

REFEREED PAPER

EIGHTY-EIGHTH ANNUAL REVIEW OF THE MILLING SEASON IN SOUTHERN AFRICA (2012-2013)

SMITH GT, DAVIS SB, MADHO S AND ACHARY M

Sugar Milling Research Institute NPC, c/o University of KwaZulu-Natal, Durban, 4041, South Africa
gsmith@smri.org sdavis@smri.org smadho@smri.org sachary@smri.org

Abstract

Performance, throughput and other relevant aspects of the sugar industries in southern Africa for the 2012/13 milling season are presented and discussed. Data from sugar mills in South Africa, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe are included. In South Africa, Umzimkulu Mill reopened after being closed for the entire 2011/12 crushing season, with the cane being diverted to Sezela Mill. The 2012/13 season in South Africa was better than the poor 2011/12 season in terms of tons cane harvested. Cane quality also improved from the previous season, with the exception of ash, which increased slightly. The Overall Time Efficiency improved, despite a higher Lost Time % Available, as a result of a marked decrease in no-cane stops. Recoveries improved from 2011/12, with the overall recovery moving off the lowest value recorded for more than ten years. Decreased losses to bagasse and molasses, as well as a constant Undetermined Loss, resulted in a higher Boiling House Recovery and Overall Recovery.

Regarding the Sugar Milling Research Institute NPC Affiliate member mills in neighbouring countries, recoveries were similar to 2011/12, while most also had improved time efficiencies.

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

Introduction

This paper reviews the 2012/13 milling season in southern Africa, and includes data from mills in South Africa, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe, that are Full (South African) or Affiliate (non-South African) Members of the Sugar Milling Research Institute NPC (SMRI)¹. This is the first year that all the Affiliate Members have been included in the Annual Review, and a detailed regional analysis has been possible. Detailed information on factory performance in 2012/13 and recent seasons, details of cane varieties crushed and a summary of cane transport used in South Africa, are presented in Tables A to H in the Appendix.

¹South African sugar factories:

AK = Amatikulu, DL = Darnall, ES = Eston, FX = Felixton,
GH = Gledhow, KM = Komati, ML = Malalane,
MS = Maidstone, NB = Noodsberg, PG = Pongola, SZ = Sezela,
UC = UCL, UF = Umfolozi, UK = Umzimkulu

Malawi sugar factories:

DW = Dwangwa, NH = Nchalo

Mozambique sugar factories:

MA = Maragra, MB = Mafambisse, XN = Xinavane

Swaziland sugar factories:

MH = Mhlume, SM = Simunye, UB = Ubombo

Tanzania sugar factories:

MW = Msolwa (Kilombero), RU = Ruembe (Kilombero)

Zambia sugar factory:

NK = Nakambala

Zimbabwe sugar factories:

HV = Hippo Valley, TR = Triangle.

Malalane mill has had a name-change from Malelane and this has been incorporated in this review.

Operations

As reported in the previous Annual Review (Smith *et al.*, 2012), the 2011/12 season in South Africa saw only 13 of the 14 mills operating due to the drought in the preceding year and subsequent low crop estimate on the KwaZulu-Natal south coast. UK crushed no cane during that season and this had a ripple effect on the industry performance for the 2011/12 season. Cane from the area was largely diverted to the Sezela mill for that season.

Cane crop

Cane varieties

The varietal distribution at southern African mills for the 2012/13 season is shown in Appendix Table F. There were only small varietal changes in South Africa since the 2011/12 season. The main change in South Africa was the decrease in percentage of N12 at SZ due to that mill picking up cane diverted from UK during 2011/12. The percentages of N39 increased at a number of mills, particularly in the North and South Coast regions. In the Affiliated mills the 2012/13 season saw similar varietal distribution to 2011/12. As mentioned earlier, this is the first year that all 13 Affiliated mills are included in the table. There are still fairly high percentages of unknown and mixed varieties delivered, so the trends should be viewed with some caution.

Burning

The overall percentage of cane burnt in South Africa remained relatively unchanged from the previous season at 91.7% (Appendix Table F), against 91.2% in 2011/12.

Rainfall

The industry rainfall returned to normal patterns until September 2012. In September and October, however, heavy rainfall was recorded with only slight relief in November and December (Figure 1). Only KM recorded under 100 mm in September, with MS and GH recording over 300 mm and five other mills recording over 250 mm. In October, UK recorded 490 mm and MS was again over 300 mm. Total rainfall for the season was 11 143 mm (9636 mm excluding UK) compared to 7910 mm in 2011/12. The total rainfall recorded at mills during the crushing season ranged from 410 mm at PG to 1507 mm at UK (Appendix Table F). Six mills recorded higher than 700 mm rainfall in 2012/13.

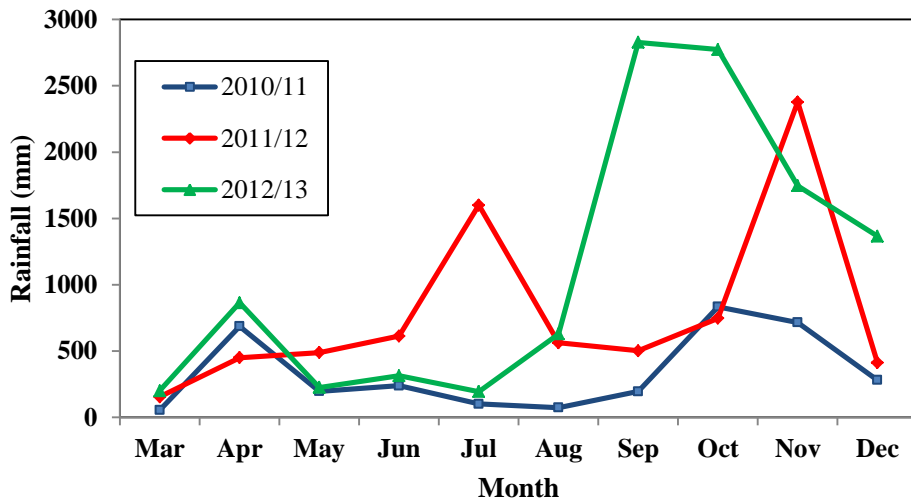


Figure 1. Monthly total rainfall at crushing South African mills for the 2010/11 to 2012/13 seasons (values are the monthly rainfalls summed over all mills crushing during the month).

Cane quality

The trends in the cane quality indicators of Recoverable Value (RV) % cane and Estimated Recoverable Crystal (ERC) % cane over the past ten seasons in South Africa are shown in Figure 2. Both parameters increased from the record low values of 2011/12 as a result of better summer rainfall than in the previous year.

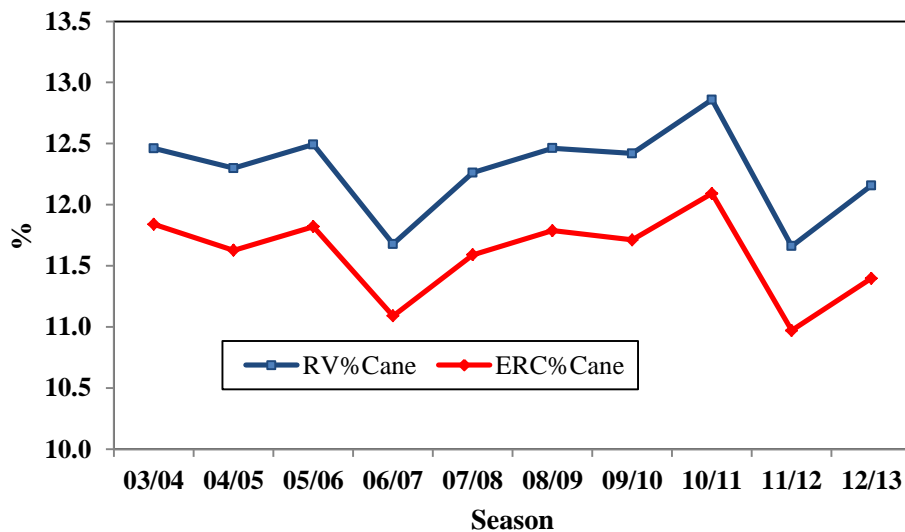


Figure 2. RV % cane and ERC % cane in South Africa for the past ten seasons.

Figure 3 shows the RV % cane at the mills for the past three seasons and clearly indicates the effect of climatic conditions on cane quality, as the irrigated areas (ML, KM and PG) show little variation over the period. The North Coast mills (FX, AK, DL, MS and GH) showed some improvement from 2011/12 to 2012/13, while there was a substantial improvement in RV % cane at the Midlands (NB, UC and ES) and South Coast (SZ) mills as a result of good rains.

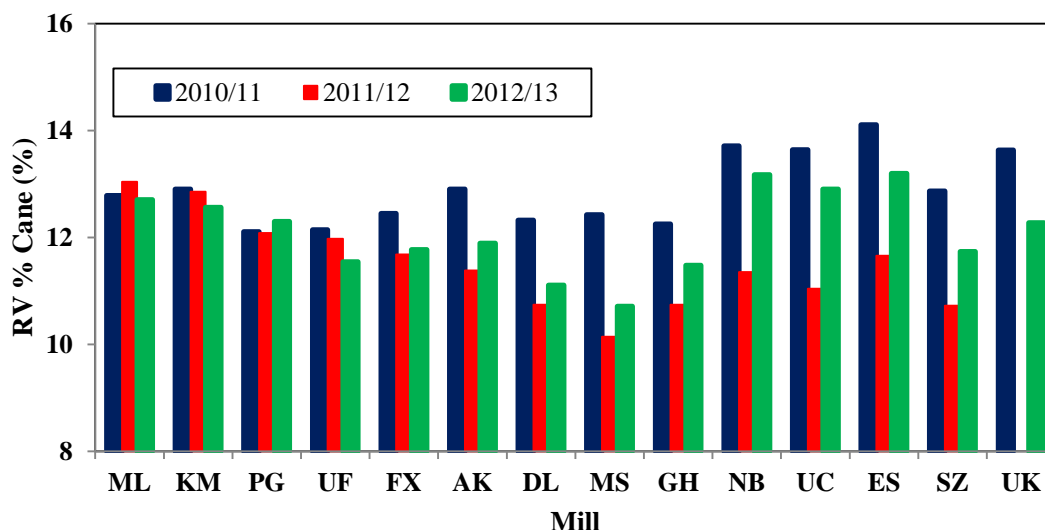


Figure 3. RV % Cane at South African mills from 2010/11 to 2012/13.

The monthly RV % cane for the past three seasons in South Africa (Figure 4) indicates that the cane quality during the 2012/13 season started off well, equivalent to that of the 2010/11 season until July. However, from September, the quality dropped off dramatically, being poorer than that of the 2011/12 season for the last four months of the season as a result of the heavy rains experienced in most of the industry in spring and early summer (Figure 1).

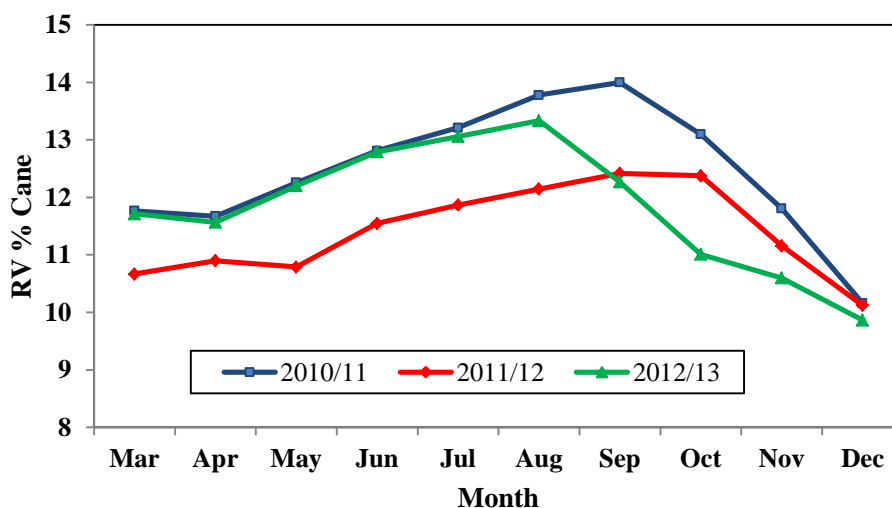


Figure 4. Monthly RV % cane in South Africa for the 2010/11 to 2012/13 seasons.

Considering the whole region, changes in cane quality in terms of ERC % cane (Figure 5) from 2011/12 to 2012/13 showed mixed trends in the countries under review. South Africa, Swaziland and Zambia recorded improvements, Zimbabwe continued on a declining trend and there was little change in Malawi, Mozambique and Tanzania. In 2012/13, Swaziland included three Affiliated mills for the first time since 2004/05.

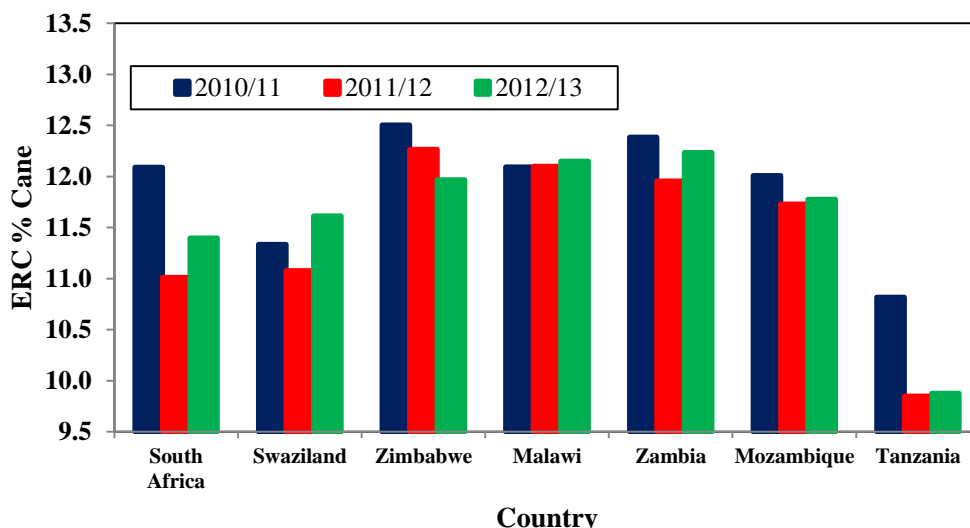


Figure 5. ERC % cane in southern Africa from 2010/11 to 2012/13.

Looking at some other parameters included in cane quality, Ash % Cane increased to a new record high for the SA industry (Figure 6), largely as a result of the heavy spring rains. However, this is a concerning trend and has substantial cost implications for the milling industry. The SMRI has included in its research programme a project to try to assess the costs to the mills of higher ash levels.

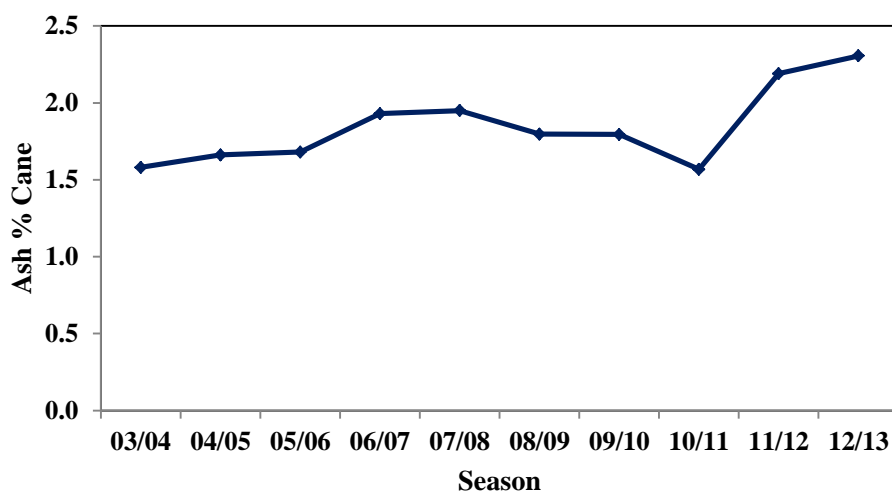


Figure 6. Ash % cane in South Africa for the past ten seasons.

As might be expected from the improved cane quality, the mixed juice sucrose purity showed an increase from 2011/12 to 2012/13 to an average value of 86.35% for South Africa (Figure 7).

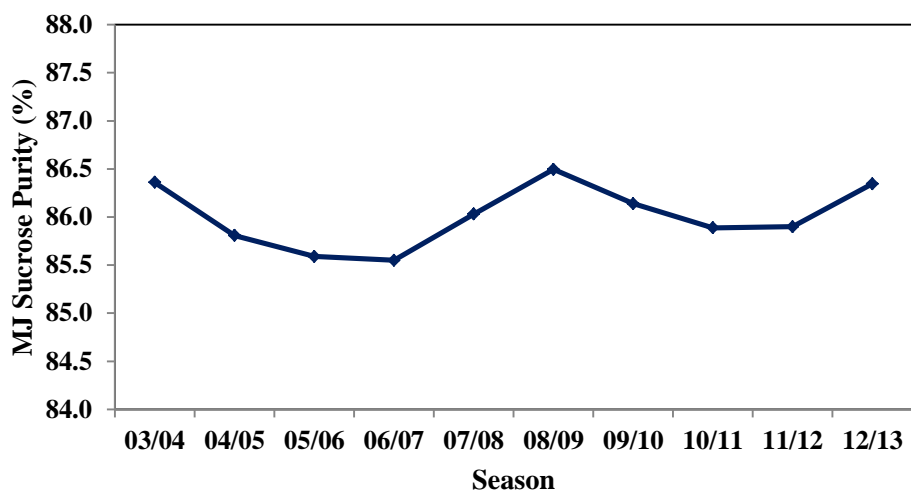


Figure 7. Mixed juice sucrose purity in South Africa for the past ten seasons.

Cane tonnage

Initial predictions in November 2011 for the 2012/13 season in South Africa by the South African Sugarcane Research Institute (SASRI) Canesim crop model forecast were for a 16.8% increase over the crop that was crushed in 2010/11. This would equate to a 16% increase over the final 2011/12 crop. The estimate was based on normal summer rainfall and on reasonable irrigation water supplies. The estimate decreased to 97.9% of the previous season potential in March 2012 following poor summer rains, and remained around 100% for the rest of the season. The final tonnage of cane crushed during 2012/13 was 17.28 million tons, which was 477 743 tons, or 2.8%, more than the previous season, and is 7.9% up on the low of the 2010/11 season (Figure 8). The tonnage is 6.6 million tons (28%) less than the high of 2000/01, when 23.9 million tons was crushed. The reasons for the changing sugarcane supply are dealt with in detail in the agricultural Annual Review by Singels *et al.* (2013).

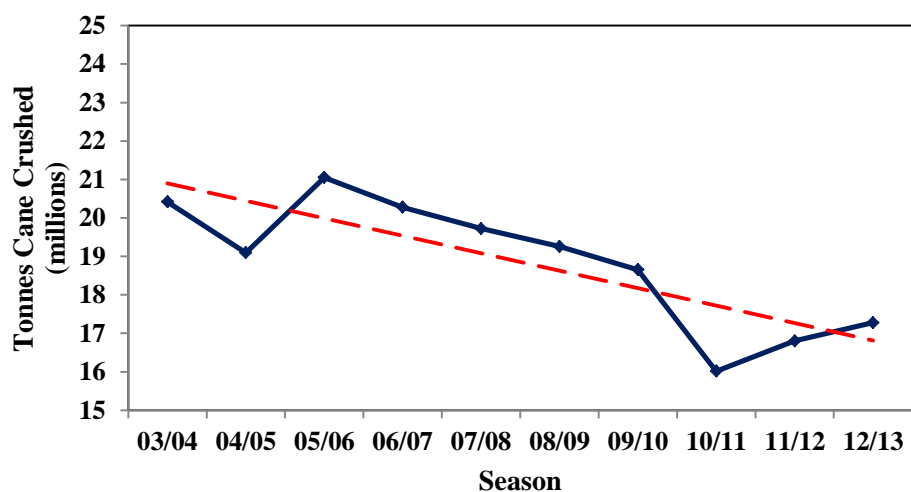


Figure 8. Tons of cane crushed in South Africa for the past ten seasons (with linear trendline).

Factory performance

Length of milling season

The 2012/13 season in South Africa ran from 5 March 2012 (UC) until 30 December 2012 (UF). The average length of the season was 254 days, an increase of 12 days from the previous season, and the longest season for the past five years. UC had the longest season of 290 days, with FX having the shortest of 212 days. It is encouraging to see that all but three SA mills had longer seasons than in 2011/12. The lengths of the milling seasons in other southern African countries ranged from 172 days at MB in Mozambique to 286 days at MH and SM in Swaziland.

Time efficiencies

The time efficiencies for South Africa for the past five seasons are shown in Figure 9. Although Overall Time efficiency (OTE) increased to 75.7%, this is still the second lowest in the period. The increase was mainly due to a marked drop of 3.72 percentage points in No-cane Stops. This improvement in No-cane Stops was, however, somewhat offset by an increase in Lost Time % Available (LTA). Hours for Force Majeure increased from 569 hours in 2011/12 to 3023 hours in 2012/13 (172 hours in 2010/11), mainly as a result of industrial action outside the millers' control.

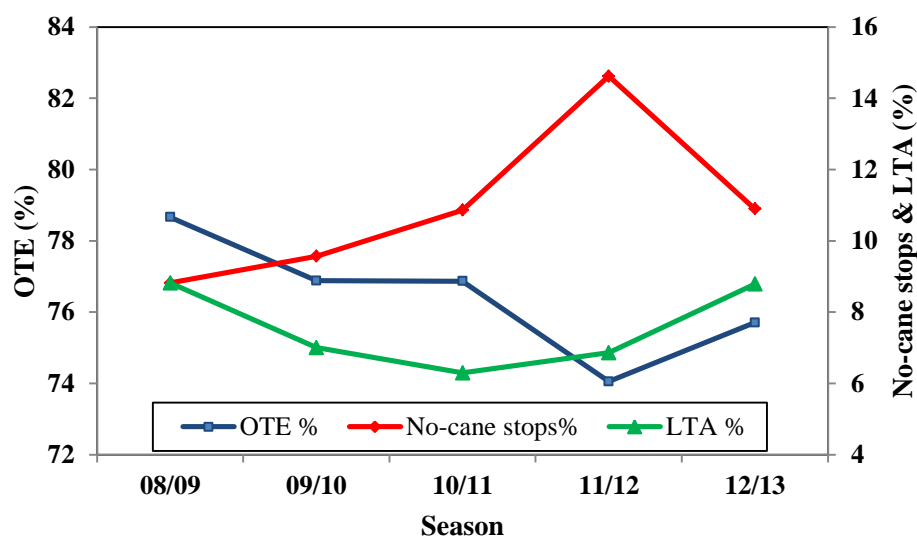


Figure 9. Overall Time Efficiency (OTE), Lost Time Available (LTA) and No-cane Stops in South Africa from 2008/09 to 2012/13.

Nine mills showed an improvement in OTE, mainly as a result of improved No-cane Stops. Only four of these nine mills recorded lower LTAs than in 2011/12. Two other mills also recorded decreases in LTA.

Eleven mills showed an improvement in No-cane Stops over the previous season (Figure 10). The greatest improvement was at MS, where the No-cane Stops was less than half of the previous season's value, although the mill still recorded the third highest value in the industry for 2012/13. Whereas in the 2011/12 season monthly values for No-cane Stops for the SA industry exceeded 10% for every month of the season, with the exception of May, in 2012/13 the value only moved above the 10% mark for the rainy period from September to December.

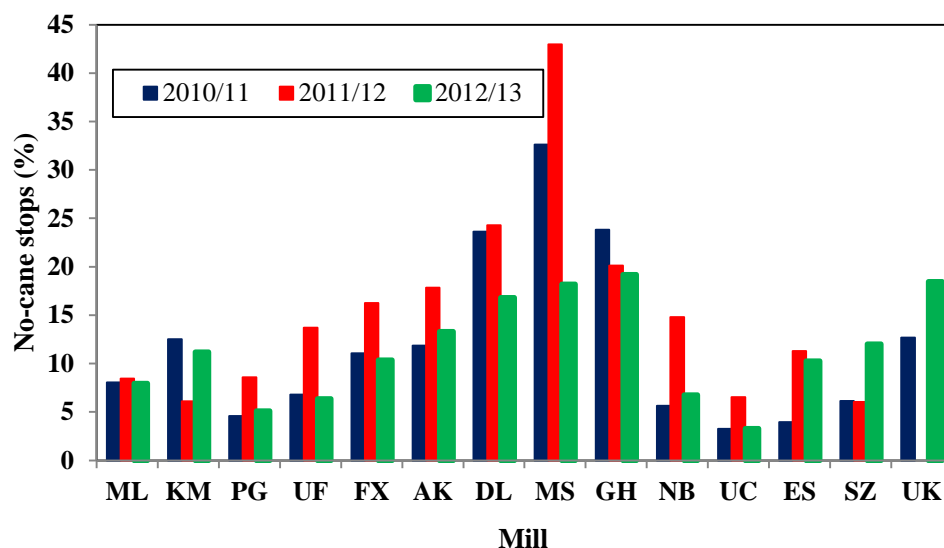


Figure 10. No-cane Stops at South African mills from 2010/11 to 2012/13.

All the mills in the other southern African countries, with the exception of SM, recorded higher OTEs than the South African industry average. SM suffered from high LTA (11.83%) and No-cane Stops (13.96%) in 2012/13. Zimbabwe recorded OTEs of 84.8% (HV) and 78.1% (TR), a marked improvement from 2011/12 when both mills had OTEs of 70%.

Extraction

Figure 11 shows virtually unchanged extraction, imbibition % fibre in bagasse and Corrected Reduced Extraction (CRE) values in 2012/13 from the preceding season.

The extraction for these two seasons (97.14 and 97.19% for 2011/12 and 2012/13, respectively) remained the lowest achieved in the South African sugar industry since the 1983/84 season, when a value of 97.02% was recorded. The start-up of UK in 2012/13 (recall that the factory did not operate in the previous year) had only a small impact on the industrial extraction average with its extraction recorded at 97.28%.

The imbibition % fibre in bagasse is still around its ten year low at 333%, substantially less than the 380% used in 2005/06. UK's imbibition usage, at 370% fibre in bagasse, and the slight change in the industrial average over the past two seasons, suggests that the other mills would have further reduced their imbibition usage. This is to be expected with the focus firmly on energy management.

The CRE value, which takes variations in cane quality into account, follows the extraction trend over the past decade and suggests that, for the past season, the slight increase in extraction achieved was due to improved cane quality.

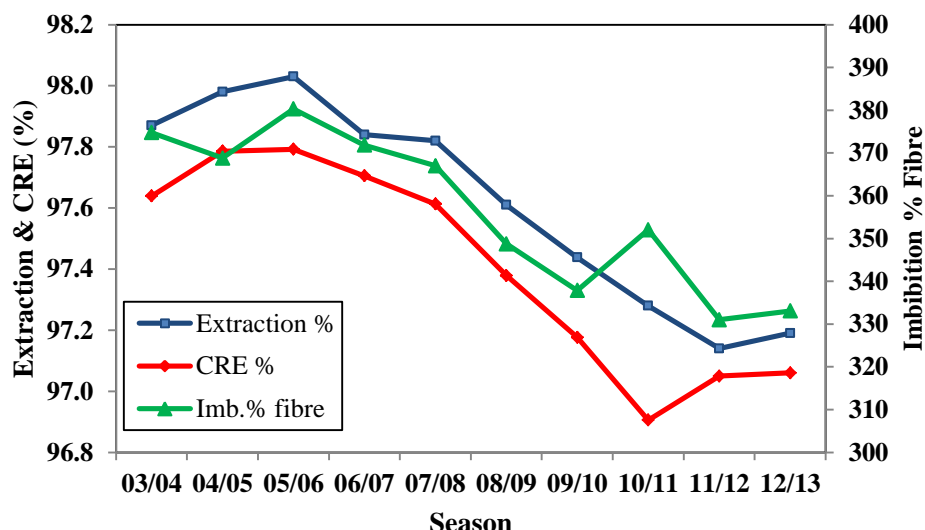


Figure 11. Extraction, Corrected Reduced Extraction (CRE) and Imbibition % Fibre in South Africa for the past ten seasons.

The extraction values for individual South African factories for the 2011/12 and 2012/13 seasons are shown in Figure 12. It can be seen that, despite the average extraction not changing much in these two seasons, there were several changes in extraction performance at the individual mills. ML, PG, GH, UC, ES and SZ all recorded improvements of about 0.2% or more. However, these increases were offset mostly by MS, where extraction dropped from 97.67 to 96.82% in the last season, as imbibition % fibre dropped from 343% to 289%. Felixton is now the only South African sugar mill with an extraction of over 98%; however, this comes with an imbibition % fibre in bagasse usage of 369%.

In the 2012/13 season, six factories (ML, KM, FX, AK, MS and UK) routed clarifier mud back to the diffusers throughout the entire season, while PG operated with partial recycling.

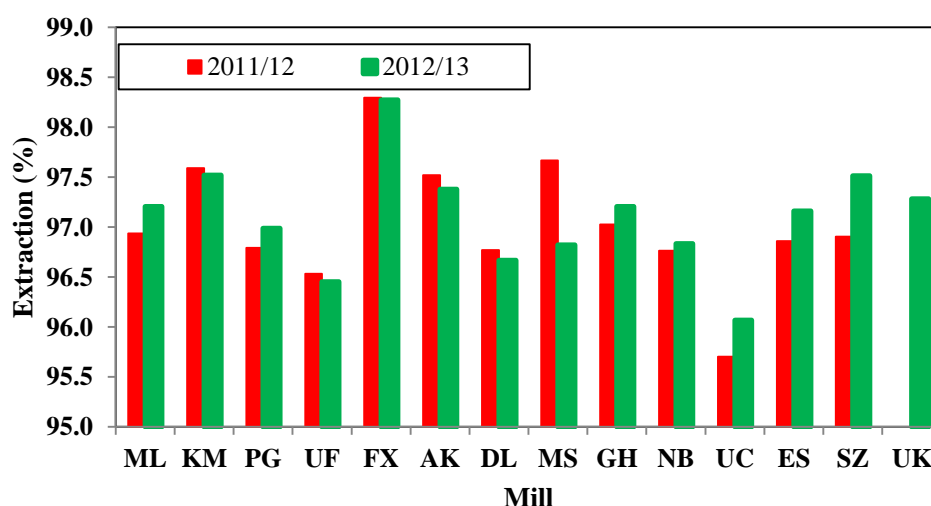


Figure 12. Extraction at South African mills for the 2011/12 and 2012/13 seasons.

Among the Affiliated mills in 2012/13, pol-based extraction increased by more than 0.2% at UB, HV and RU, while decreases of more than 0.2% were seen at NH, MW, MA and NK from the 2011/12 season (Figure 13). The drop at MW was the most noticeable with an extraction of 92.76% in 2012/13 from 94.37% the preceding season.

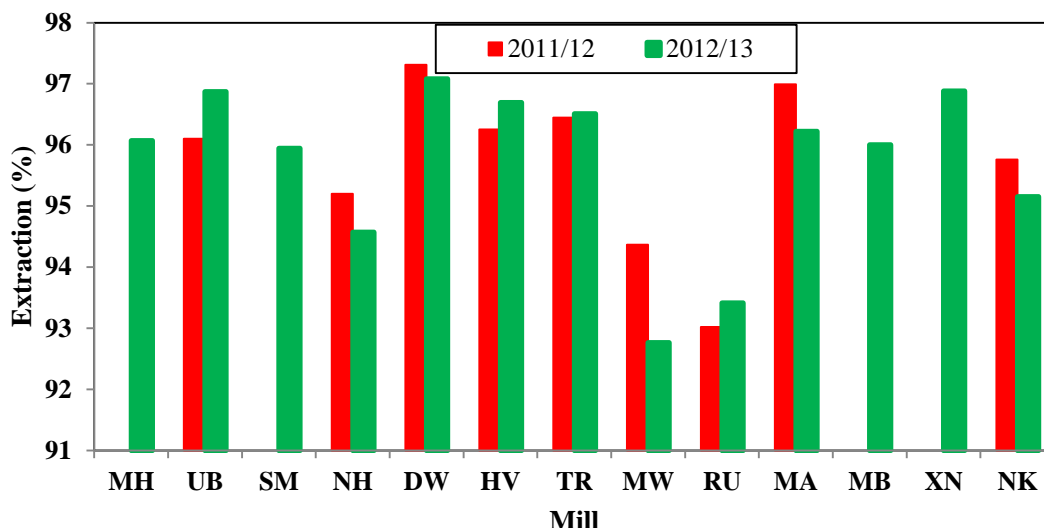


Figure 13. Pol-based extraction at southern African mills for the 2011/12 and 2012/13 seasons

Boiling house performance

The Boiling House Recovery (BHR) for the South African industry appears to show little change in 2012/13 (86.99%) from the previous season’s BHR of 86.84% (Figure 14). The downward trend of BHR over the past decade is evident and mill performances are far from the 88.25% average attained in 2005/06.

There was a slight decrease in Corrected Reduced BHR (CRB) from the previous season, 85.83% in 2011/12 to 85.44% in 2012/13, indicating that the slight improvement in BHR could have been more substantial. For the past season, the decrease in CRB can be attributed to the fact that the BHR did not increase as much as might have been expected from the increase in MJ purity.

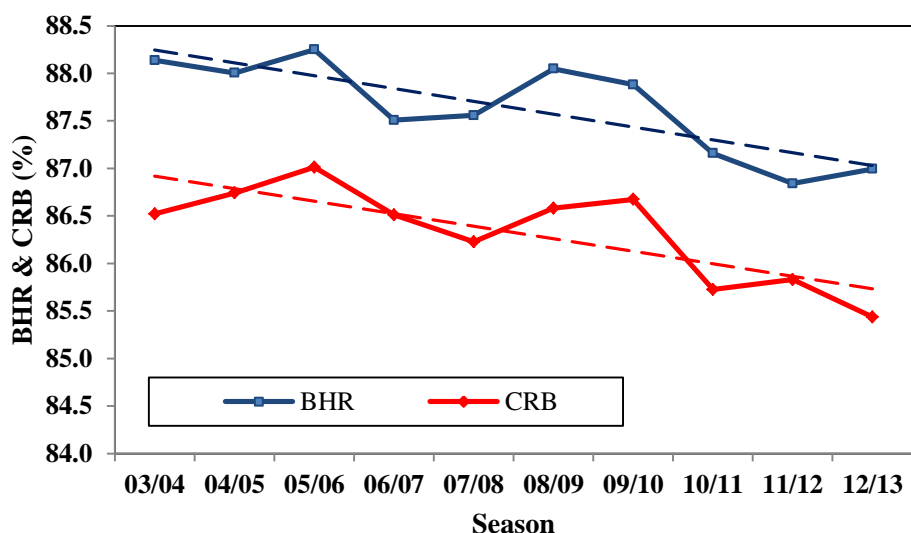


Figure 14. Boiling House Recovery (BHR) and Corrected Reduced BHR (CRB) in South Africa for the past ten seasons (with trendlines).

The slight improvement in BHR was due mainly to a drop in the overall loss of sucrose to molasses as a percentage of sucrose in cane (Figure 15) from a ten year high in 2011/12 of 10.19% to 10.02% in the past season. Although an improvement is noted, the losses are still substantially higher than the ten year low value of 9.32% achieved in 2008/09.

The trend of Molasses Factor (the ratio of tons of sucrose in final molasses to tons of non-sucrose in mixed juice) is shown in Figure 16, and reveals an alarming upward trend, which continued in 2012/13 to the highest value (0.6517) since it was first calculated for the 1986/87 season (then a value of 0.5714). The A-exhaustion dropped to 61.36% from 61.42% and 62.87% in previous seasons, suggesting further opportunity for losses to take place, as the low purity operations would have had to face higher loadings.

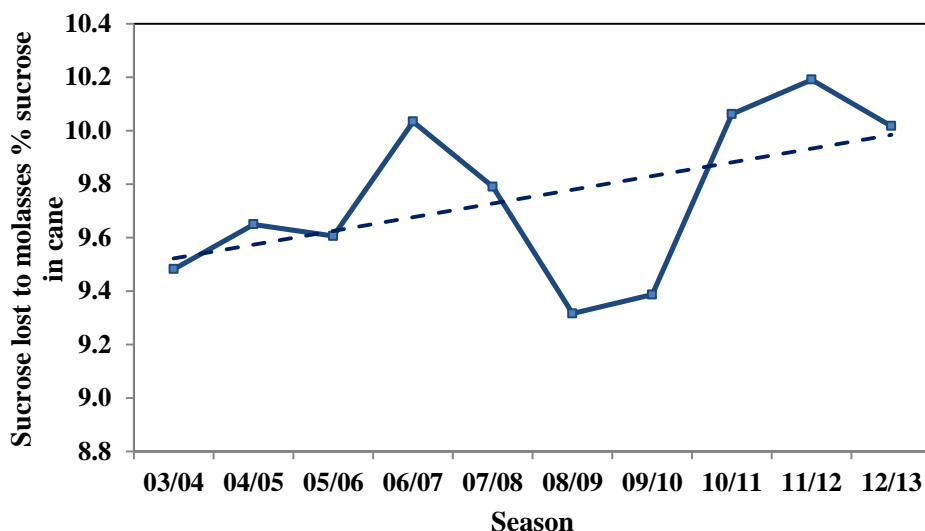


Figure 15. Sucrose loss to molasses in South Africa for the past ten seasons (with linear trendline).

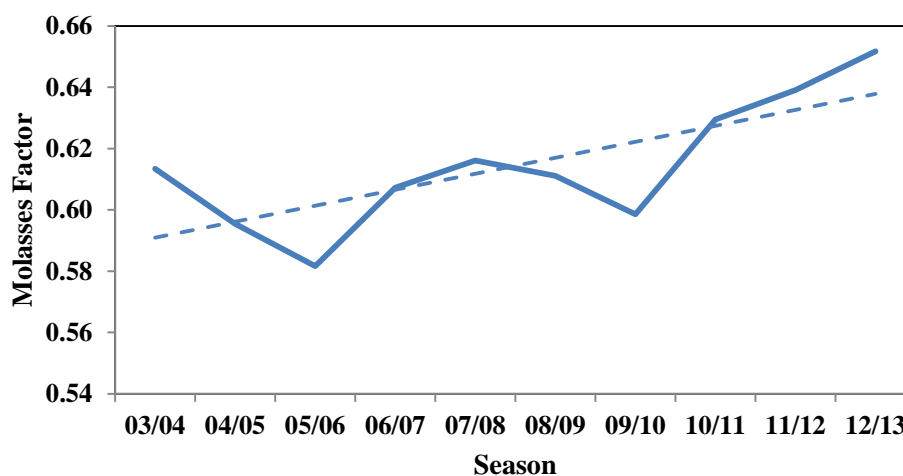


Figure 16. Molasses factor in South Africa for the past ten seasons (with linear trendline).

The Undetermined Loss % sucrose in cane (UDL) did not change from 2.35% over the past two seasons, the highest value over the past decade (Figure 17). Mills naturally want to keep this figure as low as possible but as a rule of thumb consider any UDL over 2% as high. The South African industry has not been able to achieve this benchmark since the 2006/07 season.

Figure 18, which compares the individual South African mills' UDLs for the past two seasons, shows that while the industrial UDL average has remained unchanged, there have been changes to the UDL achieved at most mills. ML and UC are to be commended for their respective UDLs of 1.26 and 1.11%, respectively, with the former mill improving from 2.38% the previous season. The UDL at PG remains the highest, with an average of 4.44% for the 2012/13 season. Unfavourable rises in the UDL were noted at the UF, MS and NB mills, with increases of 0.87, 1.50 and 1.45%, respectively.

The high UDL experienced in the South African industry can possibly be linked to the low OTE%, particularly as a result of start/stop operations, often as a result of poor cane supply. Under-utilisation of plant capacities may also sometimes lead to increased exposure to low pHs, high temperatures and microbial activity leading to increased UDL.

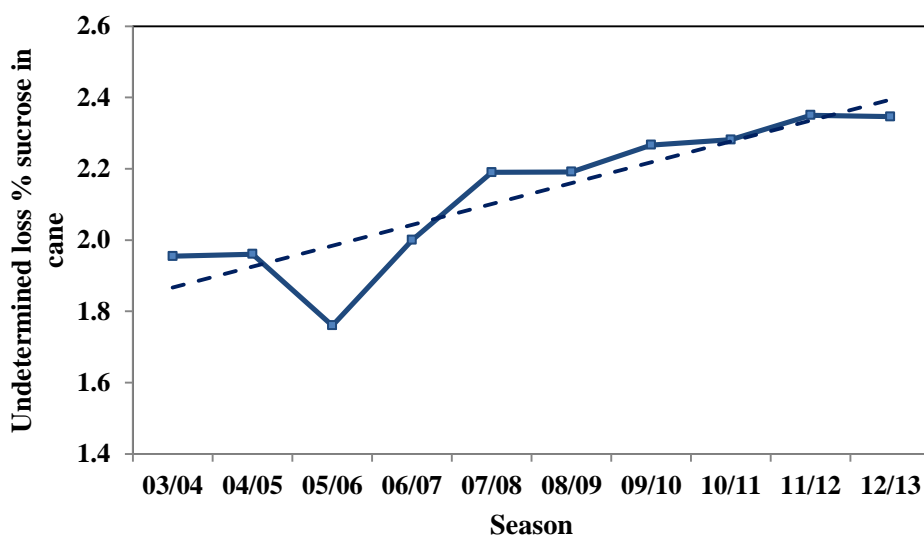


Figure 17. Undetermined Loss (UDL) % sucrose in cane in South Africa for the past ten seasons (with linear trendline).

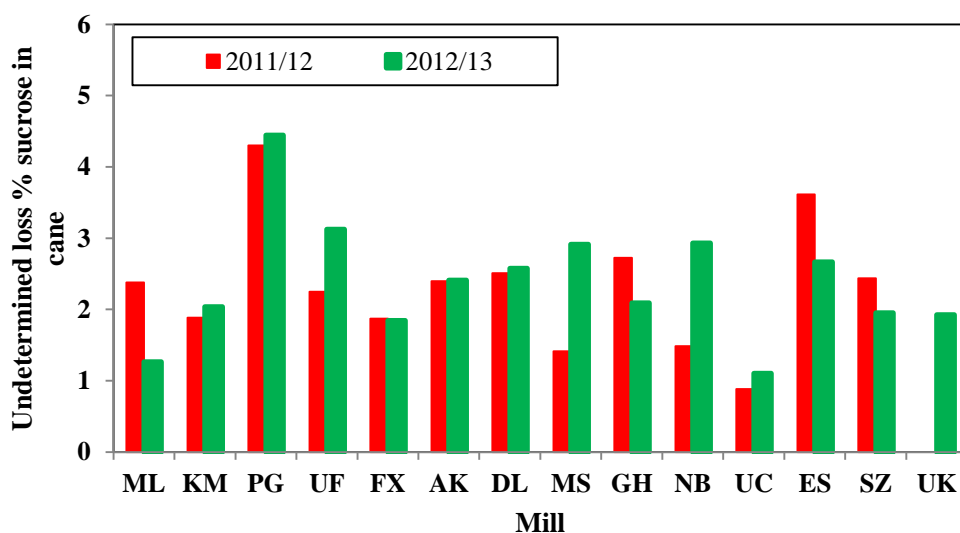


Figure 18. Undetermined Loss (UDL) % sucrose in cane at South African mills for the 2011/12 and 2012/13 seasons.

Among the Affiliate mills, only UB showed a pol-based BHR of below 86%, while SM and DW posted BHRs of over 90%.

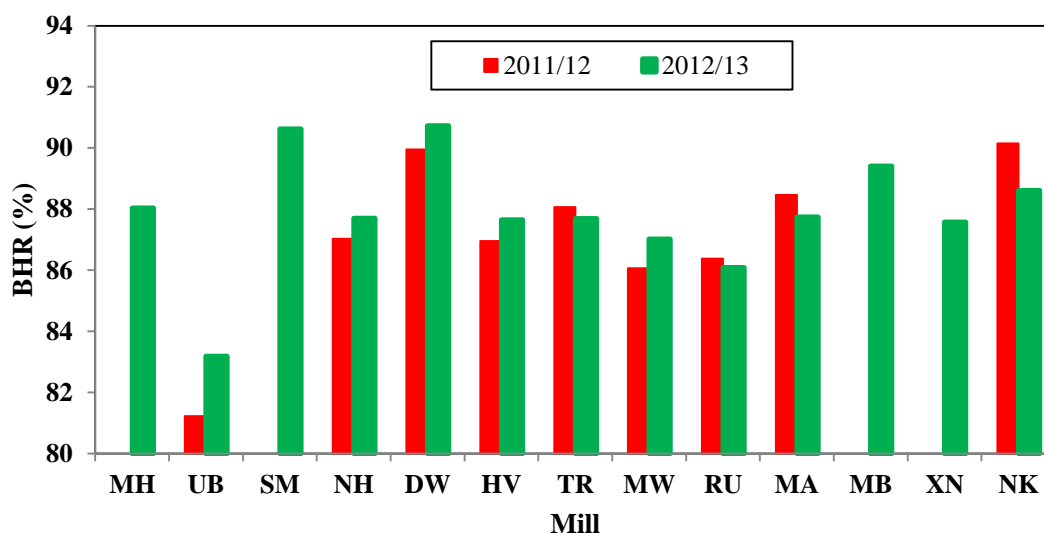


Figure 19. Pol-based Boiling House Recovery (BHR) at southern African mills for the 2011/12 and 2012/13 seasons.

Overall recovery parameters

The Overall Recovery (OR) and Value Recovery (VR) of the South African industry for the past ten seasons are shown in Figure 20. As expected from the steady extraction and slight improvement in BHR, the OR showed a small improvement over the 2011/12 value. The VR showed a slightly larger improvement, but, as the CRB had declined, this is likely to again be due to reduced ‘expected’ recoveries because of the three-year averaging of the RV factors and does not indicate a substantial improvement in technical performance.

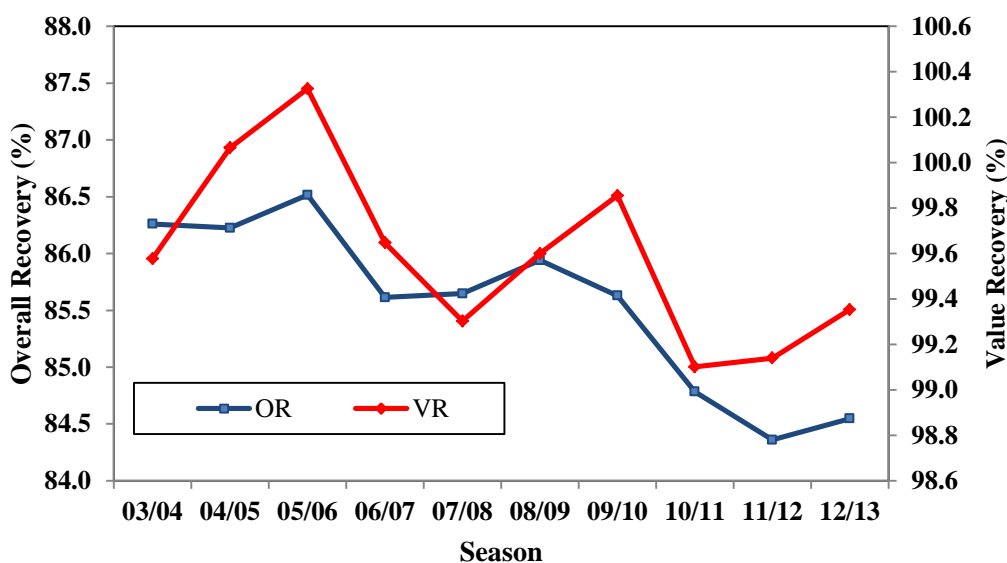


Figure 20. Overall Recovery (OR) and Value Recovery (VR) in South Africa for the past ten seasons.

Cane to sugar ratio

The changes in cane to sugar ratios from 2011/12 to 2012/13 in southern Africa largely reflect the changes in cane quality as measured by ERC % cane, with South Africa and Swaziland showing noticeable improvements, and Zimbabwe continuing an increasing trend (Figure 21). An exception was Mozambique, where the cane to sugar ratio improved while the cane quality was unchanged. The Tanzanian mills receive cane with the lowest pol content and also recorded the lowest extractions. These both contribute to the higher cane to sugar ratio.

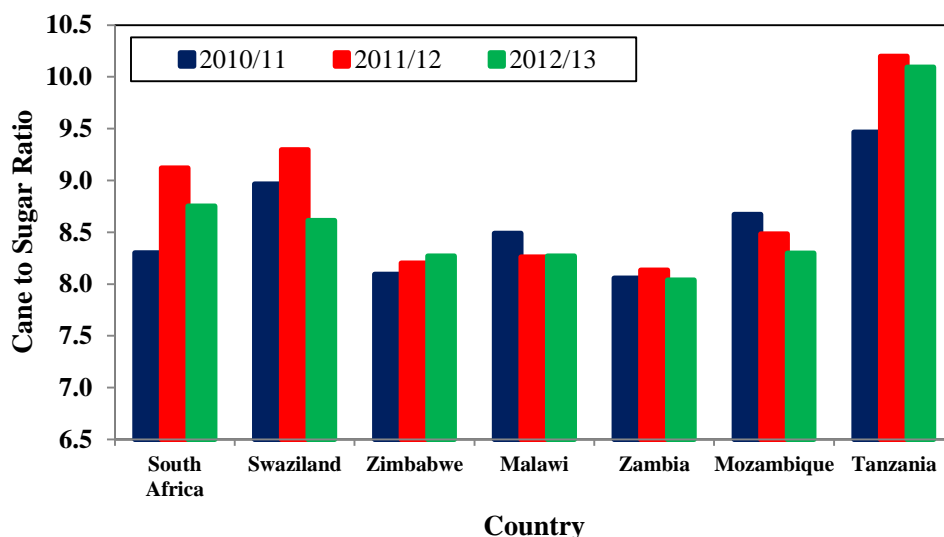


Figure 21. Cane to sugar ratio in southern Africa from 2010/11 to 2012/13.

Sugar quality

The trends in the Very High Pol (VHP) sugar quality with respect to colour are shown in Figure 22. This relates to sugar received by the South African Sugar Terminal (SAST). In the 2012/13 season, the affinated sugar colour of 648 ICUMSA units was similar to the ten year lows of 614 and 618 ICUMSA units obtained in 2010/11 and 2011/12. The average VHP sugar colour was below the 1500 ICUMSA target level for the fourth time in ten years, recording a value of 1431 ICUMSA units, similar to the previous year’s ten year low of 1410 ICUMSA units.

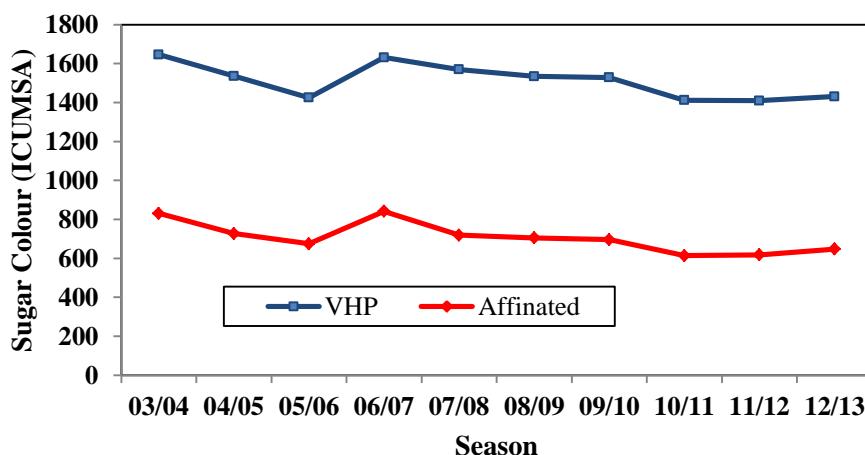


Figure 22. Very High Pol (VHP) and affinated sugar colour in South Africa for the past ten seasons.

An ongoing sugar quality concern is the percentage of sugar fines. In 2012/13 the percentage of fine sugar increased to 37%. Sugar fines exist due to crystal damage in sugar handling, but more so due to poor crystallisation techniques employed in the mill.

Concluding Remarks

The 2012/13 milling season in South Africa was an improved season, with better cane quality entering the factories. The tonnage of cane harvested saw a second season of increase over the previous year, although this was still lower than the amount harvested in 2009/10. OTE improved as a result of lower No-cane Stops and despite an increase in LTA. Extraction performance halted the substantial decline of the previous seasons with a slight improvement, although CRE remained constant. Decreased losses to molasses and a constant UDL resulted in a higher BHR, OR and VR.

Regarding the Affiliate mills in neighbouring countries, most reported improved cane quality in terms of ERC % cane. The Affiliated factories recorded mixed results in terms of extraction, while the BHR was fairly consistent at most mills

Acknowledgements

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APPENDIX: DATA TABLES

- Table A1:** Cane crushed and sugar made, cane composition and time accounts, performances and losses – South African factories (Season 2012/13)
- Table A2:** Cane crushed and sugar made, cane composition and time accounts, performances and losses – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2012/13)
- Table B1:** Analysis of bagasse, juices, filter cake, syrup and final molasses – South African factories (Season 2012/13)
- Table B2:** Analysis of bagasse, juices, filter cake, syrup and final molasses – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2012/13)
- Table C1:** Masecutes, exhaustions, clarifying agents and additional fuels – South African factories (Season 2012/13)
- Table C2:** Masecutes, exhaustions, clarifying agents and additional fuels – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2012/13)
- Table D:** Comparative manufacturing data of recent years (South African factories)
- Table E:** Average manufacturing results by monthly periods for South African factories (Season 2012/13)
- Table F:** Cane varieties and rainfall (Season 2012/13)
- Table G:** Transport summary – South African factories (Season 2012/13)
- Table H:** Comparative data of reporting South African factories from 1925 onward

TABLE A1
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SOUTH AFRICAN FACTORIES (SEASON 2012 - 2013)

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	186485	-	-	249965	131869	110030	-	-	167188	132736	96346	-	-	89944
Refined % total sugar	47.06	-	-	-	80.62	-	-	-	-	-	-	-	-	-
Moisture all sugar	0.04	-	-	0.09	0.02	0.07	-	-	0.07	0.18	0.09	-	-	0.07
Pol all sugar	99.97	-	-	99.44	99.83	99.39	-	-	99.38	99.34	99.40	-	-	99.43
Tons cane crushed total	1556390			2075805	1189868	1029298			1464812	1164581	915110			906131
Tons cane crushed per tandem		1047159	1028646				782829	681983				291789	614343	
Season started on	26-Mar-2012	-	-	26-Mar-2012	15-Mar-2012	11-Apr-2012	-	-	3-May-2012	11-Apr-2012	12-Apr-2012	-	-	3-May-2012
Season completed on	22-Dec-2012	-	-	21-Dec-2012	23-Dec-2012	30-Dec-2012	-	-	1-Dec-2012	7-Dec-2012	28-Nov-2012	-	-	19-Dec-2012
Length of season (days)	271	-	-	270	283	263	-	-	212	240	230	-	-	230
TIME ACCOUNT														
Overall time efficiency %	88.12	79.54	77.55	78.55	78.40	72.46	72.77	69.88	71.36	71.99	64.12	49.69	64.50	57.23
Scheduled stops% gross available time	0.23	2.81	2.75	2.78	4.69	4.38	9.22	10.50	9.84	8.85	9.09	9.92	8.37	9.13
Lack of cane % gross available time	7.95	10.23	12.19	11.20	5.10	6.37	10.02	10.74	10.37	13.30	16.81	22.08	14.49	18.22
Other stops % gross available time	3.55	6.83	6.62	6.73	11.08	16.40	7.00	7.08	7.04	4.48	8.24	18.22	12.39	15.25
Foreign matter % gross available time	0.14	0.59	0.88	0.74	0.73	0.40	0.99	1.80	1.38	1.38	1.73	0.08	0.25	0.17
Lost time % available crush.time	3.87	7.90	7.87	7.89	12.38	18.45	8.78	9.20	8.98	5.85	11.39	26.83	16.11	21.05
Force majeure stops (hours)	524	560	582	571	134	55	374	521	448	474	421	0	0	0
THROUGHPUTS PER CRUSHING HOUR #														
Tons cane	277.60	223.00	228.58	442.06	227.86	227.88	226.15	216.06	370.65	305.95	279.18	110.23	172.58	257.85
Tons fibre in bagasse	38.96	31.04	31.75	61.47	31.12	31.80	36.61	34.86	59.90	50.58	45.59	18.84	30.64	45.23
Tons brix in mixed juice(adj.)	44.03	34.65	35.65	68.81	34.95	33.23	34.68	33.84	57.40	45.96	39.28	15.05	24.16	35.81
Tons sucrose in mixed juice(adj.)	37.82	30.02	30.80	59.54	30.07	28.27	29.17	28.54	48.35	39.29	33.64	12.73	20.43	30.28
Tons non-suc. in mixed juice(adj.)	6.21	4.62	4.85	9.27	4.88	4.96	5.51	5.30	9.05	6.67	5.64	2.31	3.73	5.53
Tons of sugar produced	33.26	-	-	53.23	25.25	24.36	-	-	42.30	34.87	29.39	-	-	25.59
COMPOSITION OF CANE CRUSHED														
Sucrose % cane	14.02	13.81	13.81	13.81	13.61	12.86	13.13	13.44	13.27	13.19	12.46	12.01	12.19	12.13
Pol % cane	13.86	13.67	13.69	13.68	13.47	12.70	13.06	13.36	13.20	13.14	12.35	11.91	12.08	12.03
Fibre % cane	14.04	13.92	13.90	13.91	13.75	14.46	16.18	16.14	16.16	16.53	17.37	17.38	17.60	17.53
Brix % cane	16.48	16.12	16.15	16.14	16.11	15.33	15.96	16.29	16.11	15.48	14.85	14.61	14.70	14.67
Ash % cane	1.47	1.46	1.46	1.46	1.45	1.94	3.73	3.90	3.81	2.12	2.42	2.60	2.85	2.77
ERC % cane	11.91	11.80	11.79	11.80	11.50	10.78	10.79	11.08	10.93	11.15	10.37	9.79	10.02	9.95
ERC % sucrose in cane	85.00	85.47	85.37	85.42	84.55	83.79	82.17	82.47	82.32	84.52	83.16	81.58	82.21	82.01
RV % cane	12.71	12.57	12.56	12.56	12.29	11.54	11.62	11.93	11.77	11.89	11.11	10.56	10.78	10.71
Merc % cane	11.92	11.74	11.72	11.73	11.49	10.76	10.60	10.90	10.74	11.06	10.28	9.67	9.92	9.84
EXTRACTION														
Extraction (sucrose based)	97.21	97.49	97.56	97.52	96.99	96.45	98.26	98.29	98.27	97.38	96.67	96.23	97.10	96.82
Corrected reduced extraction	96.72	97.04	97.12	97.08	96.41	96.04	98.34	98.34	98.34	97.55	96.98	96.81	97.62	97.37
Imbibition % fibre	373	334	304	319	328	333	347	395	369	391	291	266	300	289
Diffusion Rate Index	9	13	14	13	8	-	-	-	-	-	-	-	-	-
Preparation index	-	92	93	92	-	93	91	91	91	91	90	90	90	90
Pol factor	99.07	100.53	99.92	100.22	99.13	97.52	98.24	99.18	98.68	100.18	99.93	96.24	98.73	97.92
Brix factor	100.32	101.88	101.48	101.68	100.54	100.60	100.67	101.52	101.07	100.90	101.27	99.47	101.14	100.60
RECOVERIES														
Boiling house recovery (sucrose)	87.92	-	-	88.90	83.84	85.66	-	-	86.96	88.16	86.86	-	-	84.03
C R B	86.83	-	-	87.26	82.44	84.51	-	-	87.49	87.44	85.88	-	-	84.98
Overall recovery (sucrose)	85.47	-	-	86.69	81.31	82.62	-	-	85.46	85.85	83.97	-	-	81.36
Ton cane per ton sugar	8.35	-	-	8.30	9.02	9.35	-	-	8.76	8.77	9.50	-	-	10.07
Ton cane per ton 96° pol sugar	8.01	-	-	8.02	8.68	9.04	-	-	8.46	8.48	9.17	-	-	9.73
Value Recovery %	100.20	-	-	100.60	96.50	97.79	-	-	102.42	100.62	99.77	-	-	98.80
Crystal Recovery Efficiency (XRE)	103.42	-	-	104.75	99.68	101.36	-	-	108.49	105.12	104.51	-	-	103.09
BALANCES														
Sucrose lost % sucrose in cane														
- lost in bagasse	2.79	-	-	2.48	3.01	3.55	-	-	1.73	2.62	3.33	-	-	3.18
- lost in filter cake	-	-	-	-	0.11	0.30	-	-	-	-	1.43	-	-	-
- lost in final molasses	10.48	-	-	8.79	11.13	10.41	-	-	10.97	9.12	8.70	-	-	12.55
- undetermined losses	1.26	-	-	2.04	4.44	3.12	-	-	1.85	2.41	2.58	-	-	2.91
Non sucrose ratio	1.01	-	-	1.02	1.04	1.01	-	-	1.01	0.94	1.03	-	-	1.09
Fructose ratio FM/MJ	0.82	-	-	0.77	0.80	0.71	-	-	0.68	0.65	0.69	-	-	0.82
Glucose ratio FM/MJ	0.77	-	-	0.60	0.73	0.58	-	-	0.58	0.62	0.58	-	-	0.79

* Cane diffuser

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2012/13 season's throughputs, for factories with double tandems, were calculated using concurrent crushing hours.

TABLE A1 (continued)
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SOUTH AFRICAN FACTORIES (SEASON 2012 - 2013)

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	-	-	119494	168666	90941	153950	-	-	186040	90044	1973698
Refined % total sugar	-	-	100.00	100.00	-	-	-	-	-	-	24.43
Moisture all sugar	-	-	0.02	0.02	0.06	0.06	-	-	0.10	0.06	0.07
Pol all sugar	-	-	99.93	99.93	99.52	99.64	-	-	99.44	99.40	99.59
Tons cane crushed total			1109374	1425584	746706	1252853			1668931	772576	17278020
Tons cane crushed per tandem	321565	787809					783711	885220			
Season started on	-	-	12-Apr-2012	14-Mar-2012	5-Mar-2012	14-Mar-2012	-	-	11-Apr-2012	24-Apr-2012	5-Mar-2012
Season completed on	-	-	14-Nov-2012	19-Dec-2012	20-Dec-2012	15-Dec-2012	-	-	19-Dec-2012	24-Nov-2012	30-Dec-2012
Length of season (days)	-	-	216	280	290	276	-	-	252	214	254
TIME ACCOUNT											
Overall time efficiency %	64.48	82.52	73.52	80.49	83.33	80.32	76.71	84.18	80.51	70.59	75.70
Scheduled stops% gross available time	3.35	4.00	3.68	5.57	5.28	4.71	3.75	4.37	4.06	6.27	5.43
Lack of cane % gross available time	29.27	9.14	19.18	6.78	3.30	10.26	16.68	7.52	12.03	18.48	10.90
Other stops % gross available time	2.87	4.05	3.46	6.75	7.25	4.20	2.08	3.20	2.65	4.14	7.29
Foreign matter % gross available time	0.03	0.29	0.16	0.42	0.83	0.51	0.79	0.73	0.76	0.52	0.68
Lost time % available crush.time	4.26	4.68	4.50	7.74	8.01	4.97	2.64	3.66	3.18	5.53	8.78
Force majeure stops (hours)	31	9	20	14	28	60	298	124	211	63	3023
THROUGHPUTS PER CRUSHING HOUR #											
Tons cane	96.74	184.34	252.19	264.70	129.50	238.05	178.73	178.10	333.31	215.67	269.99
Tons fibre in bagasse	15.76	28.76	39.85	36.46	17.80	35.89	30.08	29.97	56.09	34.40	40.91
Tons brix in mixed juice(adj.)	14.12	26.43	36.34	41.58	19.92	37.49	26.14	26.17	48.86	32.70	40.89
Tons sucrose in mixed juice(adj.)	12.15	22.80	31.33	36.86	17.52	33.19	22.63	22.67	42.33	28.42	35.31
Tons non-suc. in mixed juice(adj.)	1.97	3.63	5.01	4.72	2.39	4.31	3.51	3.49	6.54	4.28	5.58
Tons of sugar produced	-	-	27.16	31.32	15.77	29.25	-	-	37.15	25.14	30.84
COMPOSITION OF CANE CRUSHED											
Sucrose % cane	12.86	12.75	12.78	14.38	14.09	14.35	12.99	13.05	13.02	13.55	13.46
Pol % cane	12.75	12.61	12.65	14.22	13.98	14.27	12.93	13.00	12.97	13.54	13.35
Fibre % cane	16.54	16.47	16.49	14.76	13.92	15.24	17.06	17.09	17.07	15.92	15.41
Brix % cane	15.16	15.05	15.08	16.54	16.25	16.34	15.21	15.28	15.25	15.79	15.81
Ash % cane	6.12	4.34	4.86	2.12	1.24	2.64	-	-	-	1.98	2.31
ERC % cane	10.82	10.71	10.74	12.42	12.16	12.48	10.97	11.03	11.01	11.53	11.40
ERC % sucrose in cane	84.13	84.00	84.04	86.39	86.32	86.95	84.50	84.53	84.52	85.13	84.70
RV % cane	11.56	11.44	11.47	13.17	12.90	13.19	11.70	11.76	11.73	12.27	12.16
Merc % cane	10.77	10.65	10.68	12.47	12.18	12.49	10.95	11.01	10.98	11.43	11.35
EXTRACTION											
Extraction (sucrose based)	97.65	97.02	97.21	96.84	96.07	97.16	97.51	97.52	97.51	97.28	97.19
Corrected reduced extraction	97.81	97.11	97.32	96.18	95.26	96.89	97.75	97.75	97.75	97.31	97.06
Imbibition % fibre	304	324	318	265	306	376	314	322	318	370	333
Diffusion Rate Index	11	11	11	10	-	7	10	10	10	9	11
Preparation index	-	85.56	-	-	93	-	-	-	-	-	91
Pol factor	99.57	99.22	99.32	98.81	97.57	99.43	100.34	101.65	101.03	99.27	99.29
Brix factor	100.60	100.68	100.66	100.37	99.10	100.94	101.51	102.80	102.19	100.82	100.89
RECOVERIES											
Boiling house recovery (sucrose)	-	-	86.64	84.91	89.56	87.82	-	-	87.29	87.91	86.99
C R B	-	-	85.56	80.85	85.47	83.82	-	-	85.31	85.94	85.44
Overall recovery (sucrose)	-	-	84.22	82.22	86.04	85.33	-	-	85.12	85.53	84.55
Ton cane per ton sugar	-	-	9.28	8.45	8.21	8.14	-	-	8.97	8.58	8.75
Ton cane per ton 96° pol sugar	-	-	8.92	8.12	7.92	7.84	-	-	8.66	8.29	8.44
Value Recovery %	-	-	100.47	96.02	98.90	97.96	-	-	100.07	99.71	99.35
Crystal Recovery Efficiency (XRE)	-	-	104.53	98.26	102.15	100.64	-	-	103.66	103.97	103.14
BALANCES											
Sucrose lost % sucrose in cane	-	-	2.79	3.16	3.93	2.84	-	-	2.49	2.72	2.81
- lost in bagasse	-	-	0.36	1.44	0.22	0.13	-	-	0.16	-	0.28
- lost in filter cake	-	-	10.54	10.24	8.70	9.03	-	-	10.28	9.83	10.02
- undetermined losses	-	-	2.09	2.93	1.11	2.67	-	-	1.95	1.93	2.35
Non sucrose ratio	-	-	1.04	1.15	0.97	1.07	-	-	1.02	1.02	1.03
Fructose ratio FM/MJ	-	-	0.63	0.87	0.65	0.80	-	-	0.77	0.73	0.75
Glucose ratio FM/MJ	-	-	0.45	0.74	0.34	0.53	-	-	0.69	0.61	0.63

* Cane diffuser

2012/13 season's throughputs, for factories with double tandems, were calculated using concurrent crushing hours.

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 2012 - 2013)

SYMBOLS OF FACTORIES	MH-A *	MH-B	MH-AVE	UB-A *	UB-B	UB-AVE	SM	NH *	DW *	HV-A *	HV-B *	HV-AVE
TONS SUGAR MADE AND ESTIMATED	-	-	192700	-	-	232723	232843	177108	122386	-	-	228083
Refined % total sugar	-	-	69.13	-	-	33.00	-	17.55	5.54	-	-	-
Moisture % all sugar	-	-	0.03	-	-	0.15	0.09	0.03	0.05	-	-	0.07
Pol % all sugar	-	-	98.97	-	-	99.35	99.33	99.68	99.25	-	-	99.28
Tons cane crushed total			1589188			2165058	1894224	1552905	907830			1906156
Tons cane crushed per tandem	686856	902332		807945	1357113					940495	965661	
Season started on	-	-	12-Apr-2012	-	-	17-Apr-2012	13-Apr-2012	5-Apr-2012	13-Apr-2012	-	-	24-Apr-2012
Season completed on	-	-	23-Jan-2013	-	-	9-Jan-2013	24-Jan-2013	30-Nov-2012	4-Dec-2012	-	-	12-Dec-2012
Length of season (days)	-	-	286	-	-	267	286	239	235	-	-	232
TIME ACCOUNT												
Overall time efficiency %	77.89	80.14	79.00	78.31	86.39	82.36	71.04	85.70	89.41	84.82	84.80	84.81
Scheduled stops% gross available time	6.81	6.42	6.62	2.61	2.95	2.78	4.91	3.87	3.59	4.75	4.93	4.84
Lack of cane % gross available time	15.08	13.21	14.16	17.43	9.40	13.40	13.96	5.72	2.40	1.21	3.11	2.17
Other stops % gross available time	0.19	0.18	0.19	0.85	1.17	1.01	9.53	3.98	4.47	9.06	6.99	8.02
Foreign matter % gross available time	0.03	0.04	0.04	0.80	0.09	0.44	0.57	0.73	0.12	0.16	0.17	0.17
Lost time % available crush.time	0.25	0.23	0.24	1.07	1.33	1.21	11.83	4.44	4.76	9.65	7.61	8.64
Force majeure stops (hours)	3	0	1	62	38	50	0	1	3	0	37	18
THROUGHPUTS PER CRUSHING HOUR #												
Tons cane	128.57	169.93	297.48	165.07	250.05	398.92	398.56	316.76	184.93	206.74	210.68	415.87
Tons fibre in bagasse	16.83	24.47	41.15	21.61	31.89	51.37	51.45	43.42	26.81	31.14	31.87	62.77
Tons brix in mixed juice	20.27	27.01	47.11	19.27	43.80	61.18	61.72	47.47	31.16	31.97	33.62	65.34
Tons pol in mixed juice	17.45	23.25	40.55	16.20	36.60	51.21	53.70	41.06	27.27	27.60	28.97	56.36
Tons non-pol. in mixed juice	2.82	3.77	6.56	3.06	7.20	9.97	8.02	6.41	3.88	4.37	4.65	8.98
Tons of sugar produced	-	-	36.07	-	-	42.88	48.99	36.13	24.93	-	-	49.76
COMPOSITION OF CANE CRUSHED												
Pol % cane	14.04	14.30	14.19	10.26	15.03	13.25	14.04	13.71	15.19	13.84	14.19	14.02
Fibre % cane	14.07	14.86	14.52	13.73	13.71	13.72	14.24	14.04	14.59	15.22	15.30	15.26
Brix % cane	16.51	16.82	16.68	12.48	18.30	16.13	16.37	16.10	17.74	16.28	16.71	16.50
Ash % cane	-	-	-	-	-	-	1.37	4.08	-	-	-	-
ERC % cane	11.93	12.15	12.05	8.40	12.46	10.94	12.01	11.65	13.00	11.73	12.02	11.88
ERC % pol in cane	85.00	84.93	84.96	81.86	82.87	82.58	85.56	85.02	85.57	84.76	84.69	84.72
EXTRACTION												
Extraction (pol based)	96.65	95.63	96.07	95.68	97.36	96.87	95.94	94.57	97.08	96.46	96.91	96.69
Corrected reduced extraction	95.78	94.99	95.30	95.47	96.42	96.11	94.82	93.56	96.54	96.21	96.66	96.44
Imbibition % fibre	401	390	394	157	492	365	312	240	371	315	314	315
Diffusion Rate Index	-	-	-	11	11	11	-	8	8	-	-	-
Preparation index	-	-	-	-	-	-	91	-	-	92	92	92
Pol factor	97.39	100.79	99.31	76.34	113.42	99.46	99.06	93.94	100.04	94.60	96.92	95.77
Brix factor	100.01	103.21	101.82	78.00	114.78	101.02	99.60	95.64	101.90	96.00	98.27	97.15
RECOVERIES												
Boiling house recovery (pol based)	-	-	88.04	-	-	83.18	90.63	87.70	90.73	-	-	87.65
Overall recovery (pol based)	-	-	84.57	-	-	80.58	86.95	82.94	88.08	-	-	84.75
Ton cane per ton sugar	-	-	8.25	-	-	9.30	8.14	8.77	7.42	-	-	8.36
Ton cane per ton 96° pol sugar	-	-	8.00	-	-	8.99	7.86	8.44	7.17	-	-	8.08
BALANCES												
Pol lost % pol in cane	-	-	3.93	-	-	3.13	4.06	5.43	2.92	-	-	3.31
- lost in bagasse	-	-	0.08	-	-	0.13	0.29	0.17	0.05	-	-	-
- lost in filter cake	-	-	7.74	-	-	11.78	7.41	9.40	7.06	-	-	8.01
- undetermined losses	-	-	3.67	-	-	4.38	1.30	2.06	1.89	-	-	3.94
Non pol ratio	-	-	1.07	-	-	1.16	1.03	1.00	0.94	-	-	0.98

* Cane diffuser

2012/13 season's throughputs, for factories with double tandems, were calculated using concurrent crushing hours.

TABLE A2 (continued)
CANE CRUSHED AND SUGAR MADE, CANE COMPOSITION, THROUGHPUTS AND TIME ACCOUNTS, PERFORMANCES AND LOSSES
SWAZILAND, MALAWI, ZIMBABWE, ZAMBIA, TANZANIA AND MOZAMBIQUE FACTORIES. (SEASON 2012 - 2013)

SYMBOLS OF FACTORIES	TR-A *	TR-B	TR-AVE	NK-A	NK-B	NK-AVE	MW *	RU *	MA *	MB *	XN *
TONS SUGAR MADE AND ESTIMATED	-	-	247055	-	-	403867	57996	71741	84546	60243	176414
Refined % total sugar	-	-	-	-	-	9.52	-	-	-	-	-
Moisture % all sugar	-	-	-	-	-	0.08	0.12	0.17	0.67	0.12	0.16
Pol % all sugar	-	-	99.15	-	-	99.47	99.15	99.20	99.23	99.07	99.10
Tons cane crushed total			2022901			3246082	597565	711580	719860	513398	1430885
Tons cane crushed per tandem	1455591	567310		1736225	1509857						
Season started on	-	-	5-Apr-2012	-	-	28-Mar-2012	20-May-2012	8-Jun-2012	2-May-2012	9-May-2012	15-May-2012
Season completed on	-	-	16-Dec-2012	-	-	10-Dec-2012	24-Feb-2013	19-Feb-2013	11-Nov-2012	28-Oct-2012	2-Dec-2012
Length of season (days)	-	-	255	-	-	257	280	256	193	172	201
TIME ACCOUNT											
Overall time efficiency %	83.77	71.38	78.10	84.94	83.54	84.24	80.94	81.75	80.41	80.56	80.83
Scheduled stops% gross available time	3.52	6.89	5.06	3.28	2.73	3.00	3.56	3.95	2.87	3.45	3.74
Lack of cane % gross available time	0.77	6.25	3.28	4.41	5.90	5.16	8.08	3.95	13.78	10.31	8.15
Other stops % gross available time	11.83	14.55	13.08	7.37	7.82	7.59	7.16	10.22	0.49	5.37	7.27
Foreign matter % gross available time	0.11	0.92	0.49	0.00	0.01	0.01	0.26	0.14	2.45	0.31	0.01
Lost time % available crush.time	12.38	16.93	14.34	7.98	8.56	8.27	8.12	11.11	0.61	6.25	8.25
Force majeure stops (hours)	0	0	0	104	160	132	22	21	3	0	0
THROUGHPUTS PER CRUSHING HOUR #											
Tons cane	281.95	152.77	391.84	343.42	303.07	642.07	110.26	142.35	184.24	153.89	368.36
Tons fibre in bagasse	38.70	20.96	53.78	49.43	40.25	89.09	15.88	20.91	21.89	21.58	50.84
Tons brix in mixed juice	45.41	24.11	62.75	54.73	49.75	103.75	14.68	19.88	28.19	23.29	60.03
Tons pol in mixed juice	39.17	20.77	54.11	47.27	43.04	89.68	12.19	16.54	24.47	20.01	51.40
Tons non-pol. in mixed juice	6.23	3.34	8.63	7.46	6.71	14.07	2.49	3.34	3.72	3.28	8.64
Tons of sugar produced	-	-	47.85	-	-	79.88	10.70	14.35	21.64	18.06	45.41
COMPOSITION OF CANE CRUSHED											
Pol % cane	14.37	14.15	14.31	14.51	14.87	14.68	11.92	12.44	13.80	13.54	14.40
Fibre % cane	14.01	14.08	14.03	13.87	14.13	13.99	15.61	15.78	12.63	14.95	13.79
Brix % cane	17.07	16.93	17.03	17.91	17.50	17.72	14.75	15.33	16.23	17.02	17.19
Ash % cane	0.93	0.93	0.93	-	-	-	3.26	2.75	1.44	1.71	1.35
ERC % cane	12.13	11.87	12.06	11.87	12.66	12.23	9.62	10.09	11.76	10.86	12.11
ERC % pol in cane	84.40	83.88	84.25	81.78	85.09	83.34	80.72	81.11	85.22	80.15	84.12
EXTRACTION											
Extraction (pol based)	96.69	96.04	96.51	94.86	95.48	95.15	92.76	93.41	96.22	96.00	96.88
Corrected reduced extraction	95.96	95.21	95.75	93.97	94.19	94.07	92.61	93.26	94.71	95.44	96.20
Imbibition % fibre	352	332	346	291	296	293	185	240	251	239	373
Diffusion Rate Index	-	-	-	-	-	-	-	-	-	-	-
Preparation index	91	91	91	87	86	86	83	80	89	90	91
Pol factor	99.72	97.93	99.22	97.16	100.06	98.51	91.90	94.73	96.13	99.85	99.83
Brix factor	100.96	100.02	100.69	102.64	100.67	101.73	94.01	96.69	97.22	107.59	101.61
RECOVERIES											
Boiling house recovery (pol based)	-	-	87.68	-	-	88.61	87.02	86.09	87.74	89.41	87.57
Overall recovery (pol based)	-	-	84.62	-	-	84.32	80.72	80.42	84.42	85.84	84.84
Ton cane per ton sugar	-	-	8.19	-	-	8.04	10.30	9.92	8.51	8.52	8.11
Ton cane per ton 96° pol sugar	-	-	7.93	-	-	7.76	9.98	9.60	8.24	8.26	7.86
BALANCES											
Pol lost % pol in cane	-	-	3.49	-	-	4.85	7.24	6.59	3.78	4.00	3.12
- lost in bagasse	-	-	0.28	-	-	0.37	0.48	0.50	0.39	0.19	-
- lost in filter cake	-	-	7.47	-	-	8.20	10.19	10.62	7.76	8.79	7.60
- undetermined losses	-	-	4.14	-	-	2.26	1.37	1.87	3.65	1.19	4.44
Non pol ratio	-	-	1.00	-	-	1.06	0.92	1.03	0.97	0.97	0.96

* Cane diffuser

2012/13 season's throughputs, for factories with double tandems, were calculated using concurrent crushing hours.

TABLE B1
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SOUTH AFRICAN FACTORIES (SEASON 2012 - 2013)

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	1.31	1.29	1.23	1.26	1.37	1.51	0.66	0.66	0.66	1.04	1.18	1.22	0.93	1.02
Moisture % bagasse	50.96	46.25	47.35	46.80	51.76	51.32	51.48	51.91	51.68	48.92	51.37	51.38	51.57	51.51
Fibre % bagasse	46.95	51.58	50.63	51.10	45.67	46.21	46.73	46.31	46.53	49.72	46.42	46.05	46.60	46.43
Ash % bagasse	3.03	-	-	3.26	2.76	4.26	-	-	-	4.50	-	-	-	-
LCV (kJ per kg bagasse) #	7093	-	-	7912	6961	6781	-	-	-	7269	-	-	-	-
MIXED JUICE														
Mixed juice(adj.) % cane	122.46	119.45	114.75	117.12	114.97	116.32	121.78	129.20	125.23	131.65	112.37	108.34	115.65	113.30
Brix % mixed juice(adj.)	12.95	13.01	13.59	13.29	13.34	12.54	12.59	12.12	12.37	11.41	12.52	12.60	12.11	12.26
Sucrose purity (MJ adj.)	85.90	86.65	86.40	86.53	86.04	85.07	84.12	84.35	84.23	85.49	85.63	84.62	84.54	84.57
Apparent purity(MJ adj.)	84.73	85.75	85.60	85.62	85.01	83.89	83.69	83.84	83.57	85.04	84.64	83.89	83.79	82.41
Purity difference(MJ adj. - DAC)	-0.23	-0.18	-0.47	-0.32	0.32	-1.51	-0.19	-0.14	-0.17	-0.36	0.52	-0.36	-0.45	-0.42
(Glucose + fructose) % sucrose(MJ unadj)	5.44	-	-	4.93	5.24	5.80	-	-	5.09	4.50	5.28	-	-	5.79
Suspended solids % MJ(unadj.)	0.21	0.28	0.30	0.29	0.10	0.44	0.21	0.20	0.21	0.23	0.93	0.28	0.28	0.28
Pol/sucrose ratio (MJ unadj.)	0.9883	0.9895	0.9908	0.9901	0.9897	0.9873	0.9949	0.9939	0.9944	0.9959	0.9908	0.9913	0.9911	0.9912
CLARIFIED JUICE														
Brix % clarified juice	13.02	-	-	13.14	13.06	12.34	-	-	12.17	11.38	11.67	-	-	12.61
Apparent purity (%)	85.14	-	-	85.22	84.97	82.50	-	-	82.37	84.37	83.68	-	-	79.05
Purity difference(CJ - MJ)	0.41	-	-	-0.39	-0.03	-1.39	-	-	-1.20	-0.67	-0.96	-	-	-3.36
Average pH	7.0	-	-	7.1	7.1	7.0	-	-	7.2	7.0	7.1	-	-	7.1
CLARIFIER MUD														
Tons clarifier mud	69562	44359	44420	88779	7071	-	99059	83792	182851	90145	-	746	40067	40814
Pol % clarifier mud	11.34	11.21	11.30	11.26	10.54	-	10.23	10.22	10.23	9.94	-	9.83	10.97	10.95
Brix % clarifier mud	13.56	13.65	13.74	13.70	12.91	-	12.90	12.90	12.90	11.93	-	12.15	13.65	13.62
Insoluble solids % clarifier mud	5.95	8.30	8.10	8.20	4.93	-	2.22	2.31	2.26	4.10	-	5.93	7.69	7.66
FILTER CAKE														
Pol % filter cake	-	-	-	-	1.55	1.24	-	-	-	-	2.88	-	-	-
Moisture % filter cake	-	-	-	-	-	70.00	-	-	-	-	-	-	-	-
Filter cake % cane	-	-	-	-	-	3.10	-	-	-	-	6.16	-	-	-
Filter wash index	-	-	-	-	102.2	101.6	-	-	-	-	107.3	-	-	-
Purity difference(CJ - filtrate)	-	-	-	-	-	9.10	-	-	-	-	1.68	-	-	-
SYRUP														
Brix % syrup	68.06	-	-	66.53	66.12	55.59	-	-	62.80	66.42	64.11	-	-	68.20
Apparent purity (%)	84.66	-	-	84.69	84.88	83.15	-	-	82.70	84.30	84.06	-	-	80.84
Purity difference(Syrup - MJ)	-0.07	-	-	-0.93	-0.12	-0.74	-	-	-0.87	-0.74	-0.58	-	-	-1.57
Average pH	5.8	-	-	6.0	6.0	6.1	-	-	6.1	6.1	6.2	-	-	6.2
FINAL MOLASSES														
Refractometer brix	81.03	-	-	84.65	84.88	82.41	-	-	85.16	84.90	84.47	-	-	85.37
Pol/refractometer brix purity (%)	36.21	-	-	32.76	38.18	35.20	-	-	35.51	36.54	32.15	-	-	35.83
Sucrose/refractometer brix purity (%)	38.99	-	-	36.70	40.43	38.21	-	-	37.39	37.41	34.46	-	-	37.38
Conductivity ash %	12.19	-	-	15.35	12.39	12.45	-	-	14.31	13.95	15.40	-	-	13.13
(Glucose + fructose)/ash ratio	1.08	-	-	0.79	0.97	0.92	-	-	0.71	0.75	0.70	-	-	0.92
Fructose %	6.93	-	-	6.88	6.57	6.57	-	-	5.77	5.69	6.14	-	-	6.57
Glucose %	6.24	-	-	5.26	5.48	4.94	-	-	4.37	4.72	4.71	-	-	5.53
TPD based on molasses (made)	7.3	-	-	3.5	9.6	6.9	-	-	4.3	4.4	1.0	-	-	4.6
TPD based on mixed juice	8.0	-	-	4.6	10.6	8.4	-	-	5.8	5.6	3.2	-	-	5.2
Final molasses @ 85° brix % cane	4.43	-	-	3.89	4.41	4.12	-	-	4.58	3.78	3.70	-	-	4.79
Pol/sucrose ratio	0.9288	-	-	0.8926	0.9444	0.9213	-	-	0.9498	0.9767	0.9331	-	-	0.9585

* Cane diffuser

Lower Calorific Value (LCV) = 18260.00 - 31.14 Bx % bagasse - 207.01 moisture % bagasse - 182.60 ash % bagasse

TABLE B1 (continued)
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SOUTH AFRICAN FACTORIES (SEASON 2012 - 2013)

SYMBOLS OF FACTORIES	GH-A *	GH-B	GH-AVE	NB	UC *	ES *	SZ-A *	SZ-B *	SZ-AVE	UK *	INDUSTRY
FINAL BAGASSE											
Pol % bagasse	0.88	1.16	1.08	1.51	1.80	1.30	0.98	0.96	0.97	1.12	1.19
Moisture % bagasse	50.64	49.98	50.18	51.50	52.58	49.91	47.15	48.36	47.80	49.40	50.18
Fibre % bagasse	47.69	47.83	47.79	45.72	44.60	48.19	51.08	49.88	50.44	48.67	47.73
Ash % bagasse	-	-	4.15	4.54	3.08	5.70	-	-	4.16	4.84	3.15
LCV (kJ per kg bagasse) #	-	-	7052	6682	6725	6828	-	-	7551	7090	7153
MIXED JUICE											
Mixed juice(adj.) % cane	115.43	117.85	117.15	106.41	111.26	125.46	119.85	120.38	120.13	126.45	118.80
Brix % mixed juice(adj.)	12.64	12.17	12.30	14.76	13.83	12.55	12.20	12.20	12.20	11.99	12.75
Sucrose purity (MJ adj.)	86.08	86.26	86.21	88.66	87.98	88.51	86.58	86.65	86.62	86.92	86.35
Apparent purity(MJ adj.)	85.29	85.30	85.29	87.54	87.29	87.99	86.20	86.30	85.79	86.73	85.43
Purity difference(MJ adj. - DAC)	0.35	0.30	0.31	0.33	-0.10	-0.61	0.19	0.26	0.23	-0.18	-0.15
(Glucose + fructose) % sucrose(MJ unadj.)	-	-	4.84	3.95	3.72	3.44	-	-	4.32	3.63	4.72
Suspended solids % MJ(unadj.)	0.22	0.74	0.59	0.93	0.15	0.13	0.19	0.22	0.20	0.19	0.33
Pol/sucrose ratio (MJ unadj.)	0.9909	0.9888	0.9894	0.9885	0.9921	0.9946	0.9956	0.9959	0.9958	0.9993	0.9918
CLARIFIED JUICE											
Brix % clarified juice	-	-	11.87	14.29	14.19	12.71	-	-	11.70	11.95	12.60
Apparent purity (%)	-	-	86.65	88.21	85.99	87.85	-	-	85.51	85.88	85.52
Purity difference(CJ - MJ)	-	-	1.36	0.66	-1.30	-0.15	-	-	-0.28	-0.85	-0.48
Average pH	-	-	7.1	7.1	7.0	7.2	-	-	7.0	7.0	7.1
CLARIFIER MUD											
Tons clarifier mud	-	-	-	-	-	-	-	-	-	31133	510356
Pol % clarifier mud	-	-	-	-	-	-	-	-	-	10.12	10.56
Brix % clarifier mud	-	-	-	-	-	-	-	-	-	12.00	12.96
Insoluble solids % clarifier mud	-	-	-	-	-	-	-	-	-	6.90	4.87
FILTER CAKE											
Pol % filter cake	-	-	1.10	2.92	3.62	1.69	-	-	1.77	-	2.26
Moisture % filter cake	-	-	70.00	75.00	71.13	73.37	-	-	66.00	-	70.05
Filter cake % cane	-	-	4.16	7.10	0.85	1.10	-	-	1.20	-	1.66
Filter wash index	-	-	103.6	103.3	97.4	98.8	-	-	104.3	-	101.1
Purity difference(CJ - filtrate)	-	-	1.79	0.84	5.42	1.65	-	-	1.53	-	3.00
SYRUP											
Brix % syrup	-	-	64.45	70.31	65.50	65.53	-	-	65.69	68.11	65.65
Apparent purity (%)	-	-	85.60	87.46	86.93	87.83	-	-	86.05	85.75	84.96
Purity difference(Syrup - MJ)	-	-	0.31	-0.08	-0.36	-0.17	-	-	0.26	-0.98	-0.48
Average pH	-	-	6.0	6.0	6.2	6.2	-	-	5.9	5.9	6.1
FINAL MOLASSES											
Refractometer brix	-	-	84.10	79.03	81.95	82.09	-	-	81.53	83.07	83.10
Pol/refractometer brix purity (%)	-	-	37.87	39.29	38.69	38.07	-	-	38.24	39.21	36.53
Sucrose/refractometer brix purity (%)	-	-	39.39	41.68	41.33	40.41	-	-	39.71	40.07	38.77
Conductivity ash %	-	-	13.93	10.69	11.75	11.68	-	-	11.56	13.02	12.99
(Glucose + fructose)/ash ratio	-	-	0.58	0.94	0.61	0.71	-	-	0.85	0.65	0.82
Fructose %	-	-	4.98	5.92	5.04	5.35	-	-	5.70	4.97	6.05
Glucose %	-	-	3.11	4.10	2.16	2.96	-	-	4.18	3.44	4.54
TPD based on molasses (made)	-	-	4.7	9.7	7.3	7.2	-	-	7.1	6.3	6.1
TPD based on mixed juice	-	-	7.9	11.0	10.5	9.0	-	-	8.4	7.9	7.5
Final molasses @ 85° brix % cane	-	-	4.02	4.16	3.49	3.77	-	-	3.97	3.91	4.09
Pol/sucrose ratio	-	-	0.9615	0.9427	0.9363	0.9421	-	-	0.9631	0.9785	0.9424

* Cane diffuser

Lower Calorific Value (LCV) = 18260.00 - 31.14 Bx % bagasse - 207.01 moisture % bagasse - 182.60⁴⁵ ash % bagasse

TABLE B2
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SWAZILAND, MALAWI, ZIMBABWE, ZAMBIA, TANZANIA AND MOZAMBIQUE FACTORIES
(SEASON 2012 - 2013)

SYMBOLS OF FACTORIES	MH-A *	MH-B	MH-AVE	UB-A *	UB-B	UB-AVE	SM	NH *	DW *	HV-A *	HV-B *	HV-AVE
FINAL BAGASSE												
Pol % bagasse	1.68	1.90	1.81	1.56	1.38	1.45	1.98	2.41	1.49	1.54	1.42	1.48
Moisture % bagasse	50.58	53.49	52.35	51.01	52.86	52.18	52.06	51.93	48.13	50.03	48.42	49.23
Fibre % bagasse	46.75	43.71	44.91	46.15	44.40	45.05	44.86	44.45	48.86	47.41	49.12	48.26
Bagasse % cane	27.99	32.94	30.80	28.36	28.72	28.59	28.78	30.84	29.67	31.77	30.79	31.27
Ash % bagasse	-	-	-	-	-	4.62	3.25	-	-	-	-	-
LCV (kJ per kg bagasse) #	-	-	-	-	-	6529	6793	-	-	-	-	-
MIXED JUICE												
Mixed juice % cane	124.47	123.19	123.74	92.17	134.04	118.41	111.51	102.05	124.10	115.66	116.73	116.20
Brix % mixed juice	12.66	12.90	12.80	12.66	13.07	12.95	13.89	14.69	13.58	13.37	13.67	13.52
Apparent purity (%)	86.08	86.06	86.07	84.10	83.55	83.71	87.01	86.49	87.53	86.34	86.17	86.25
Purity difference(MJ - DAC)	-1.24	-1.04	-1.12	0.10	0.43	0.26	0.75	-0.18	0.30	0.05	0.09	0.07
Suspended solids % mixed juice	0.79	0.38	0.56	0.70	0.75	0.74	1.19	0.32	0.07	0.14	0.15	0.14
CLARIFIED JUICE												
Brix % clarified juice	-	-	12.47	-	-	13.19	13.98	14.74	13.41	-	-	13.54
Apparent purity (%)	-	-	86.24	-	-	83.18	85.63	87.13	87.28	-	-	86.04
Purity difference(CJ - MJ)	-	-	0.17	-	-	-0.53	-1.38	0.64	-0.26	-	-	-0.21
Average pH	-	-	7.0	-	-	7.0	6.9	7.1	7.2	-	-	6.8
CLARIFIER MUD												
Tons clarifier mud	-	-	-	-	7664	7664	-	-	-	57444	59749	117193
Pol % clarifier mud	-	-	-	-	9.58	9.58	-	-	-	11.61	11.66	11.63
Brix % clarifier mud	-	-	-	-	12.27	12.27	-	-	-	13.81	13.83	13.82
Insoluble solids % clarifier mud	-	-	-	-	8.91	8.91	-	-	-	2.77	2.91	2.84
FILTER CAKE												
Pol % filter cake	-	-	0.48	-	-	2.17	0.78	1.24	0.76	-	-	-
Moisture % filter cake	-	-	70.78	-	-	-	78.26	-	71.66	-	-	-
Filter cake % cane	-	-	2.42	-	-	0.82	5.26	1.84	1.00	-	-	-
Filter wash index	-	-	102.6	-	-	98.2	99.3	99.6	101.3	-	-	-
Purity difference(CJ - filtrate)	-	-	2.05	-	-	0.74	2.40	6.13	2.15	-	-	-
SYRUP												
Brix % syrup	-	-	63.06	-	-	65.97	68.39	59.88	67.60	-	-	60.42
Apparent purity (%)	-	-	87.15	-	-	82.66	85.93	86.88	87.37	-	-	86.18
Purity difference(Syrup - MJ)	-	-	1.08	-	-	-1.05	-1.08	0.39	-0.16	-	-	-0.07
Average pH	-	-	5.8	-	-	5.6	6.0	5.9	6.1	-	-	6.4
FINAL MOLASSES												
Refractometer brix	-	-	82.65	-	-	85.95	79.14	80.61	84.98	-	-	85.37
Pol/refractometer brix purity	-	-	32.89	-	-	35.33	34.29	39.26	36.34	-	-	35.53
Purity difference(true-target)	-	-	-	-	-	-	-	-	-	-	-	-
Reducing sugars % \$	-	-	-	-	-	-	17.92	-	-	-	-	17.12
Sulphated ash %	-	-	-	-	-	-	12.53	-	-	-	-	14.16
Reducing sugars/ash ratio	-	-	-	-	-	-	1.43	-	-	-	-	1.21
Final molasses at 85° brix % cane	-	-	3.93	-	-	5.20	3.57	3.86	3.47	-	-	3.72

* Cane diffuser

Lower Calorific Value (LCV) = 18260.00 - 31.14 Bx % bagasse - 207.01 moisture % bagasse - 182.60 ash % bagasse

\$ Lane & Eynon

TABLE B2 (continued)
ANALYSIS OF BAGASSE, JUICES, FILTER CAKE, SYRUP AND FINAL MOLASSES
SWAZILAND, MALAWI, ZIMBABWE, ZAMBIA, TANZANIA AND MOZAMBIQUE FACTORIES
(SEASON 2012 - 2013)

SYMBOLS OF FACTORIES	TR-A *	TR-B	TR-AVE	NK-A	NK-B	NK-AVE	MW	RU	MA	MB	XN
FINAL BAGASSE											
Pol % bagasse	1.55	1.79	1.62	2.26	2.30	2.27	2.76	2.61	2.13	1.75	1.47
Moisture % bagasse	52.19	52.52	52.29	50.47	50.94	50.67	49.35	48.92	47.63	48.63	51.98
Fibre % bagasse	44.67	43.81	44.43	43.56	45.35	44.34	46.05	46.75	48.57	45.29	45.12
Bagasse % cane	30.73	31.31	30.89	33.04	29.28	31.29	31.27	31.42	24.47	30.96	30.59
Ash % bagasse	-	-	-	-	-	-	5.84	3.63	2.51	3.03	-
LCV (kJ per kg bagasse) #	-	-	-	-	-	-	6835	7336	7822	7451	-
MIXED JUICE											
Mixed juice % cane	117.86	114.19	116.83	109.62	110.01	109.80	95.35	103.85	105.39	102.54	121.67
Brix % mixed juice	13.66	13.82	13.71	14.54	14.92	14.72	13.96	13.45	14.52	14.76	13.40
Apparent purity (%)	86.27	86.15	86.24	86.36	86.52	86.44	83.05	83.18	86.80	85.90	85.61
Purity difference(MJ - DAC)	1.04	0.75	0.96	0.79	1.01	0.89	0.40	0.37	0.80	0.15	0.32
Suspended solids % mixed juice	0.25	0.32	0.27	0.22	0.77	0.47	1.27	1.06	0.71	0.90	0.54
CLARIFIED JUICE											
Brix % clarified juice	-	-	13.75	-	-	14.78	14.29	13.44	14.35	14.63	13.38
Apparent purity (%)	-	-	86.21	-	-	86.70	84.56	84.09	86.56	85.84	85.06
Purity difference(CJ - MJ)	-	-	-0.03	-	-	0.27	1.51	0.92	-0.24	-0.06	-0.55
Average pH	-	-	7.0	-	-	6.7	6.9	7.0	7.0	7.0	7.6
CLARIFIER MUD											
Tons clarifier mud	4785	-	4785	140540	-	140540	-	-	-	-	157014
Pol % clarifier mud	11.64	-	11.64	10.69	-	10.69	-	-	-	-	11.34
Brix % clarifier mud	13.96	-	13.96	12.55	-	12.55	-	-	-	-	13.56
Insoluble solids % clarifier mud	2.95	-	2.95	9.63	-	9.63	-	-	-	-	6.60
FILTER CAKE											
Pol % filter cake	-	-	1.59	-	-	2.62	1.40	1.33	1.41	0.65	-
Moisture % filter cake	-	-	-	-	-	-	-	-	71.20	-	-
Filter cake % cane	-	-	2.50	-	-	2.08	4.10	4.71	3.79	4.00	-
Filter wash index	-	-	99.7	-	-	99.6	97.7	100.1	101.2	100.9	-
Purity difference(CJ - filtrate)	-	-	2.14	-	-	1.02	2.97	2.36	0.78	0.06	-
SYRUP											
Brix % syrup	-	-	65.56	-	-	65.82	63.15	63.94	56.30	67.87	64.78
Apparent purity (%)	-	-	85.77	-	-	86.41	84.19	82.38	85.94	86.04	85.59
Purity difference(Syrup - MJ)	-	-	-0.47	-	-	-0.03	1.14	-0.80	-0.86	0.14	-0.02
Average pH	-	-	6.2	-	-	6.2	6.4	6.6	6.0	6.3	6.3
FINAL MOLASSES											
Refractometer brix	-	-	86.47	-	-	85.91	81.64	84.52	82.23	84.74	84.14
Pol/refractometer brix purity	-	-	33.78	-	-	34.72	37.61	35.89	35.42	37.62	33.62
Purity difference(true-target)	-	-	-	-	-	-	-	-	-	-	-
Reducing sugars % \$	-	-	-	-	-	-	-	-	-	-	-
Sulphated ash %	-	-	-	-	-	-	-	-	-	-	-
Reducing sugars/ash ratio	-	-	-	-	-	-	-	-	-	-	-
Final molasses at 85° brix % cane	-	-	3.72	-	-	4.08	3.80	4.33	3.56	3.72	3.83

* Cane diffuser

Lower Calorific Value (LCV) = 18260.00 - 31.14 Bx % bagasse - 207.01 moisture % bagasse - 182.60 ash % bagasse

\$ Lane & Eynon

TABLE C1
MASSECUITES, EXHAUSTIONS, CLARIFYING AGENTS AND ADDITIONAL FUELS.
SOUTH AFRICAN FACTORIES (SEASON 2012-2013)

SYMBOLS OF FACTORIES	ML	KM	PG	UF	FX	AK	DL	MS	GH	NB	UC	ES	SZ	UK	INDUSTRY
A - MASSECUITE															
m ³ per ton brix in mixed juice(adj.)	1.15	-	1.33	0.94	0.96	1.03	0.98	1.16	1.11	1.22	1.04	1.03	1.18	1.10	0.96
Refractometer brix of massecuite	92.63	92.05	92.31	92.36	93.00	92.82	92.81	92.69	92.53	91.83	92.23	92.41	92.35	92.64	92.48
Purity of massecuite (%)	86.55	84.58	86.44	84.73	84.56	84.23	84.82	81.37	87.55	87.26	87.60	87.65	86.33	86.24	85.96
Purity of A - molasses (%)	73.01	65.84	73.09	69.30	66.34	65.57	66.12	65.52	72.31	72.83	72.15	72.64	70.38	68.99	70.29
Purity drop (%)	13.54	18.74	13.35	15.43	18.22	18.66	18.70	15.85	15.24	14.42	15.45	15.01	15.95	17.25	15.67
Exhaustion (%)	57.96	64.86	57.39	59.32	64.01	64.34	65.07	56.49	62.86	60.84	63.33	62.59	62.38	64.51	61.36
Pty of A-massecuite - purity syrup (%)	1.89	-0.11	1.56	1.58	1.86	-0.07	0.76	0.53	1.95	-0.20	0.67	-0.18	0.28	0.49	1.01
Pty of remelt (%)	86.53	81.74	85.72	86.13	87.50	83.69	84.42	84.93	85.75	85.85	87.21	86.80	86.90	84.98	85.47
B - MASSECUITE															
m ³ per ton brix in mixed juice(adj.)	0.58	-	0.48	0.37	0.32	0.37	0.31	0.27	0.46	0.59	0.37	0.39	0.45	0.46	0.38
Refractometer brix of massecuite	94.30	94.25	94.12	94.87	95.21	94.61	93.78	93.18	94.67	93.63	94.38	94.58	94.49	94.62	94.35
Purity of massecuite (%)	72.07	67.47	72.57	68.78	68.32	66.52	67.30	66.03	72.44	72.81	71.25	73.14	71.56	71.12	70.95
Purity of B - molasses (%)	52.25	44.72	53.55	47.11	44.25	47.19	45.58	48.18	49.01	51.02	50.77	50.58	48.80	51.40	49.71
Purity drop (%)	19.82	22.75	19.03	21.67	24.07	19.33	21.72	17.85	23.43	21.79	20.48	22.56	22.76	19.72	21.24
Exhaustion (%)	57.59	61.00	56.44	59.57	63.20	55.03	59.30	52.17	63.43	61.09	58.39	62.41	62.12	57.06	59.53
C - MASSECUITE															
m ³ per ton brix in mixed juice(adj.)	0.10	-	0.42	0.26	0.28	0.27	0.28	0.34	0.29	0.29	0.20	0.23	0.25	0.30	0.23
Refractometer brix of massecuite	96.64	96.75	97.28	96.88	96.77	96.34	96.35	95.53	97.26	95.63	97.75	96.98	96.00	97.50	96.62
Purity of massecuite (%)	56.45	52.22	56.31	54.72	53.68	55.30	53.02	55.29	54.35	58.00	54.62	55.94	55.64	56.91	55.50
Purity of C - molasses (%)	36.21	32.76	38.18	35.20	35.51	36.54	32.15	35.83	37.87	39.29	38.69	38.07	38.24	39.21	36.53
Crystal content (%)	30.66	28.00	28.53	29.18	27.27	28.48	29.63	28.97	25.80	29.47	25.39	27.98	27.05	28.38	28.88
Exhaustion (%)	56.21	55.43	52.08	55.05	52.49	53.46	58.01	54.85	48.80	53.14	47.56	51.58	50.64	51.15	53.85
TOTAL VOLUME ALL RAW MASSECUITES															
m ³ per ton brix in mixed juice(adj.)	1.83	-	2.23	1.57	1.56	1.67	1.57	1.77	1.87	2.10	1.61	1.65	1.88	1.86	1.57
WHITE SUGAR MASSECUITES															
Massecuite (kg sugar per m ³)	151	-	473	-	-	-	-	-	537	329	-	-	-	-	370
Tons limestone per 1000 tons white sugar	-	-	66.58	-	-	-	-	-	38.78	-	-	-	-	-	23.67
Tons coke per 1000 tons white sugar	-	-	7.56	-	-	-	-	-	-	-	-	-	-	-	1.41
Tons phosphoric acid per 1000 tons white sugar	-	-	-	-	-	-	-	-	-	1.92	-	-	-	-	0.57
Tons sulphur per 1000 tons white sugar	-	-	0.22	-	-	-	-	-	0.33	0.10	-	-	-	-	0.14
Phosphoric acid ppm mixed juice(unadj.)	-	-	-	-	-	-	-	-	-	-	39.00	31.28	6.98	6.84	4.87
Flocculant ppm mixed juice(unadj.)	3.47	3.75	4.48	12.34	2.23	4.06	0.96	2.94	3.13	19.53	4.01	6.76	5.32	1.35	5.44
Tons lime per 1000 tons cane	2.27	0.48	4.61	-	0.66	0.62	0.53	1.34	-	0.79	0.40	0.57	0.52	0.45	0.97
Enzyme (ppm sugar)	-	-	-	-	-	-	53.48	4.22	5.82	-	-	4.40	42.63	16.02	8.25
ADDITIONAL FUELS PER 1000 TONS CANE															
Tons of coal	32.54	0.75	18.65	9.37	16.08	5.78	1.57	27.95	7.72	9.75	5.54	0.22	14.89	1.53	11.23
Tons of wood	-	-	3.65	1.92	-	-	0.45	0.04	-	-	0.21	0.38	-	-	0.43
Converted into bagasse *	130.14	3.00	78.97	39.80	64.31	23.13	6.81	111.87	30.88	38.99	22.40	1.32	59.56	6.11	45.42

* 1 ton coal is equivalent to 4 tons of bagasse

1 ton firewood is equivalent to 1.2 tons of bagasse

1 ton sulphur dioxide is 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 2012 - 2013)

SYMBOLS OF FACTORIES	MH	UB	SM	NH	DW	HV	TR	NK	MW	RU	MA	MB	XN
A - MASSECUITE													
m ³ per ton brix in mixed juice (adj)	1.18	0.95	1.07	1.24	1.35	1.04	-	0.98	1.10	0.94	1.02	0.53	-
Refractometer brix of massecuite	92.65	93.39	92.45	94.75	91.54	92.57	92.90	93.24	92.20	93.17	91.84	92.68	91.20
Purity of massecuite (%)	87.43	83.70	86.15	89.53	87.96	86.80	85.53	88.10	85.43	82.65	86.25	85.81	85.60
Purity of A - molasses (%)	69.92	65.64	69.20	74.16	73.82	70.73	69.47	72.32	70.49	67.44	69.46	67.75	67.77
Purity drop (%)	17.51	18.06	16.95	15.36	14.14	16.07	16.06	15.78	14.94	15.21	16.79	18.06	17.83
Exhaustion (%)	66.58	62.80	63.88	66.42	61.41	63.25	61.50	64.71	59.27	56.53	63.74	65.26	64.63
Purity of A-massecuite - pty syrup (%)	0.28	1.04	0.22	2.65	0.59	0.62	-0.24	1.69	1.24	0.28	0.31	-0.22	0.01
Purity of remelt (%)	84.04	85.82	86.05	85.85	87.50	87.11	82.59	86.63	83.20	83.19	87.22	85.89	84.31
B - MASSECUITE													
m ³ per ton brix in mixed juice (adj)	0.47	0.42	0.49	0.32	0.45	0.42	-	0.46	0.54	0.41	0.35	0.21	-
Refractometer brix of massecuite	93.68	94.52	94.12	94.50	93.96	93.65	94.19	94.42	94.60	94.72	93.37	94.38	93.46
Purity of massecuite (%)	71.47	68.55	73.23	71.53	73.18	71.46	69.29	72.35	72.14	68.38	70.47	68.46	68.57
Purity of B - molasses (%)	49.94	46.88	48.82	53.48	51.31	52.47	48.91	51.45	51.25	47.68	44.62	47.26	47.90
Purity drop (%)	21.53	21.67	24.41	18.05	21.87	18.99	20.38	20.90	20.89	20.70	25.85	21.21	20.67
Exhaustion (%)	60.18	59.51	65.13	54.24	61.38	55.91	57.57	59.50	59.40	57.86	66.24	58.73	57.86
C - MASSECUITE													
m ³ per ton brix in mixed juice (adj)	0.23	0.32	0.20	0.22	0.21	-	-	0.28	0.28	0.28	0.20	0.69	-
Refractometer brix of massecuite	97.24	96.91	97.51	97.53	96.27	96.41	96.40	96.72	96.79	97.25	97.19	96.02	95.30
Purity of massecuite (%)	52.31	53.66	55.36	58.62	53.99	54.69	53.96	56.28	52.79	53.07	51.93	54.52	53.92
Purity of C - molasses (%)	32.89	35.33	34.29	39.26	36.34	35.53	33.78	34.72	37.61	35.89	35.42	37.62	33.62
Crystal content (%)	28.14	27.46	31.26	31.08	26.69	28.65	29.38	31.95	23.55	26.07	24.84	26.01	29.14
Exhaustion (%)	55.33	52.81	57.91	54.37	51.34	54.35	56.47	58.69	46.08	50.50	49.22	49.69	56.71
TOTAL VOLUME ALL RAW MASSECUITES													
m ³ per ton brix in mixed juice	1.88	1.69	1.75	1.78	2.01	-	-	1.73	1.92	1.63	1.57	1.43	-
WHITE SUGAR MASSECUITES													
Massecuite (kg sugar per m ³)	599	525	-	-	518	-	-	584	-	-	-	-	-
Tons phosphoric acid per 1000 tons white sugar	-	-	-	0.90	-	-	-	0.88	-	-	-	-	-
Tons sulphur per 1000 tons white sugar	0.06	0.14	-	-	0.14	-	-	-	-	-	-	-	-
Phosphoric acid ppm mixed juice(unadj.)	-	-	-	-	-	-	-	-	-	-	-	-	-
Flocculant ppm mixed juice(unadj.)	5.9	-	3.5	2.4	2.2	3.7	2.6	2.7	3.9	2.5	5.7	5.6	1.7
Tons lime per 1000 tons cane	0.6	0.8	0.8	0.7	0.7	0.5	0.5	0.5	0.7	0.8	0.5	0.5	2.2
Enzyme (ppm sugar)	-	-	-	-	-	-	-	-	-	-	-	-	-
ADDITIONAL FUELS PER 1000 TONS CANE													
Tons of coal	4.87	4.58	7.90	-	-	2.41	10.43	-	-	-	0.24	1.61	1.08
Tons of wood	45.5	30.7	10.1	0.73	0.22	0.03	-	-	0.32	0.06	0.07	0.16	0.04
Converted into bagasse *	19.49	18.31	31.60	0.88	0.26	9.69	41.73	-	0.39	0.07	1.03	6.63	4.38

* 1 ton coal is equivalent to 4 tons of bagasse

1 ton firewood is equivalent to 1.2 tons of bagasse

1 ton sulphur dioxide is equivalent to 0.5 tons of sulphur

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

	2012/2013	2011/2012	2010/2011	2009/2010	2008/2009
Throughput and time efficiency #					
Tons cane per hour	269.99	292.62	276.22	293.55	298.30
Tons fibre in bagasse per hour	40.91	43.92	40.02	42.88	43.83
Overall time efficiency	75.70	74.05	76.87	76.88	78.66
Cane					
Sucrose % cane	13.46	12.94	14.14	13.68	13.69
Fibre % cane	15.41	15.27	14.71	14.87	14.95
Mixed juice					
Sucrose purity(MJ adj.)	86.35	85.90	85.89	86.14	86.49
(Glucose + Fructose)/ash in M.J.(unadj.)	1.00	0.95	1.08	0.95	0.93
Milling					
Imbibition % fibre	333	331	352	338	349
Extraction (sucrose based)	97.19	97.14	97.28	97.44	97.61
Pol % bagasse	1.19	1.17	1.26	1.14	1.06
Moisture % bagasse	50.18	50.67	50.45	50.24	50.26
Bagasse % cane	31.75	31.73	30.57	30.71	30.80
LCV bagasse kJ/kg	7153	7017	7227	7263	7218
Available kJ in bag/kg brix in MJ (adj)	14995	15215	13789	14415	14387
Recoveries					
Boiling house recovery (sucrose based)	86.99	86.84	87.16	87.88	88.05
Overall recovery (sucrose based)	84.55	84.36	84.78	85.63	85.94
Tons cane per ton sugar	8.75	9.12	8.30	8.50	8.46
Filter cake					
Pol % filter cake	2.26	1.98	1.55	1.66	1.64
Filter cake % cane	1.66	1.60	1.36	1.29	1.33
Final molasses					
Brix % final molasses	83.10	83.55	84.12	84.45	84.67
Sucrose/refractometer brix purity	38.77	38.16	37.99	37.49	37.46
Final molasses @ 85° brix % cane	4.09	4.07	4.41	4.03	4.01
Average sugar polarisation					
	99.59	99.57	99.57	99.58	99.54
Sucrose lost % sucrose in cane					
Lost in bagasse	2.81	2.86	2.72	2.56	2.39
Lost in filter cake	0.28	0.24	0.15	0.16	0.16
Lost in final molasses	10.02	10.19	10.06	9.39	9.32
Undetermined losses	2.35	2.35	2.28	2.27	2.19
Lost in boiling house	12.64	12.78	12.49	11.81	11.67
Total losses	15.45	15.64	15.22	14.37	14.06
M³ massecuite per ton Bx in M.J.					
A - massecuite	0.96	0.94	0.93	0.93	0.92
B - massecuite	0.38	0.36	0.35	0.35	0.34
C - massecuite	0.23	0.23	0.23	0.22	0.22
Total	1.57	1.53	1.50	1.51	1.48
Exhaustion of massecuites					
A - massecuite	61.36	61.42	62.87	63.39	63.12
B - massecuite	59.53	59.66	59.65	60.24	59.79
C - massecuite	53.85	54.15	54.81	55.26	54.92
Brix of syrup	65.65	65.28	65.48	65.45	65.14

2012/13 season's throughputs, for factories with double tandem, were calculated using concurrent crushing hours.

TABLE E
AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS
FOR SOUTH AFRICAN FACTORIES (SEASON 2012/13)

End of month period		31 MAR 2012	28 APR 2012	02 JUN 2012	30 JUN 2012	28 JUL 2012	01 SEP 2012	29 SEP 2012	03 NOV 2012	01 DEC 2012	29 DEC 2012	02 FEB 2013
Tons of sugar made and estimated	Month	30869	150680	316432	294711	299181	347020	156699	155418	165997	56692	0
	To-date	30869	181548	497980	792691	1091873	1438892	1595591	1751009	1917006	1973698	1973698
Tons cane crushed	Month	299495	1412082	2728058	2408368	2397002	2743025	1377093	1568504	1698008	646384	0
	To-date	299495	1711577	4439635	6848003	9245005	11988030	13365123	14933627	16631635	17278020	17278020
Tons cane crushed per hour (actual crushing)	Month	198.91	261.85	283.13	295.82	283.60	275.89	247.16	252.97	257.55	220.67	0.00
	To-date	198.91	249.09	268.96	277.23	279.15	279.81	270.45	273.97	272.36	269.99	269.99
Sucrose % cane	Month	12.99	12.83	13.45	14.04	14.34	14.60	13.60	12.32	11.92	11.27	0.00
	To-date	12.99	12.86	13.22	13.51	13.72	13.92	13.89	13.72	13.54	13.46	13.46
Fibre % cane	Month	14.68	14.51	14.58	14.58	14.77	15.25	16.31	17.11	17.06	16.96	0.00
	To-date	14.68	14.54	14.56	14.57	14.62	14.77	14.92	15.15	15.35	15.41	15.41
RV % cane	Month	11.72	11.57	12.20	12.79	13.06	13.33	12.27	11.01	10.60	9.87	0.00
	To-date	11.72	11.59	11.97	12.26	12.46	12.66	12.62	12.45	12.25	12.16	12.16
Tons cane per ton sugar	Month	9.70	9.37	8.62	8.17	8.01	7.90	8.79	10.09	10.23	11.40	0.00
	To-date	9.70	9.43	8.92	8.64	8.47	8.33	8.38	8.53	8.68	8.75	8.75
Extraction (sucrose based)	Month	95.74	96.90	97.31	97.41	97.46	97.41	97.22	96.89	96.76	96.38	0.00
	To-date	95.74	96.70	97.08	97.20	97.27	97.30	97.30	97.26	97.21	97.19	97.19
Imbibition % fibre	Month	306	328	343	340	342	347	333	317	314	305	0
	To-date	306	324	336	337	339	341	340	337	334	333	333
Pol % bagasse	Month	1.72	1.31	1.20	1.21	1.19	1.21	1.13	1.10	1.10	1.17	0.00
	To-date	1.72	1.39	1.28	1.25	1.24	1.23	1.22	1.20	1.19	1.19	1.19
Moisture % bagasse	Month	52.91	50.71	50.26	50.05	50.08	50.10	49.87	50.18	50.04	49.77	0.00
	To-date	52.91	51.11	50.59	50.40	50.32	50.27	50.22	50.22	50.19	50.18	50.18
Boiling house recovery (sucrose based)	Month	82.63	85.51	88.26	89.10	88.97	88.62	85.70	82.60	84.43	80.47	0.00
	To-date	82.63	85.00	87.05	87.80	88.11	88.24	87.98	87.48	87.20	86.99	86.99
Overall recovery (sucrose based)	Month	79.11	82.86	85.89	86.80	86.71	86.32	83.33	80.04	81.69	77.55	0.00
	To-date	79.11	82.19	84.50	85.34	85.71	85.86	85.60	85.08	84.77	84.55	84.55
Mixed juice sucrose purity	Month	85.86	85.57	86.37	86.93	87.09	87.38	86.22	85.41	84.98	83.35	0.00
	To-date	85.86	85.62	86.09	86.40	86.58	86.77	86.72	86.59	86.44	86.35	86.35
Pol/sucrose ratio in mixed juice	Month	0.9842	0.9837	0.9867	0.9901	0.9936	0.9951	0.9972	0.9977	0.9935	0.9888	0.0000
	To-date	0.9842	0.9838	0.9856	0.9873	0.9890	0.9904	0.9911	0.9917	0.9919	0.9918	0.9918
Sucrose/refractometer brix purity in final molasses	Month	41.59	37.69	36.98	36.95	37.77	38.47	40.36	41.97	39.75	43.24	0.00
	To-date	41.59	38.40	37.54	37.34	37.45	37.69	37.98	38.42	38.57	38.77	38.77
Sucrose lost in final molasses % sucrose in cane	Month	11.70	10.27	9.27	8.72	8.76	9.08	10.89	12.36	12.08	15.15	0.00
	To-date	11.70	10.52	9.74	9.36	9.20	9.17	9.35	9.63	9.85	10.02	10.02
Undetermined lost sucrose % sucrose in cane	Month	4.40	3.46	1.94	1.72	1.79	1.80	2.66	4.04	2.55	3.21	0.00
	To-date	4.40	3.63	2.57	2.26	2.13	2.05	2.11	2.30	2.32	2.35	2.35
Pol/sucrose ratio FM	Month	0.9280	0.9059	0.9099	0.9151	0.9326	0.9493	0.9664	0.9673	0.9949	0.9732	0.0000
	To-date	0.9280	0.9102	0.9101	0.9118	0.9171	0.9248	0.9297	0.9342	0.9409	0.9424	0.9424

TABLE F
CANE VARIETIES AND RAINFALL
(SEASON 2012 - 2013)
PERCENTAGE BY MASS

Factories	N 12	N 14	N 16	N 17	N 19	N 21	N 22	N 23	N 25	N 26	N 27	N 29	N 30	N 31	N 32	N 35	N 36	N 39	N 41	N 43	N 46	N 47	N 48	NCo 376	MIXED VARIETY	UNKNOWN AND	BURNT	* RAINFALL	
ML	-	9.8	-	-	17.4	-	0.9	8.9	31.4	0.9	-	-	0.5	-	4.5	-	15.6	-	0.8	-	4.0	-	-	-	3.3	0.3	99.8	443	
KM	-	17.4	-	-	21.0	-	0.6	9.0	21.4	0.1	-	-	0.5	-	6.7	-	12.3	-	2.2	0.1	2.8	-	-	-	5.1	0.4	99.5	651	
PG	-	8.3	-	-	3.9	-	0.3	9.1	15.0	4.3	-	-	0.1	-	0.2	-	18.4	-	16.1	3.4	4.2	-	-	-	10.7	5.0	99.1	410	
UF	0.1	0.5	-	2.3	29.9	0.9	0.6	8.2	8.7	0.8	10.7	1.8	-	-	-	0.2	5.1	0.8	6.1	1.6	0.2	-	-	3.1	5.9	11.1	95.9	990	
FX	1.9	0.5	0.1	2.2	3.8	0.2	0.1	2.6	7.1	0.3	16.9	0.8	-	-	-	2.7	9.6	3.5	7.4	0.6	0.1	-	-	-	3.1	4.1	32.4	81.5	574
AK	14.9	-	3.5	1.2	1.5	1.0	0.2	-	0.9	-	16.9	2.0	-	2.5	-	1.0	1.4	13.1	2.9	-	-	-	0.1	-	1.8	5.9	29.2	97.0	700
DL	8.5	-	2.8	0.5	0.8	0.9	0.1	-	-	-	15.6	2.0	-	10.8	-	-	0.3	16.3	0.8	-	-	0.1	-	3.5	0.4	36.6	93.1	679	
MS	10.4	0.1	2.3	2.0	0.6	0.7	-	-	0.2	-	10.7	1.9	-	14.3	-	0.9	0.2	14.2	1.4	-	-	0.3	-	8.0	5.2	26.9	81.1	1003	
GH	10.9	0.1	7.0	0.7	1.3	0.2	-	-	-	0.7	7.9	2.4	-	6.0	-	0.8	0.1	9.0	0.4	-	-	0.2	-	6.8	7.6	37.8	86.1	1030	
NB	59.4	-	6.4	-	-	0.5	-	-	0.2	0.2	0.3	0.1	-	10.1	-	4.5	2.4	3.8	1.2	-	-	0.1	1.0	-	0.3	9.3	97.3	666	
UC	44.0	-	11.8	-	-	0.1	-	-	0.1	-	-	-	-	12.4	-	1.1	-	6.4	0.4	-	-	0.1	-	-	0.1	23.5	99.7	650	
ES	60.3	-	3.4	0.1	-	-	-	-	-	-	0.1	0.1	0.1	18.2	-	3.2	1.2	0.8	1.1	-	-	0.0	-	-	0.6	10.7	92.6	609	
SZ	33.7	-	2.9	-	-	0.5	-	-	-	-	4.0	0.9	-	0.7	-	-	-	12.3	0.4	-	-	-	-	1.2	11.0	32.4	70.6	1129	
UK	29.3	0.1	0.7	-	-	0.7	-	-	-	-	0.9	0.8	-	3.9	0.5	0.1	0.2	17.2	0.4	-	-	-	-	2.3	2.5	40.5	94.6	1507	
Average SA Factories	18.6	3.6	2.6	0.6	6.7	0.4	0.2	3.2	7.6	0.5	5.6	0.8	0.1	4.8	1.2	1.1	5.8	6.0	3.0	0.4	1.0	0.1	0.1	1.8	4.8	18.9	91.7		
MH	-	0.7	-	-	10.5	-	-	24.2	44.4	0.5	-	-	-	-	0.3	-	1.8	-	-	-	2.0	-	-	13.0	1.7	0.9	-	564	
UB	-	1.7	-	-	8.5	-	-	24.4	33.2	0.2	-	-	-	-	-	-	0.6	-	-	-	1.1	-	-	-	24.4	6.0	-	431	
SM	-	1.0	-	-	2.1	-	-	26.9	45.8	0.3	-	-	-	-	0.3	-	2.5	-	-	-	4.5	-	-	12.7	3.9	-	-	423	
NH	-	3.8	-	-	-	-	-	-	7.9	-	-	-	-	-	-	28.4	3.4	2.2	-	-	-	-	-	-	-	8.6	45.6	-	65
DW	-	9.5	-	-	4.6	-	-	2.4	6.3	-	-	-	-	-	-	1.2	0.1	1.5	-	-	-	-	-	0.9	5.4	68.0	-	75	
HV	-	78.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	0.7	16.2	-	84	
TR	-	88.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.5	1.6	1.7	-	105	
NK	-	0.2	-	-	11.3	-	0.1	13.6	55.6	-	-	-	-	-	-	-	-	-	13.6	-	0.1	-	-	0.1	5.1	0.5	-	161	
MW	0.9	-	-	-	5.4	-	-	0.3	15.7	-	9.8	-	0.2	-	-	-	0.6	0.1	10.4	-	-	-	-	47.2	1.8	7.7	-	733	
RU	1.5	-	-	-	3.5	-	-	0.1	15.1	-	0.1	-	0.2	-	-	-	0.7	0.4	8.6	-	-	-	-	53.6	6.9	9.4	-	728	
MA	-	-	-	0.2	17.1	-	-	58.5	8.8	-	-	0.2	-	-	1.0	-	-	-	0.1	-	0.5	-	0.1	2.6	5.5	5.5	-	255	
MB	-	24.3	-	-	8.7	5.9	-	9.8	26.1	-	9.7	-	-	-	8.7	-	-	-	-	-	-	-	-	-	6.7	-	-	138	
XN	-	0.7	-	-	0.4	-	-	29.8	45.6	0.7	7.5	0.4	-	-	1.1	-	2.7	-	0.1	-	-	-	-	5.0	6.5	-	-	193	

* Rainfall during the crushing season

TABLE G
TRANSPORT SUMMARY - SOUTH AFRICAN FACTORIES
(SEASON 2012 - 2013)
PERCENT OF CANE TRANSPORTED

FACTORIES	ML	KM	PG	UF	FX	AK	DL	MS	GH	NB	UC	ES	SZ	UK	AVERAGE
SOUTH AFRICAN RAILWAYS	-	-	-	-	16.8	-	-	-	-	-	-	-	-	-	1.4
TRAMS	-	-	-	68.1	-	-	0.5	-	-	-	-	-	-	-	4.1
TANKERS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ARTICULATED TRUCK DRIVEN VEHICLES															
- Interlink	0.9	-	13.6	25.6	63.7	36.3	40.5	77.6	55.4	24.5	27.9	34.4	96.7	89.4	39.2
- Tri-Axle	-	-	12.7	-	0.5	-	12.6	0.3	11.8	3.7	3.7	8.9	-	0.9	3.5
- Hilo	1.5	-	5.0	4.6	0.9	-	6.8	-	0.2	3.1	-	-	3.1	7.4	2.1
RIGID CHASSIS VEHICLES															
- Truck	92.8	73.0	5.1	-	2.3	27.5	6.9	12.0	24.4	40.6	21.6	35.6	0.1	1.1	29.0
- Lorry	3.3	-	2.3	-	-	-	0.2	-	-	2.3	13.9	-	0.1	-	1.3
TRACTOR DRIVEN VEHICLES															
- Hilo	-	-	8.8	-	3.4	8.8	1.6	0.5	1.4	20.0	7.2	19.5	-	-	5.1
- Rig	1.5	24.3	-	-	2.4	16.1	13.9	1.0	6.8	2.6	6.2	-	-	0.2	6.1
- Interlink	-	2.7	52.5	1.7	10.1	11.3	17.1	8.6	0.1	3.2	19.4	1.6	-	0.9	8.3

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

PERIOD (SEASON)	Percent Cane		Cane / sugar Ratio		Extraction Pol based	Pol % fibre in Bagasse	Percent Bagasse		Imbibition Percent		Mixed Juice		Final Molasses Suc/brix Purity Chem.suc.	Boiling House Recovery Pol based	Overall Recovery Pol based	
	Pol	Fibre	Tel Quel	96° Pol Sugar			Pol	Moisture	Cane	Fibre	Purity Pol based	Reducing Sugar/ Pol ratio				
	Sucrose based						Sucrose based				Sucrose based (F + G) / suc.ratio					Sucrose 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	46.3	309	84.85	5.37	38.4	88.92	85.54	
<i>From 1981 onwards data are sucrose based</i>	Sucrose based				Sucrose based						Sucrose based (F + G) / suc.ratio		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	
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	
2006	12.85	14.95	8.99	8.68	97.84	1.91	0.92	49.76	54.5	372	85.55	4.98	37.4	87.51	85.61	
2007	13.47	14.86	8.63	8.32	97.82	2.02	0.97	49.77	53.5	367	86.03	4.62	37.7	87.56	85.65	
2008	13.69	14.95	8.46	8.16	97.61	2.23	1.06	50.26	51.3	349	86.49	4.41	37.5	88.05	85.94	
2009	13.68	14.87	8.50	8.20	97.44	2.40	1.14	50.24	49.4	338	86.14	4.51	37.5	87.88	85.63	
2010	14.14	14.71	8.30	8.01	97.28	2.66	1.26	50.45	51.0	352	85.89	5.17	38.0	87.16	84.78	
2011	12.94	15.27	9.12	8.79	97.14	2.46	1.17	50.67	49.7	331	85.90	4.57	38.2	86.84	84.36	
2012	13.46	15.41	8.75	8.44	97.19	2.50	1.19	50.18	50.5	333	86.35	4.72	38.8	86.99	84.55	
Average 2005 - 2012	13.50	14.96	8.64	8.33	97.54	2.26	1.08	50.11	51.8	353	85.99	4.76	37.7	87.53	85.38	