3.60	1.97	3.73	5.81	4.05	3.63	1.77	4.19	3.21	5.95	4.36	6.23	3.63	2.77	3.93
Tons lime per 1000 tons cane	1.83	0.21	0.19	0.58	0.62	0.64	0.50	0.90	0.00	0.71	1.31	0.53	0.50	0.62	0.63
Enzyme ppm sugar	-	-	-	-	-	-	24.14	2.07	1.83	-	-	3.73	29.22	6.89	5.39
ADDITIONAL FUELS PER 1000 TONS CANE															
Tons of coal	30.19	0.56	5.04	3.70	15.00	1.57	0.44	18.15	5.48	16.42	2.29	0.98	-	0.12	7.52
Tons of wood	-	-	0.05	-	-	-	0.13	0.03	-	-	0.24	0.21	0.07	-	0.04
Converted into bagasse **	120.78	2.24	20.23	14.78	59.98	6.27	1.92	72.66	21.92	65.69	9.42	4.19	0.08	0.48	30.12

**** 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 2005 - 2006)

SYMBOLS OF FACTORIES	UB	NH	DW	HV	TR	NK	MW	RU	MA
A - MASSECUITE									
m3 per ton brix in mixed juice	1.04	1.30	1.16	1.03	-	1.10	1.09	1.26	1.00
Refractometer brix of massecuite	93.00	93.51	91.37	91.36	93.11	92.86	92.38	92.47	92.30
Purity of massecuite	84.90	88.17	87.50	86.74	84.44	88.47	85.67	86.07	86.60
Purity of A - molasses	68.80	73.81	72.27	69.66	68.39	72.41	71.22	71.83	69.54
Purity drop	16.10	14.36	15.23	17.08	16.05	16.06	14.45	14.24	17.06
Exhaustion	60.78	62.19	62.77	64.90	60.13	65.80	58.61	58.73	64.67
Purity of A-massecuite - pty syrup	0.60	0.93	0.57	0.56	-0.16	-0.17	0.96	0.70	0.08
Purity of remelt	87.20	85.28	86.74	85.12	83.54	84.34	86.33	85.18	84.80
B - MASSECUITE									
m3 per ton brix in mixed juice	0.36	0.30	0.61	-	-	0.39	0.43	0.50	0.36
Refractometer brix of massecuite	95.30	93.63	93.36	92.90	94.81	94.76	94.58	93.64	93.71
Purity of massecuite	68.90	70.68	68.40	71.51	68.52	72.57	72.19	71.88	70.75
Purity of B - molasses	47.60	53.41	49.99	52.42	49.41	52.09	48.89	50.77	47.92
Purity drop	21.30	17.27	18.41	19.09	19.11	20.48	23.30	21.11	22.83
Exhaustion	59.00	52.44	53.82	56.11	55.13	58.90	63.15	59.66	61.96
C - MASSECUITE									
m3 per ton brix in mixed juice	0.24	0.25	0.23	-	-	0.19	0.25	0.29	0.22
Refractometer brix of massecuite	98.10	96.86	95.49	95.50	97.30	96.80	97.19	97.05	95.09
Purity of massecuite	53.90	55.98	52.77	58.15	56.64	53.20	53.13	54.98	52.88
Purity of C - molasses	35.01	37.47	33.19	37.65	34.73	31.50	33.97	34.96	35.51
Crystal content	28.51	28.67	27.99	31.39	32.66	30.67	28.20	29.87	25.61
Exhaustion	53.92	52.88	55.54	56.53	59.26	59.55	54.61	55.98	50.93
TOTAL VOLUME ALL RAW MASSECUITES									
m3 per ton brix in mixed juice	1.65	1.86	2.00	-	-	1.68	1.77	2.06	1.58
WHITE SUGAR MASSECUITES									
Kg sugar per m3 massecuite	758	473	484	-	-	701	-	-	-
Tons phosphoric acid/1000 tons white sugar	-	0.65	-	-	-	0.61	-	-	-
Tons sulphur/1000 tons white sugar	0.15	-	0.12	0.48	-	0.10	-	-	-
Phos. acid ppm mixed juice	-	-	-	-	-	-	-	-	-
Flocculant ppm mixed juice	0.1	4.7	1.3	2.2	3.9	1.5	4.6	-	3.3
Tons lime per 1000 tons cane	1.1	0.9	0.9	0.7	0.6	0.9	0.7	1.1	0.3
Enzyme ppm sugar	-	-	-	-	-	-	-	-	-
ADDITIONAL FUELS PER 1000 TONS CANE									
Tons of coal	7.07	-	-	8.96	5.30	-	-	-	-
Tons of wood	-	0.75	0.14	-	-	0.03	1.32	0.58	0.08
Converted into bagasse **	28.28	0.90	0.17	35.84	21.20	0.03	1.58	0.69	0.09

**** 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 MILLS)

	2005/2006	2004/2005	2003/2004	2002/2003	2001/2002
Throughput and time efficiency					
Tons cane per hour	301.88	301.95	284.40	301.36	296.25
Tons fibre per hour	43.49	44.11	41.35	43.85	43.61
Overall time efficiency	82.90	82.40	82.72	83.97	80.46
Cane					
Sucrose % cane	13.74	13.52	13.70	13.71	13.11
Fibre % cane	14.66	14.84	14.81	14.80	14.97
Mixed juice					
Sucrose purity(MJ adj.)	85.59	85.81	86.36	87.31	85.92
(Glucose + Fructose)/ash in M.J.(unadj.)	1.06	1.03	0.98	0.98	1.11
Milling					
Imbibition % fibre	380	369	375	366	369
Extraction (sucrose based)	98.03	97.98	97.87	97.96	97.74
Pol % bagasse	0.91	0.90	0.96	0.92	0.95
Moisture % bagasse	49.57	49.93	50.34	50.08	50.81
Bagasse % cane	29.67	30.30	30.46	30.31	31.14
LCV bagasse kJ/kg	7468	7397	7233	7261	6989
Available kJ in bag./kg brix in M.J.(adj)	14080	14515	14192	14308	14594
Recoveries					
Boiling house recovery (sucrose based)	88.25	88.00	88.14	89.11	88.18
Overall recovery (sucrose based)	86.52	86.23	86.26	87.29	86.19
Tons cane per ton sugar	8.37	8.53	8.42	8.32	8.81
Filter cake					
Pol % filter cake	1.63	1.56	1.71	1.80	1.79
Filter cake % cane	1.33	1.25	1.40	1.36	1.32
Final molasses					
Brix % final molasses	84.83	83.97	84.79	85.09	84.44
Sucrose/refractometer brix purity	36.70	36.94	37.92	37.24	37.08
Final molasses @ 85 brix % cane	4.23	4.16	4.03	3.73	3.93
Average sugar polarisation	99.49	99.48	99.53	99.54	99.48
Sucrose lost % sucrose in cane					
Lost in bagasse	1.97	2.02	2.13	2.04	2.26
Lost in filter cake	0.16	0.14	0.17	0.18	0.18
Lost in final molasses	9.61	9.65	9.48	8.62	9.45
Undetermined losses	1.76	1.96	1.95	1.87	1.92
Lost in boiling house	11.52	11.75	11.61	10.67	11.55
Total losses	13.48	13.77	13.74	12.71	13.81
M3 massecuite per ton Bx in M.J.					
A - massecuite	0.94	0.92	0.95	0.90	1.06
B - massecuite	0.35	0.33	0.36	0.32	0.40
C - massecuite	0.23	0.23	0.22	0.20	0.26
Total	1.52	1.49	1.53	1.42	1.73
Exhaustion of massecuites					
A - massecuite	64.38	64.40	63.99	64.49	63.81
B - massecuite	59.55	58.63	57.76	60.09	58.75
C - massecuite	56.88	56.46	54.57	56.60	55.94
Brix of syrup	65.85	65.32	65.96	65.79	64.30

TABLE E
AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS
FOR SOUTH AFRICAN MILLS (SEASON 2005 - 2006)

End of month period		2 APR 2005	30 APR 2005	28 MAY 2005	2 JUL 2005	30 JUL 2005	3 SEP 2005	1 OCT 2005	29 OCT 2005	26 NOV 2005	31 DEC 2005	28 JAN 2006	25 FEB 2006
Tons of sugar made and	Month	10577	136029	271805	388647	331007	410764	302041	270118	245751	145761	2518	136
estimated	To-date	10577	146606	418411	807058	1138065	1548829	1850870	2120988	2366739	2512500	2515018	2515154
Tons cane crushed	Month	116911	1348536	2454330	3235047	2623025	3189657	2351456	2201614	2125581	1376500	27923	1688
	To-date	116911	1465447	3919777	7154824	9777849	12967506	15318962	17520576	19646157	21022657	21050580	21052268
Tons cane crushed per hour	Month	181.48	265.87	310.29	318.98	317.06	317.01	300.57	294.50	298.16	275.66	134.91	113.75
actual crushing	To-date	181.48	255.48	287.25	300.78	304.98	307.85	306.71	305.09	304.32	302.42	301.92	301.88
Sucrose % cane	Month	11.10	11.87	12.73	13.67	14.27	14.59	14.70	14.23	13.48	12.81	11.11	10.01
	To-date	11.10	11.81	12.39	12.97	13.32	13.63	13.79	13.85	13.81	13.74	13.74	13.74
Fibre % cane	Month	15.54	14.67	14.03	13.77	13.93	14.46	14.91	15.42	16.01	15.90	14.97	14.22
	To-date	15.54	14.74	14.29	14.06	14.03	14.13	14.25	14.40	14.57	14.66	14.66	14.66
RV % cane	Month	9.87	10.64	11.51	12.44	13.09	13.34	13.41	12.95	12.17	11.52	9.69	8.52
	To-date	9.87	10.58	11.16	11.74	12.10	12.40	12.56	12.61	12.56	12.49	12.50	12.49
Tons cane per ton sugar	Month	11.05	9.91	9.03	8.32	7.92	7.77	7.79	8.15	8.65	9.44	11.09	12.41
	To-date	11.05	10.00	9.37	8.87	8.59	8.37	8.28	8.26	8.30	8.37	8.37	8.37
Extraction	Month	97.15	97.95	98.06	98.13	98.14	98.13	98.09	97.95	97.82	97.80	97.42	91.71
(sucrose based)	To-date	97.15	97.89	98.00	98.06	98.09	98.10	98.10	98.08	98.05	98.04	98.03	98.03
Imbibition % fibre	Month	313.94	394.80	393.81	378.00	381.53	382.77	375.11	376.06	369.57	379.48	435.00	279.75
	To-date	313.94	387.95	391.56	385.55	384.48	384.05	382.61	381.73	380.29	380.23	380.31	380.30
Pol % bagasse	Month	0.94	0.81	0.86	0.92	0.94	0.93	0.93	0.94	0.91	0.87	0.81	1.83
	To-date	0.94	0.83	0.85	0.88	0.90	0.90	0.91	0.91	0.91	0.91	0.91	0.91
Moisture % bagasse	Month	52.55	50.24	49.95	49.60	49.40	49.30	49.26	49.33	49.14	50.25	55.70	64.31
	To-date	52.55	50.45	50.14	49.90	49.77	49.65	49.59	49.55	49.51	49.56	49.57	49.57
Boiling house recovery	Month	83.54	86.30	88.20	89.12	89.64	89.51	88.63	87.56	87.17	84.29	82.71	87.77
(sucrose based)	To-date	83.54	86.10	87.45	88.25	88.65	88.87	88.84	88.67	88.51	88.26	88.25	88.25
Overall recovery	Month	81.16	84.53	86.50	87.45	87.98	87.84	86.94	85.77	85.27	82.43	80.57	80.50
(sucrose based)	To-date	81.16	84.28	85.71	86.54	86.95	87.18	87.14	86.97	86.79	86.52	86.52	86.52
Mixed juice sucrose purity . . .	Month	83.08	83.68	84.59	85.63	86.77	86.47	86.13	85.39	85.23	84.41	80.33	82.86
	To-date	83.08	83.64	84.25	84.90	85.43	85.70	85.77	85.72	85.67	85.59	85.59	85.59
Pol/sucrose ratio in mixed juice	Month	0.99	0.98	0.99	0.99	1.00	1.00	1.00	0.99	0.99	0.99	0.98	0.99
	To-date	0.99	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Sucrose/refractometer brix purity	Month	36.47	35.81	34.49	35.28	36.72	36.68	36.56	37.28	37.48	38.71	20.81	35.47
in final molasses	To-date	36.47	35.86	35.02	35.13	35.54	35.88	36.36	36.49	36.60	36.75	36.70	36.70
Sucrose lost in final molasses	Month	11.74	11.22	9.49	9.08	8.63	8.69	9.17	10.22	10.47	11.88	15.62	10.68
% sucrose in cane	To-date	11.74	11.26	10.12	9.63	9.34	9.09	9.20	9.33	9.45	9.61	9.61	9.61
Undetermined lost sucrose %	Month	4.12	1.95	1.93	1.47	1.40	1.47	1.83	1.78	1.88	3.29	1.23	0.54
sucrose in cane	To-date	4.12	2.11	2.00	1.75	1.65	1.68	1.61	1.63	1.66	1.76	1.76	1.76
Pol/sucrose ratio FM	Month	0.9538	0.8972	0.8682	0.8667	0.9046	0.9336	0.9607	0.9597	0.9528	0.9662	1.0605	0.9718
	To-date	0.9538	0.9016	0.8815	0.8748	0.8828	0.8956	0.9061	0.9137	0.9183	0.9219	0.9222	0.9222

TABLE F

CANE VARIETIES AND RAINFALL
(SEASON 2005 - 2006)
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 32	N 36	NCo 310	NCo 376	MIXED VARIETY	UNKNOWN and OTHER	% BURNT	* RAINFALL
ML			12.5		0.3	36.5		1.8	3.4	2.8	31.4	0.2				0.7	8.3	0.3			1.8		99.9	295
KM			27.0		0.3	38.6		1.6	2.4	0.6	16.2			0.4		0.3	8.3	0.8			3.2	0.5	99.7	365
PG			19.1		0.7	12.3		1.2	6.9	0.3	30.8	6.1		0.7		0.2		7.5			8.0	6.3	76.9	422
UF		1.3	1.3		6.2	25.7	0.6	2.3	0.2	0.1	0.1	0.2	8.7		6.5			0.1	0.3	10.9	9.5	26.1	99.2	795
FX		3.3	2.0	0.1	4.5	8.8	0.2	0.3	2.3	0.1	5.0	0.5	21.4	0.6	5.4	0.2		0.4		13.7	3.5	27.7	80.5	463
AK		22.7	0.5	6.9	3.2	6.0	2.1				0.6	0.1	8.8		4.9					8.2	6.8	29.1	93.3	280
DL		17.9	0.2	8.6	2.8	4.1	2.2						11.1		2.1					10.3	0.4	40.5	88.0	323
MS		14.5	0.3	11.6	2.4	2.1	1.2				0.1		4.3	0.1	4.1			0.1	0.1	22.9	8.4	28.0	74.5	267
GH		18.8	0.5	4.5	4.4	3.9	1.6				0.4	0.1	7.2		2.4					18.9	5.2	32.2	86.1	261
NB	0.5	63.7	0.1	23.0	0.1	0.3	1.3	0.1	0.3		0.8	0.5	0.3		1.2			0.8			0.3	6.9	96.3	386
UC	0.5	59.5		28.5		1.2	2.5	0.2	0.6		0.6	0.5	0.1		0.7			0.9		0.3	0.1	3.8	98.9	670
ES		55.1		10.9			0.2	0.1				0.1	0.6	0.2	0.4	0.9					0.2	31.2	88.8	292
SZ		35.5	0.2	5.4			0.4						1.7		2.6					4.8	9.9	39.6	71.4	591
UK		28.6	0.4	2.5			2.0						2.2		2.8					10.5	3.4	47.4	90.6	492
Average SA Mills	0.1	20.8	5.4	6.2	1.8	11.1	0.9	0.6	1.3	0.3	6.8	0.6	5.2	0.2	2.4	0.2	1.6	0.7	0.0	7.0	4.5	22.5	88.1	
UB			1.1			7.9			35.3	0.2	20.5					0.2				31.7	3.1			429
NH			37.7			0.4		0.1	3.7		21.2			0.2	0.2		12.7				11.2	12.7		38
DW			2.1								10.2	0.3								33.7	1.7	52.0		118
HV			31.2																	29.8	0.4	38.6		26
TR			46.8																	41.2	0.8	11.2		22
NK			13.0		0.4	36.7		1.5	8.9		31.8						1.4	0.1		1.2	5.0			15
MW						3.1					3.0					0.5				90.3	3.1			836
RU						1.4					1.4					0.2				95.5	1.4			849
MA						39.3			42.2		4.7			3.1						10.7				640

* Rainfall during the crushing season

TABLE G

TRANSPORT SUMMARY SOUTH AFRICAN FACTORIES

(SEASON 2005 - 2006)

PERCENT OF CANE TRANSPORTED

MILLS	ML	KM	PG	UF	FX	AK	DL	MS	GH	NB	UC	ES	SZ	UK	AVERAGE
SOUTH AFRICAN RAILWAYS					21.1										2.3
TRAMS				67.7											3.9
UNKNOWN										0.04					
ARTICULATED TRUCK DRIVEN VEHICLES															
- Interlink		0.2	11.9	31.4	61.6	67.9	26.6	89.6	62.6	31.2	18.5	38.6	86.7	87.8	44.5
- Tri-Axle			0.2				31.6	0.2	2.5	0.6	1.0	12.5			3.0
- Hilo	5.3	0.6	26.5		0.5	0.2	2.2		3.7	8.3	1.5		9.3	3.5	4.5
RIGID CHASSIS VEHICLES															
- Truck	83.3	74.8	3.7			0.2			14.0	19.7	36.7	28.7	4.0	3.1	20.2
- Lorry		1.6					0.1			3.0	15.1		0.1	1.1	1.0
TRACTOR DRIVEN VEHICLES															
- Hilo	0.4		13.1	0.5	0.5	8.5	22.0	0.8	1.4	27.1	3.5	2.3			6.5
- Rig	0.6				16.3	14.2	17.5	1.5	2.5	10.1	7.7	18.0		0.4	5.3
- Interlink	10.5	22.8	44.5	0.5		9.0	0.1	7.9	13.3		16.1			4.1	8.9

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

PERIOD (SEASON)	Percent Cane		Cane / sugar Ratio		Extraction	Pol % fibre in Bagasse	Percent Bagasse		Imbibition Percent		Mixed Juice		Final Molasses Suc/brix Purity	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	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**	**46.30**	**309**	**84.85**	**5.37**	**38.4**	**88.92**	**85.54**
From 1981 onwards data are sucrose based	***Sucrose based***				***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**	**52.6**	**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	51.3	348	86.46	4.82	37.2	88.97	86.99
2001	13.11	14.97	8.81	8.50	97.74	2.02	0.95	50.81	54.3	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	53.3	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