REFEREED PAPER

# NINETY-THIRD ANNUAL REVIEW OF THE MILLING SEASON IN SOUTHERN AFRICA (2017/18)

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## Abstract

Performance, throughput and other relevant aspects of the sugar industries in southern Africa for the 2017/18 milling season are presented and discussed. Data from sugar factories in South Africa, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe are included.

The improved rainfall over the past two seasons in South Africa brought some relief from the drought experienced in the 2014/15 and 2015/16 seasons. This resulted in a substantial improvement of cane quality, in terms of Recoverable Value and Estimated Recoverable Crystal % cane, which both increased from ten-year low values in 2016/17 to values similar to the ten-year average in the past season. The crop size crushed was 17.39 million tonnes of cane in 2017/18; this was 2.31 million tonnes more than the previous season. Most factory performance parameters improved. Time efficiencies increased, as did overall recovery and the cane to sugar ratio through increases in extraction and boiling house recovery. The improvement in cane quality assisted factory back-end performance but factory operational improvements were also noted. There were reductions in the sucrose lost to molasses and the undetermined losses. Despite the increased cane tonnages and general improvements to performance figures the South African industry was adversely affected by large quantities of sugar imported into the country. About a third of the local sugar produced was delivered to the South African Sugar Terminal to be sold abroad at world prices. Dextran levels in the sugar received by the terminal were abnormally high.

For the non-South African factories reviewed the cane quality was mostly similar to that of the previous season, with the exception of Zimbabwe and Tanzania. The total amount of cane crushed by the non-South African factories and the pol-based extraction achieved in 2017/18 were also similar to the previous season. The pol-based boiling house recovery varied in the countries under review but were relatively high, with only one factory posting a value under 85%.

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

## Introduction

This paper reviews the 2017/18 milling season in southern Africa and includes data from factories in South Africa, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe, that are B1 (South African, previously termed Full) or B2 (non-South African, previously termed Affiliate) Members of the Sugar Milling Research Institute NPC[1] (SMRI). Detailed information

[1]South 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

on factory performance in 2017/18 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. All references to factory performances in previous seasons can be found in past reviews of milling seasons. Where ten-year average values are stipulated, this refers to the arithmetic average of the past ten seasons, including the 2017/18 season.

## Cane crop

*Cane varieties*

The varietal distribution at southern African factories for the 2017/18 season is shown in Appendix Table F. The 2016/17 data can be found in the 2016 Annual Review (Madho *et al*., 2017). There were only small varietal changes in South Africa since the 2016/17 season. The favoured varieties for the 2017/18 season remained N12, N31, N36, N39 and N41. The unknown varieties remained high at 25.4% of all cane delivered. FX and UK had the largest percentages of unknown varieties at 52.2 and 48.5%, respectively.

The non-South African factories in the 2017/18 season saw a similar varietal distribution to 2016/17 with the predominant varieties being N14, N23, N25 and N41. NCo376 was still popular in Tanzania (MW and RU) in 2017/18.

*Burning*

The overall percentage of cane burnt in South Africa remained relatively unchanged at 91.7% (Appendix Table F).

*Rainfall*

Figure 1 shows that the rainfall measured at the South African factories during the crushing season was higher in 2017/18 than the previous two seasons. For the industry, rainfall was expectedly low in the months of June and July 2017, but high at the beginning and end of the 2017/18 season.

The total rainfall recorded at individual South African factories during the crushing season ranged from 204 mm at PG to 1 243 mm at DL (Appendix Table F). The total industry rainfall for the 2017/18 season was 9 074 mm, which was substantially higher than the ten-year average of 7 286 mm and the rainfall in the preceding three seasons of 4 537, 4 418 and 6 978 mm, respectively. This increased rainfall suggests some relief from the drought experienced since the 2014/15 season and is evident in Figure 2. A more detailed account of the drought conditions is contained in the agricultural Annual Review by Singels *et al.* (2018).

The total rainfall recorded at individual southern African factories during the crushing season ranged from 56 mm at NK to 441 mm at XN (Appendix Table F).

| | |
|---|---|
| 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. |

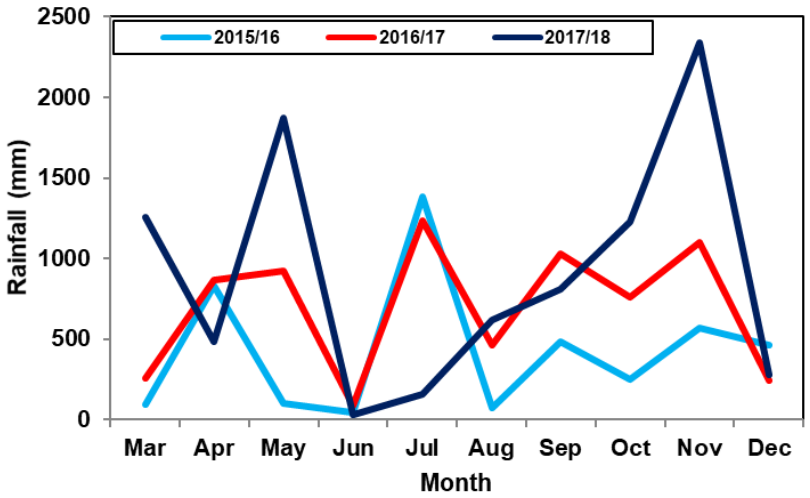


**Figure 1. Monthly total rainfall at crushing South African factories for the past three seasons (values are the monthly rainfalls summed over all factories crushing during the month).**

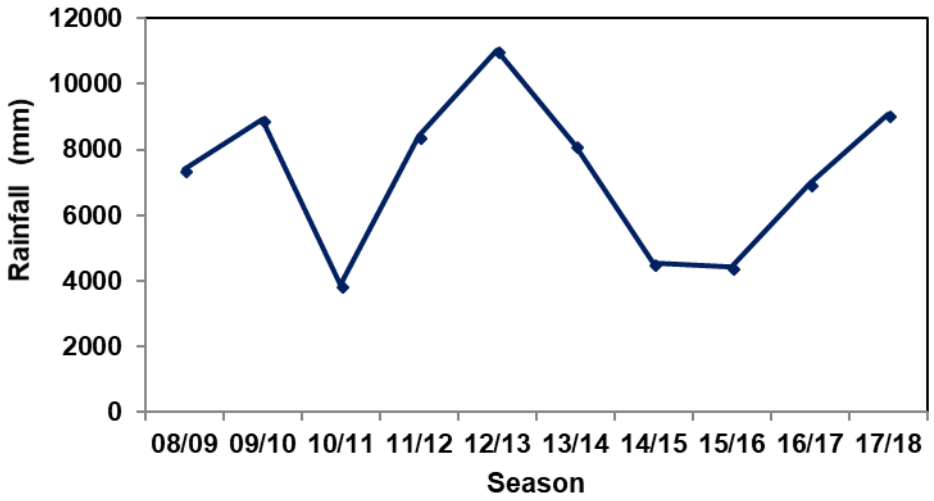


**Figure 2. Total rainfall for the South African sugar industry crushing period for the past ten seasons.**

## Cane quality

The trends in the cane quality indicators of Sucrose, Recoverable Value (RV) % cane and Estimated Recoverable Crystal (ERC) % cane over the past ten seasons in South Africa are shown in Figure 3. Each of these parameters improved substantially from low values in the 2016/17 season (RV and ERC % cane being ten-year low values) to values similar to the ten-year average in the 2017/18 season; the Sucrose % cane was 13.82 (ten-year average of 13.62%), the RV % cane was 12.46% (ten-year average of 12.29%) and the ERC % cane was 11.48% (ten-year average of 11.50%) for the 2017/18 season.

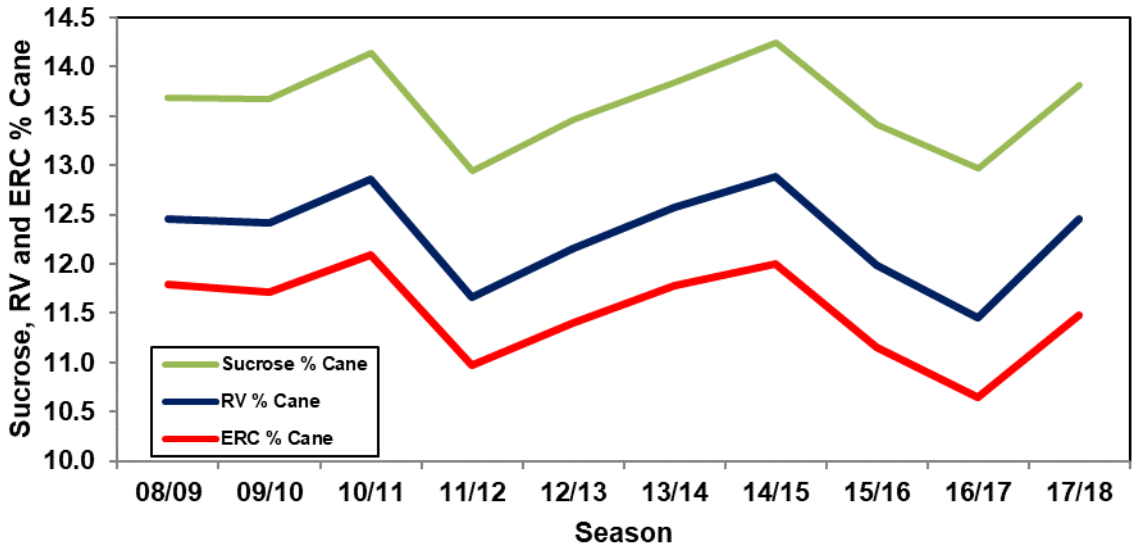


**Figure 3. Sucrose, Recoverable Value (RV) % cane and Estimated Recoverable Crystal (ERC) % cane in South Africa for the past ten seasons.**

Figure 4 shows the RV % cane at the South African factories for the past three seasons. The 2017/18 season saw an increase in RV % cane at all factories over the 2016/17 season values. The largest increases since 2016/17 were observed at Umzimkulu (increase of 2.38%), Amatikulu, Darnall, Eston, Umfolozi and Felixton.

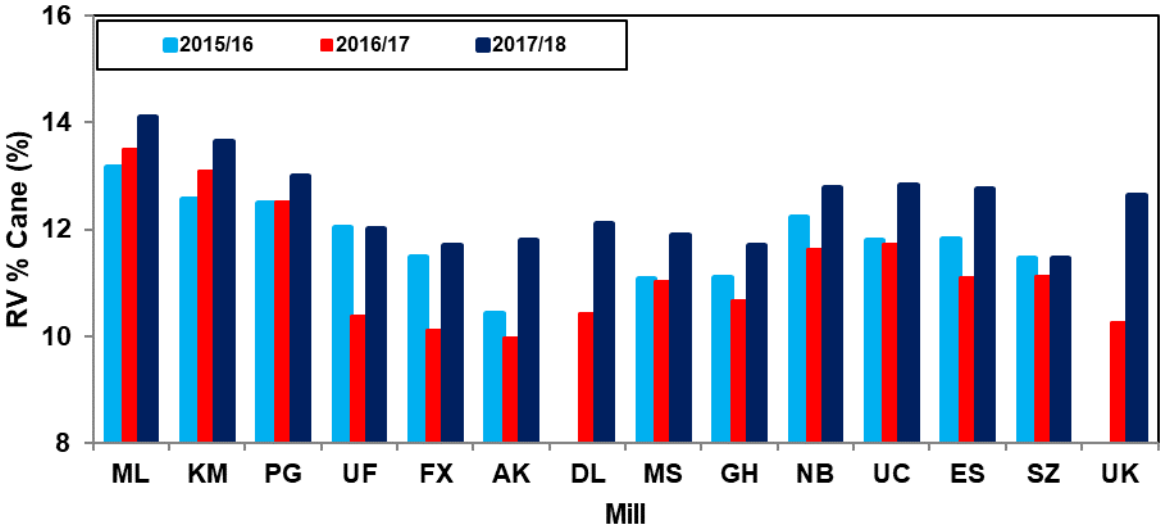


**Figure 4. Recoverable Value (RV) % Cane at South African factories for the past three seasons.**

The monthly RV % cane for the past three seasons in South Africa (Figure 5) indicates that the cane quality was slightly improved at the beginning of the 2017/18 season when compared to the previous two seasons. The average 2017/18 RV % cane from April to August was below the averages of the previous two seasons, but for the last four months of the season was higher than in previous years. The cane quality in terms of the RV % Cane also did not decline in this period, but rather remained relatively unchanged.

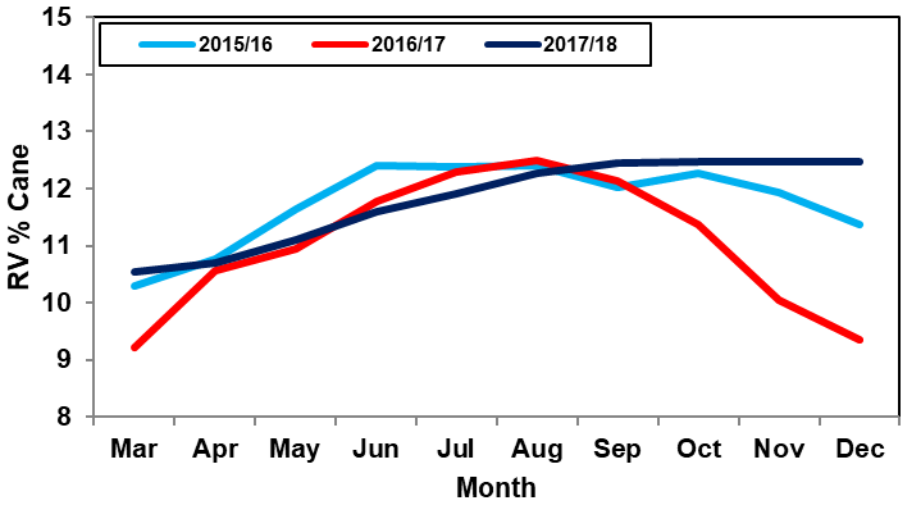


**Figure 5. Monthly Recoverable Value (RV) % cane in South Africa for the past three seasons.**

In the other countries under review, cane quality in terms of ERC % cane (Figure 6), based on South African ERC factors, from 2015/16 to 2017/18, showed a notable increase for South Africa, whilst Swaziland, Malawi, Zambia and Mozambique remained relatively unchanged. Zimbabwe and Tanzania showed a decrease in ERC % cane. Tanzania recorded the lowest ERC % cane of 9.63% and Zimbabwe the highest value of 12.09%. Excluding the Tanzanian value, it is interesting to note that a maximum of only 1.15% in ERC % cane separated the other six countries under review.

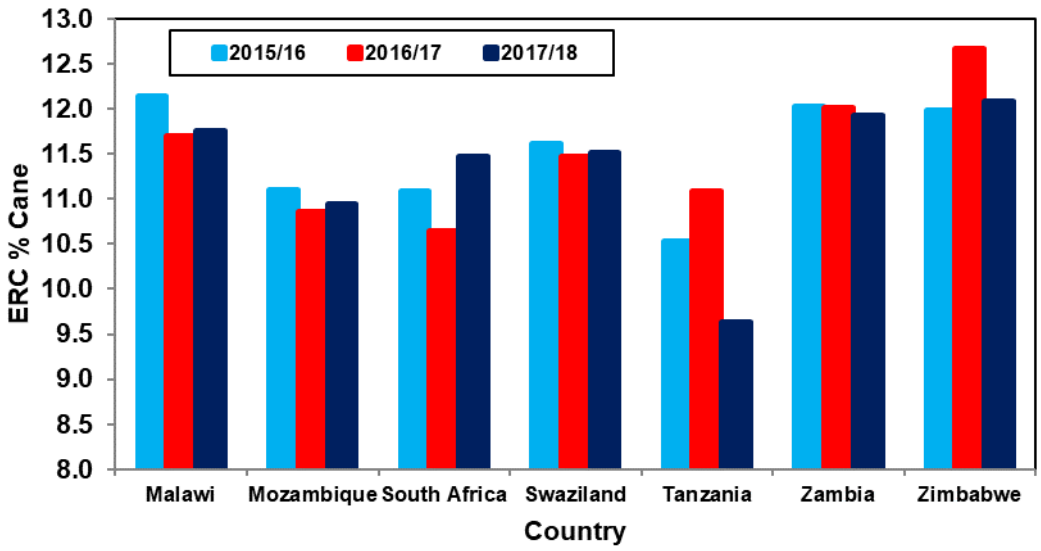


Figure 6. Estimated Recoverable Crystal (ERC) % cane in southern Africa for the past three seasons.

Looking at other parameters included within cane quality, ash % cane decreased from 1.97% in the 2016/17 season to 1.61% in the 2017/18 season (Figure 7). This was close to the ten-year best value of 1.57% achieved in 2010/11. Interestingly, the ten-year trend of ash % cane and rainfall, did not follow the expected trend from the 2015/16 season onwards: in the 2017/18 season there was a sharp decrease in ash % cane with a sharp increase in rainfall.

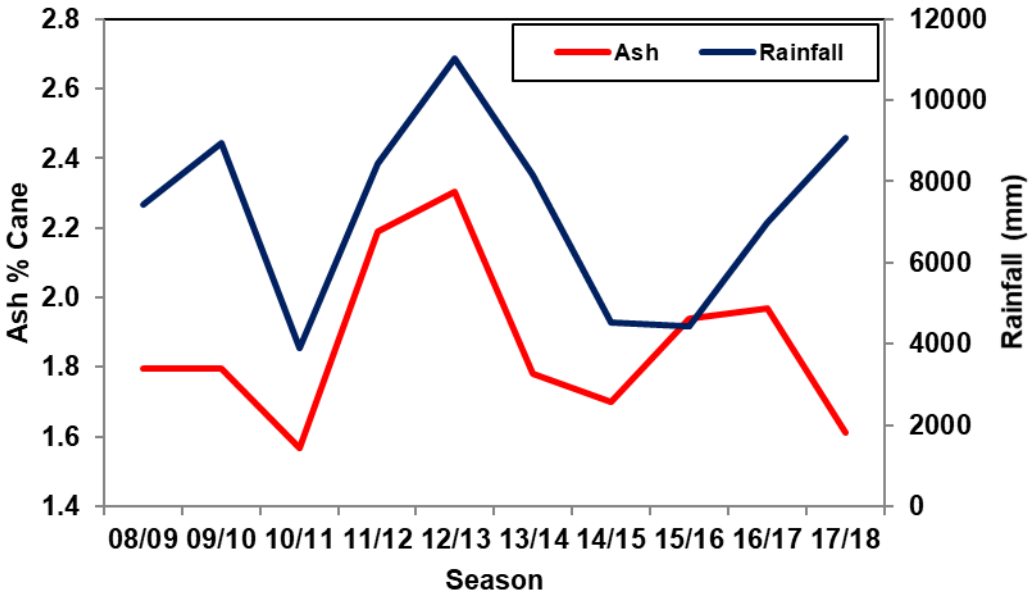


**Figure 7. Ash % cane and season rainfall in South Africa for the past ten seasons.**

The improvement in cane quality in terms of RV % cane was further reflected in the mixed juice sucrose purity which increased from an average value of 84.80% in 2016/17 to 86.30% in 2017/18 for South Africa (Figure 8); this was better than the ten-year average value of 86.01%. The consequences of this were apparent in the boiling house performance, as will be discussed later.

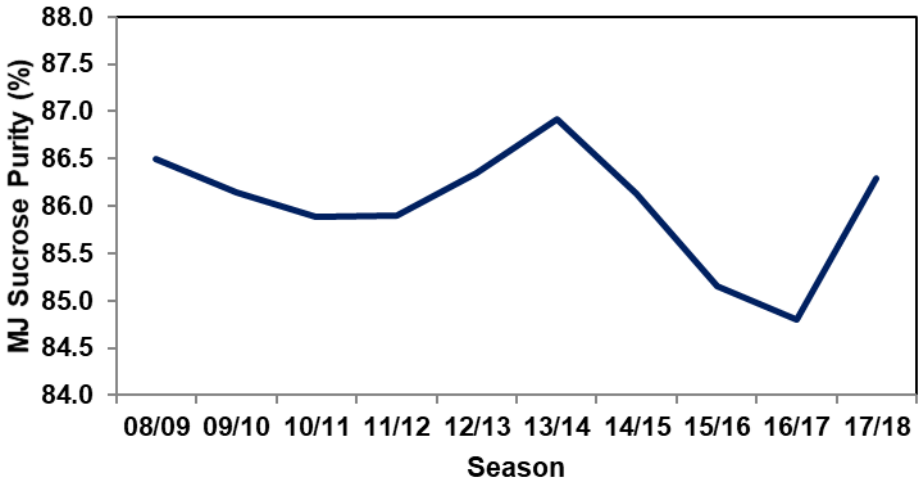


**Figure 8. Mixed juice sucrose purity in South Africa for the past ten seasons.**

## Cane tonnage

The final tonnage of cane crushed during 2017/18 was 17.39 million tonnes, which was a 15% increase over the previous season, and 17% more than the 2015/16 season when the ten-year lowest amount of 14.86 million tonnes of cane was crushed (Figure 9). The 2017/18 crush was slightly more than the ten-year average crush of 17.31 million tonnes of cane; however, it was still substantially lower (by 6.49 million tonnes) than the twenty-year highest crush of 23.88 million tonnes in the 2000/01 season.

The largest South African factory in terms of tonnes of cane crushed was SZ with 2.09 million tonnes. The reasons for the changing sugarcane supply are dealt with in more detail in the agricultural Annual Review by Singels *et al.* (2018) (in press).

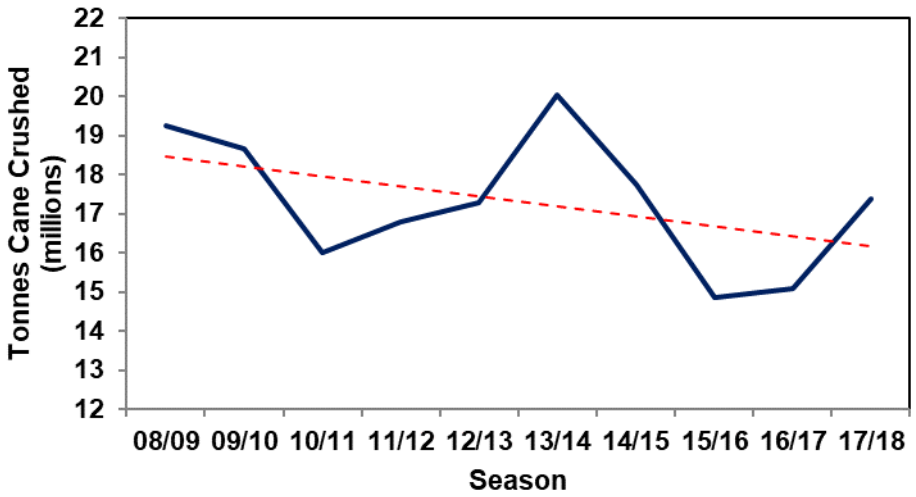


**Figure 9. Tonnes of cane crushed in South Africa for the past ten seasons (with linear trendline).**

The cane crushed at the non-South African factories increased to 17.19 million tonnes in 2017/18 from 17.12 million tonnes in the 2016/17 season. The 2018/19 crop crushed was therefore similar to quantities at the South African factories. The largest quantity crushed in 2017/18 amongst the non-South African factories was at NK with 2.91 million tonnes.

## Factory Performance

*Length of milling season*

The 2017/18 season in South Africa ran from 1 March 2017 (UC) until 16 December 2017 (SZ). The average length of the season was 241 days (34.4 weeks), which was five days more than the previous season. Despite the similar length of the milling season, about 2.31 million tonnes more cane was crushed in 2017/18 than in the previous season; this was possibly due to the slightly increased cane throughput and the improved time efficiency (commented on in the following section in this report) in 2017/18.

In 2017/18, UK had the shortest season of the South African factories with a season length of 177 days. The longest season, at 277 days, was at ES. The lengths of the milling seasons for factories in other southern African countries ranged from 186 days at MB in Mozambique to 262 days at RU in Tanzania.

*Time efficiencies*

The South African time efficiencies for the past ten seasons are shown in Figure 10. Overall Time Efficiency (OTE) increased to a ten-year best value of 81.85%. The increase in OTE was due mainly to a desirable decrease in Lost Time % Available (LTA) which was 9.64% in 2017/18, down from 11.03% in 2016/17. The ten-year average value is 8.56% and the ten-year best value was 6.29%, which was achieved in the 2010/11 season.

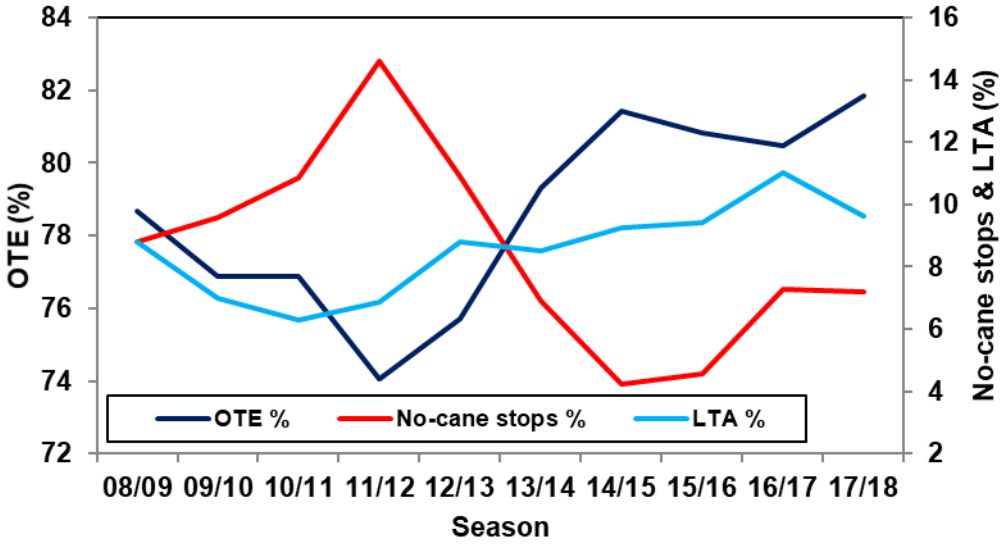


**Figure 10. Overall Time Efficiency (OTE), Lost Time Available (LTA) and No-cane Stops in South Africa for the past ten seasons.**

All factories except for KM, MS, NB and SZ showed improved OTE values in 2017/18 compared to the 2016/17 season. LTA values at all factories except UF, MS and DL decreased. The highest LTA values were recorded at the FX, AK, DL and MS factories.

No-cane Stops decreased slightly on average from the previous season. UF, GH and UK recorded values of more than 10% No-cane stops in 2017/18 (Figure 11).

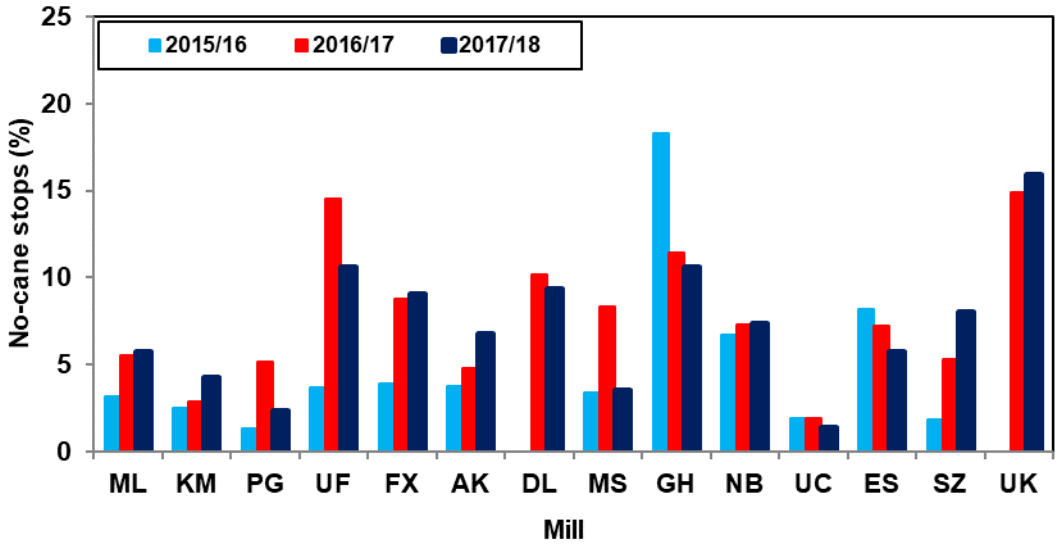


**Figure 11. No-cane Stops at South African factories for the past three seasons.**

Of the factories in the other southern African countries, NK, RU, UB, and DW recorded OTEs above 85%. No-cane Stops and LTA at TR were both above 10% which resulted in a low OTE of 73.21%. By contrast, UB had an excellent season mechanically, with an LTA of only 1.33% which was a slight improvement from the previous season.

*Extraction*

Figure 12 shows that for the 2017/18 season, sucrose-based extraction, Corrected Reduced Extraction (CRE) and imbibition % fibre in bagasse improved from the 2016/17 season which produced the lowest recorded values in the previous ten seasons for South African factories. As mentioned in previous reviews, the decrease in extraction over the past ten years may be because of the focus on energy management with a consequent reduction in imbibition at South African factories. The imbibition % fibre in bagasse was reported to be 336% in the 2017/18 season which was a slight increase from 324% in 2016/17. Figure 12 shows that the imbibition % fibre had remained relatively unchanged since the 2011/12 season. The 2017/18 value is similar to the ten-year average of 335%.

The CRE value (96.88% in 2017/18), which takes variations in cane quality into account, improved slightly from the ten-year low value of 96.80% in 2016/17. The slight improvement suggests that for the past season the extraction improvement would have been due to improved factory operations as well as the slightly increased imbibition usage. The increase in the extraction relative to the increase in the CRE suggests that the extraction also benefitted from an improvement in cane quality. The sucrose-based extraction of 97.11% achieved at South African factories for the 2017/18 season was an improvement from the 2016/17 extraction (96.75%), which was the lowest value achieved since the 1978/79 season.

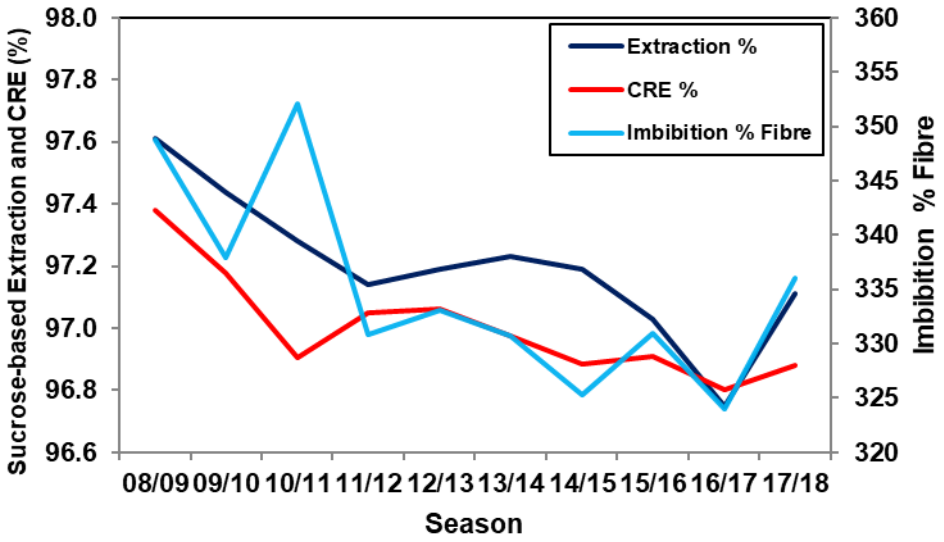


**Figure 12. Sucrose-based Extraction, Corrected Reduced Extraction (CRE) and Imbibition % Fibre in South Africa for the past ten seasons.**

The extraction values for individual South African factories for the 2015/16 to 2017/18 seasons are shown in Figure 13. In line with the industry's increase in average extraction over the past season, only two factories (SZ and MS) had lower extractions in 2017/18 than in the previous season. UF showed an increase in extraction of 2.72% from the previous season. Only FX and KM recorded extractions greater than 97.50%, with the former reporting the highest South African extraction of 98.17%. The lowest extraction was recorded at DL (95.91%). This factory, operating a milling tandem, had the highest fibre % cane of 16.87%.

In the 2017/18 season, seven factories (ML, KM, PG, FX, AK, MS and UK) routed clarifier mud back to the diffusers throughout the entire season.

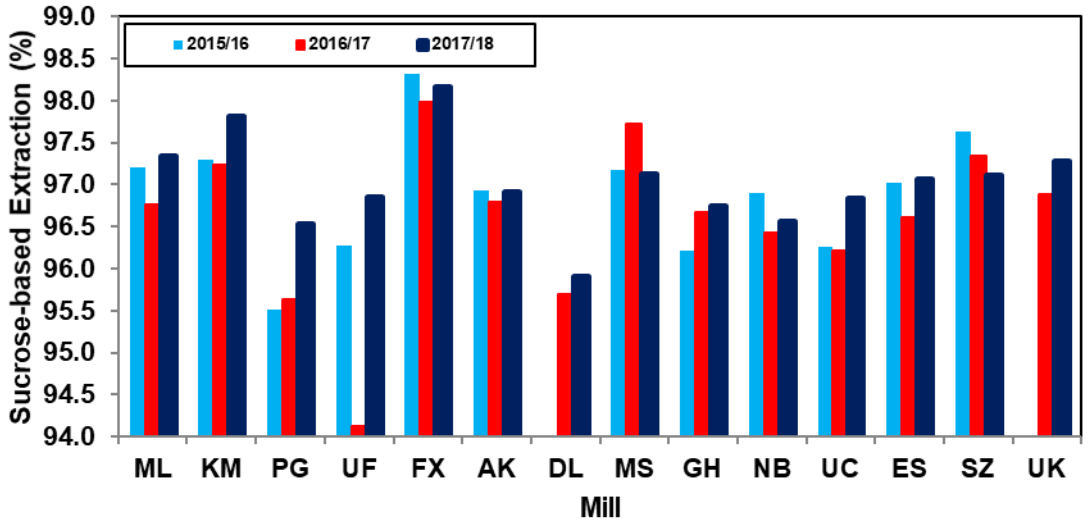


**Figure 13. Sucrose-based extraction at South African factories for the past three seasons.**

Among the non-South African factories in 2017/18, the average pol-based extraction increased slightly to 96.17% from the previous season's average extraction of 96.07%. The highest pol-based extractions in 2017/18 were recorded at XN (97.44%) and TR (97.33%). The extraction increased by more than 0.20 % at five factories (UB, SM, MA, MB and MW), whilst the extraction decreased by more than 0.20 % at three factories (DW, RU and NK). The lowest extractions were at the RU and NH factories with values of 94.32 and 94.57%, respectively. See Figure 14 for details.

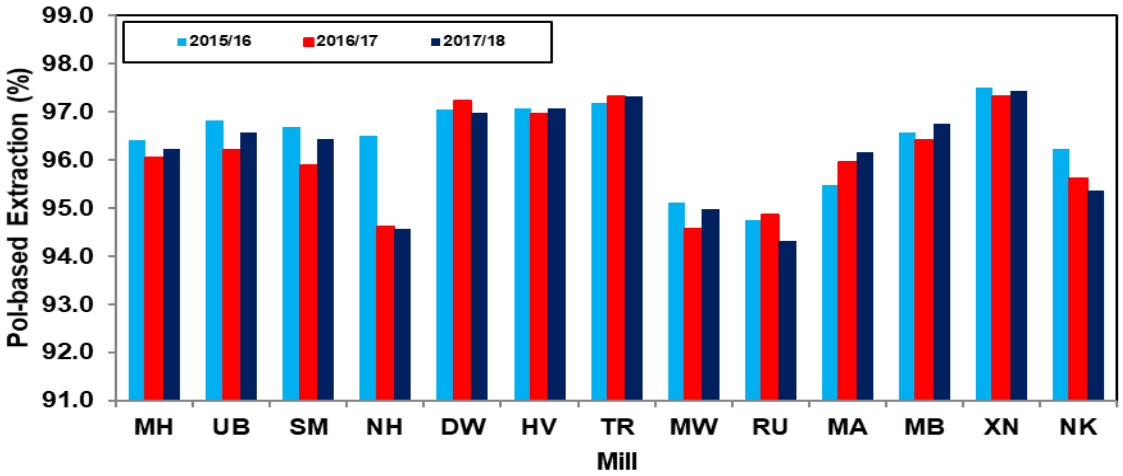


**Figure 14. Pol-based extraction at non-South African factories for the past three seasons.**

*Boiling house performance*

Figure 15 shows that the Boiling House Recovery (BHR) increased substantially to 85.47% in 2017/18 from the ten-year lowest value (83.67%) in the previous season. The ten-year average BHR was 86.39%. It is generally accepted that mixed juice purity has the biggest effect on BHR and from Figure 8 it can be observed that there was a considerable increase in the mixed juice purity from a ten-year low in 2016/17 to an above ten-year average value in the past season. The mixed juice purity is dependent on cane quality and Figure 15 shows the relationship between BHR on cane quality in terms of the RV % Sucrose in Cane.

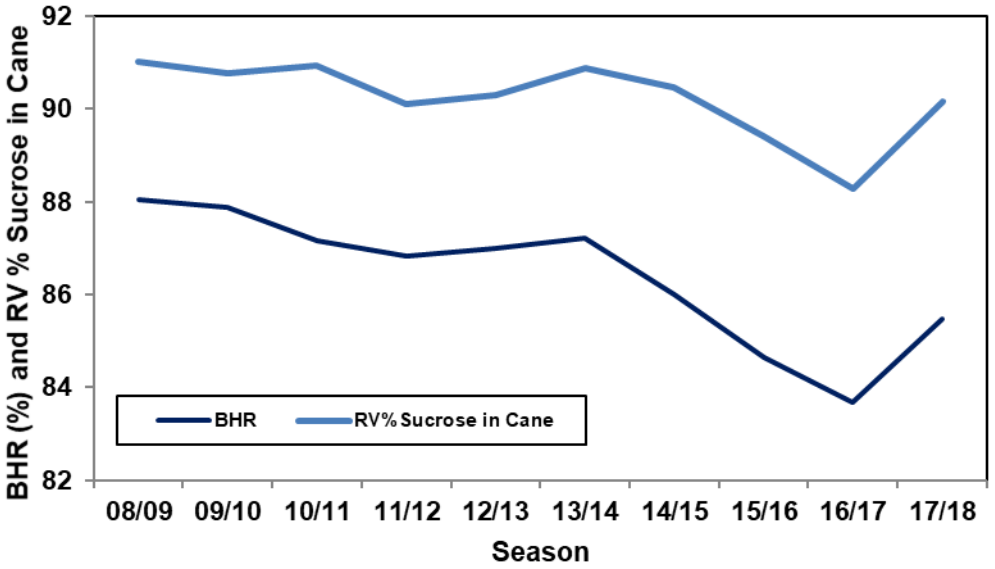


**Figure 15. Boiling House Recovery (BHR) and RV % Sucrose in Cane in South Africa for the past ten seasons.**

From Figure 16 it can also be seen that the Corrected Reduced BHR (CRB) has increased over the past two seasons to a value of 84.99% in 2017/18, which is slightly less than the ten-year average of 85.37%. The magnitude of the increase in BHR relative to the increase in CRB suggests that recoveries in the back-end of the factory benefitted from the improved cane quality but were also assisted by improved factory operations.

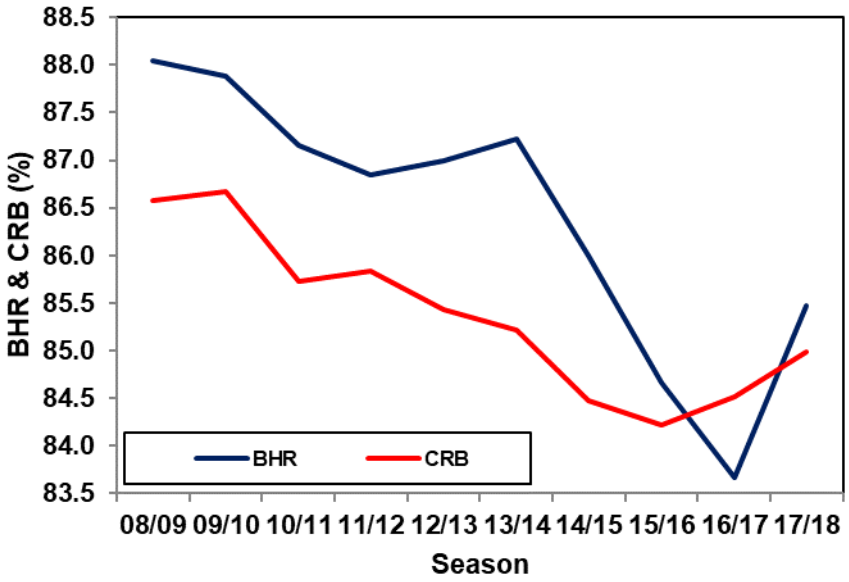


**Figure 16. Boiling House Recovery (BHR) and Corrected Reduced BHR (CRB) in South Africa for the past ten seasons.**

Figure 17 shows the BHR achieved at the individual factories in South Africa. There were improvements made over the previous season in 11 of the 14 factories, with very slight decreases recorded in the remaining factories. UC recorded the highest BHR at 88.86% and NB (a back-end refinery factory) the lowest BHR at 82.35% (improved from 78.87% the previous season).

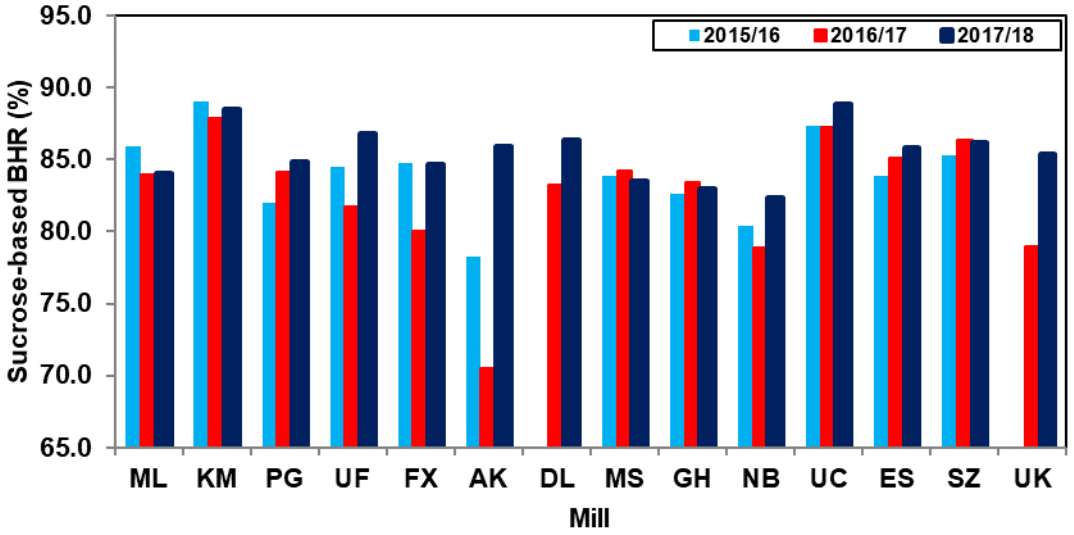


**Figure 17. Sucrose-based Boiling House Recovery (BHR) at South African factories for the past three seasons.**

The effect of mixed juice and cane quality on BHR has already been mentioned. Further to this, Figure 18 and Figure 19 show that the increase in the 2017/18 BHR in South Africa was as a result of reduced sucrose losses to molasses and undetermined losses, respectively. The sucrose lost to molasses as a percentage of the sucrose in the cane improved from its poorest value in the past ten years in 2016/17 (11.84%) to a value of 10.72% in 2017/18 (ten-year average value of 10.33%). The Undetermined Loss % sucrose in cane (UDL) declined to 3.05% in 2017/18 (see Figure 19). As a rule of thumb, any UDL over 2.00 % is considered high – this benchmark has not been achieved in the South African industry since the 2006/07 season.

Figure 19 also divides the nine years prior to the 2017/18 season into two distinct periods. It can be observed that there was a slight increase in the UDL value from 2008/09 to 2012/13 but that the UDL had surged to the undesired high values from 2012/13 to 2016/17. The 2017/18 season deviates from the trends and records an improvement in UDL for the first time in the past ten seasons.

The Molasses Factor (Figure 20), which is the ratio of sucrose lost to molasses to non-sucrose in mixed juice, increased undesirably from 0.6830 to 0.6952 over the past two seasons. The 2017/18 Molasses Factor is the highest and poorest value in the past ten seasons. The rise in the Molasses Factor could possibly be attributed to the non-sucrose components of mixed juice changing to more melassigenic compounds that increase molasses losses.

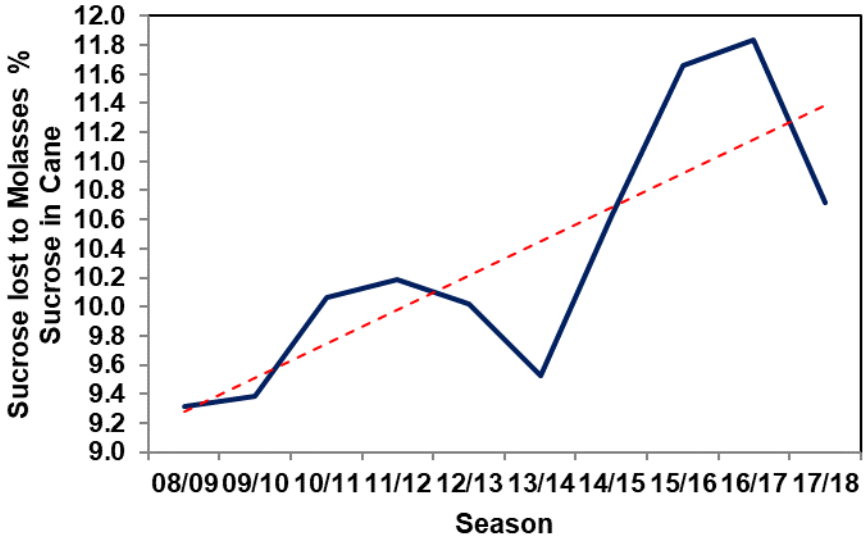


**Figure 18. South African sucrose losses to molasses for the past ten seasons (with linear trendline).**

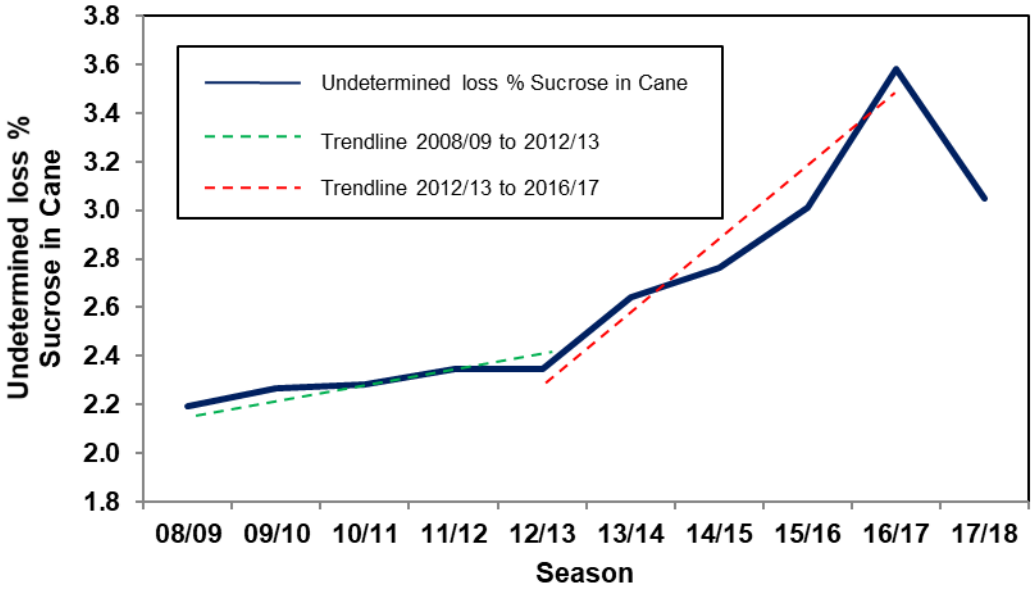


**Figure 19. Undetermined Loss (UDL) % sucrose in cane in South Africa for the past ten seasons (with linear trend lines from 2008/09 to 2012/13 and 2012/13 to 2016/17).**

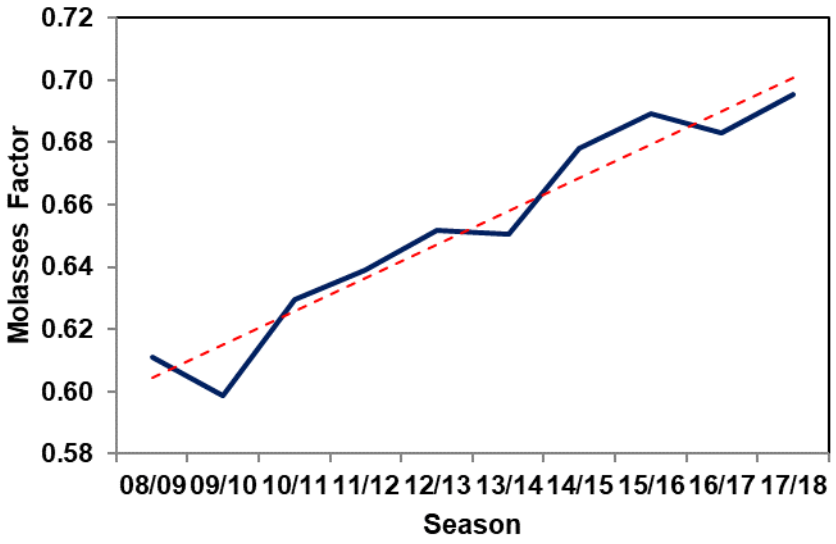


**Figure 20. South African Molasses factor for the past ten seasons (with linear trendline).**

The UDL values for the past three seasons at South African factories are compared in Figure 21 (factories marked with an asterisk indicate back-end refinery factories). UC had the lowest UDL in the 2017/18 amongst all of the factories, with a UDL value of 1.81%. The lowest UDL at the back-end refineries was achieved at NB (2.73%). There was a marked improvement in UDL from the previous season at this factory (4.99% in 2016/17). The highest UDL for back-end refineries was recorded at ML where the UDL increased from 2.58 to 4.77% in the past two seasons. The ML UDL was also the highest amongst all SA factories (includes raw sugar factories). It should be noted that the back-end refineries use a process house accounting system. In this approach a fixed refining percentage loss is assumed and therefore, if the actual refining losses were higher than the assumed value, this would reflect as an increase in the raw house UDL.

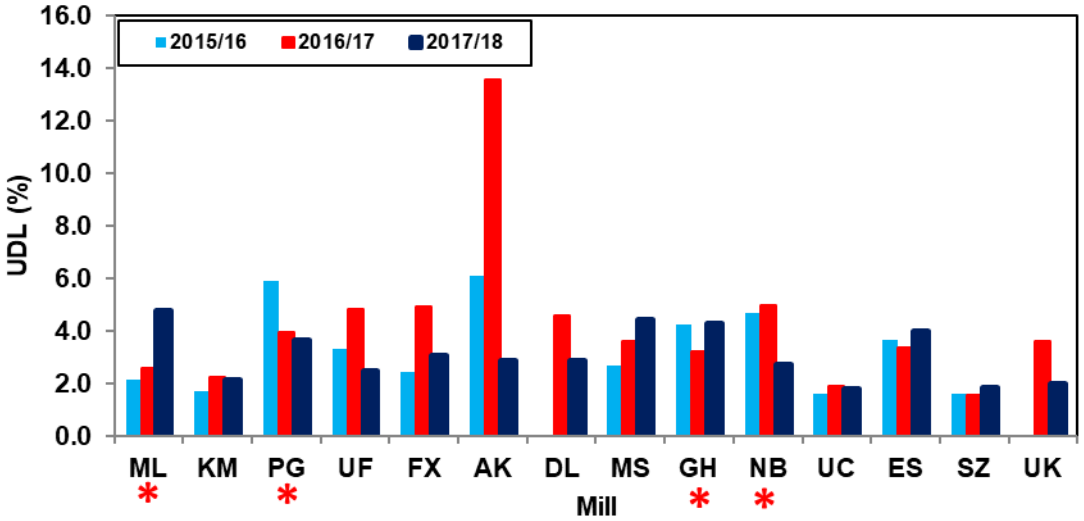


**Figure 21. Undetermined Loss (UDL) % sucrose in cane at South African factories for the past three seasons (with an asterisk indicating back-end refinery factories)**

Figure 22 shows the pol-based BHR for the non-South African factories. Only NH (back-end refinery factory) posted a pol-based BHR below 85% in the 2017/18 season. SM and HV recorded BHRs of over 90%, with values of 90.57 and 90.85%, respectively.

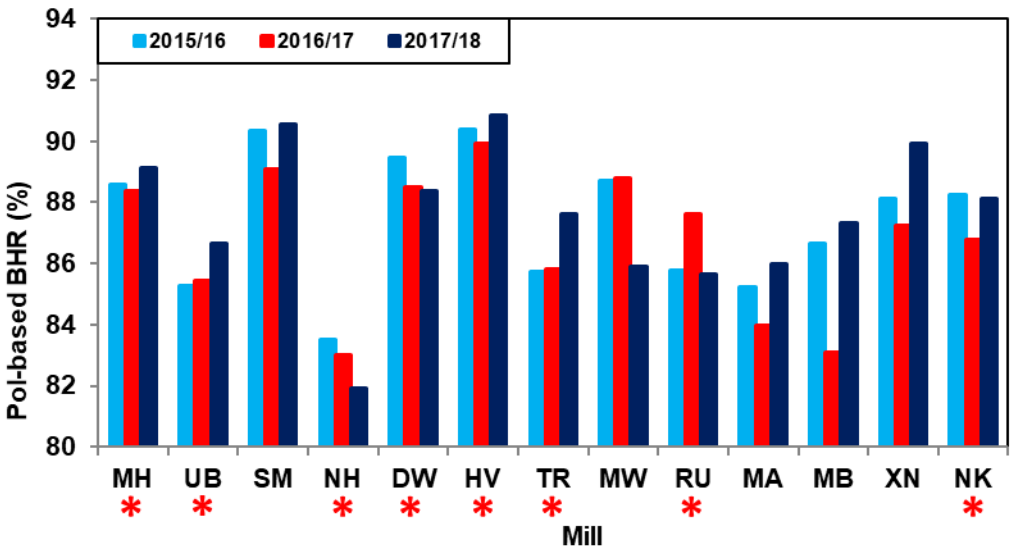


**Figure 22. Pol-based Boiling House Recovery (BHR) at southern African factories for the past three seasons (with an asterisk indicating back-end refinery factories)**

*Overall recovery parameters*

In the 2017/18 season, the South African industry Overall Recovery (OR) and Value Recovery (VR) improved substantially from the previous season's ten-year low values (Figure 23). The improvement to the OR was as a result of improvements to both extraction and BHR. The VR in 2017/18 benefitted from it being calculated using three-year averaged industry factors that included two poor years of factory performance due to the drought experienced. In 2017/18 the OR and VR were 83.00 and 99.63%, respectively. The ten-year average values for these parameters were 83.97 and 99.20%, respectively. It should be noted that whilst these parameters are close to or slightly better than the ten-year averages, just over ten seasons ago (2005/06) the South African industry averaged an OR of 86.52% and a VR of 100.33% which is substantially better than the average values reported.

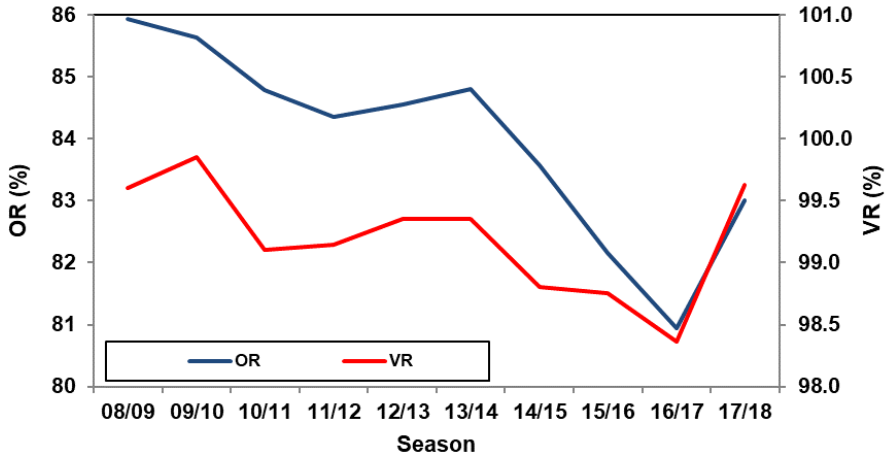


**Figure 23. Overall Recovery (OR) and Value Recovery (VR) in South Africa for the past ten seasons.**

*Cane to sugar ratio*

The changes in cane to sugar ratios from 2015/16 to 2017/18 (Figure 24) largely mirror the changes in cane quality as measured by ERC % cane (Figure 6). South Africa had the largest improvement in the cane to sugar ratio with values of 9.48 and 8.68 recorded in 2016/17 and 2017/18, respectively. The lowest and best cane to sugar ratio in 2017/18 was attained by Zimbabwe (7.95). In Tanzania, where the lowest pol content cane is usually received, the cane to sugar ratio increased from 8.78 to 10.08 over the past two seasons.

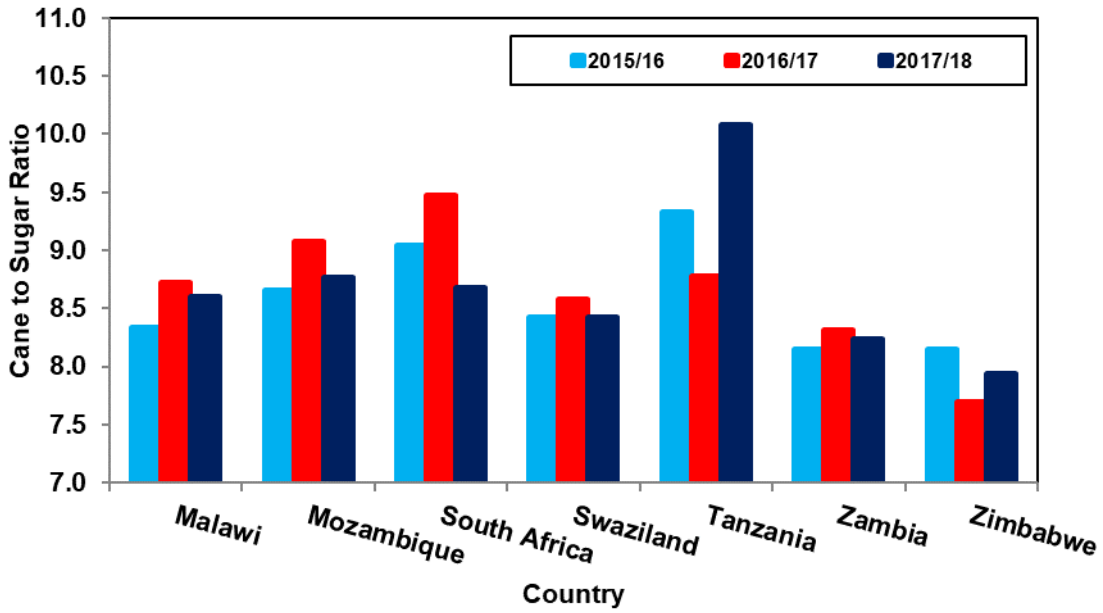


**Figure 24. Cane to sugar ratio in southern Africa for the past three seasons.**

*Sugar quality*

The SMRI does not receive comprehensive sugar quality data from its member factories. Comments are therefore only made on the quality of the bulk sugar received by the South African Sugar Terminal (SAST) in South Africa and KM sugar received by *Sociedade Terminal de Açucar de Maputo LDA* (STAM) (Anon, 2018).

In 2017/18, 672 277 tonnes of South African sugar were received by SAST and STAM. This represents 33.5% of local sugar production. In 2016/17, 120 833 tonnes of sugar were received by SAST. Comments from millers was that the increased amount of sugar sent to the terminal was as a direct result of increased amounts of sugar imported into South Africa.

Trends in the Very High Pol (VHP) sugar quality with respect to colour are shown in Figure 25. The average VHP sugar colour decreased to below the 1500 ICUMSA[1] specification level in 2017/18 with a colour of 1 454 ICUMSA units. There was a similar decrease in affinated sugar colour to 683 ICUMSA units. The ratios of affinated sugar colour to VHP sugar colour were similar for the past two seasons with ratios of 0.50 and 0.47 attained, respectively for 2016/17 and 2017/18.

[1] ICUMSA = International Commission for Uniform Methods of Sugar Analysis

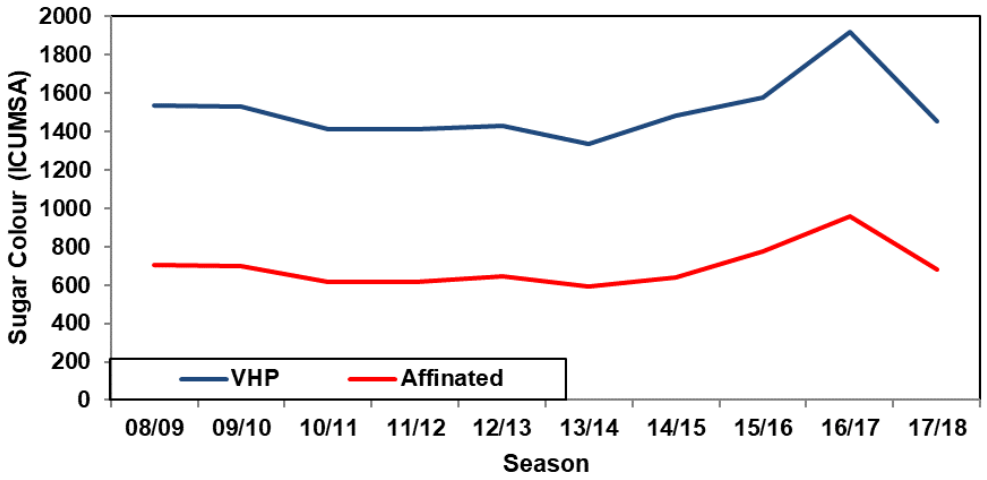


**Figure 25. Very High Pol (VHP) and affinated sugar colour in South Africa for the past ten seasons.**

The haze dextran concentration of VHP sugar received by SAST averaged 192 ppm in 2017/18. This is well above the 150 ppm concentration that is recognised as being high. The monthly average of dextran levels conformed to the specification only in the three months of June to August 2017 and also January 2018 for the period March 2017 to January 2018. The high levels of dextran is reason for concern beyond sugar quality issues as there is a negative association between dextran and sugar recovery performance. The starch content of the VHP sugar averaged 107 ppm which is below the 130 ppm specification.

## Conclusion

The improved rainfall over the past two seasons in South Africa brought some relief from the drought experienced in the 2014/15 to 2016/17 seasons. This resulted in a substantial improvement in cane quality, as measured by Recoverable Value % cane (12.46%) and Estimated Recoverable Crystal (ERC) % cane (11.48%), which increased from ten-year low values in 2016/17 to values similar to the ten-year average in the past season. The tonnage of cane crushed in 2017/18 (17.39 million tonnes) rose by 2.31 million tonnes over the previous season. The Overall Time Efficiency of South African factories improved to a ten-year best average value of 81.85%. This was mostly as a result of a decrease in the Lost time % Available from 11.03% to 9.64% over the past two seasons. The sucrose-based extraction improved to 97.11% and benefitted from a slight increase in imbibition usage and from improved factory operations – as suggested by the improved Corrected Reduced Extraction. The Boiling House Recovery (BHR) was 85.47% in 2017/18 and increased from a ten-year low value in 2016/17 to an above ten-year average value in the past season. The Corrected Reduced BHR or CRB, suggested that the improved BHR was as a result of the improved cane quality but was also assisted by improved factory operations. There were reductions to the sucrose lost to molasses and the undetermined losses. Amongst the countries under review, South Africa had the largest improvement to the cane to sugar ratio with this changing desirably from 9.48 to 8.68 over the past two seasons. Of the sugar produced in South Africa, 33.5% was despatched to SAST and STAM. The total of 672 277 tonnes of sugar increased from 120 833 tonnes the previous season. Comments from millers were that the increased amount of sugar sent to the terminal was as a direct result of increased amounts of sugar imported into South Africa. The export of locally produced sugar at low world prices leads to reduced industry proceeds. The haze dextran concentration of the sugar received by SAST averaged 192 ppm in 2017/18. This is well above the 150 ppm concentration that is recognised as a high dextran content.

For the non-South African factories reviewed, the cane quality was mostly similar to the previous season, with the exception of the Zimbabwean and Tanzanian factories where decreases in ERC % cane were recorded. Zimbabwe still recorded the highest ERC % cane amongst the countries reviewed. The total amount of cane crushed by the non-South African factories and the pol-based extraction achieved in 2017/18 were also similar to the previous season. The pol-based BHR values varied in the countries under review but were still high, with only one factory posting a value under 85%.

## 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 NPC, South African Sugar Association Cane Testing Service, South African Sugarcane Research Institute, South African Sugar Terminal, SMRI B1 Member and B2 Member factory laboratories, SMRI laboratories and staff, and the staff of the various factories and milling groups.

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## APPENDIX DATA TABLES

**Table A1:** Cane crushed and sugar made, cane composition and time accounts, performances and losses – South African factories (Season 2017/18)
**Table A2:** Cane crushed and sugar made, cane composition and time accounts, performances and losses – Swaziland, Malawi, Zimbabwe, Tanzania and Mozambique factories (Season 2017/18)
**Table B1:** Analysis of bagasse, juices, filter cake, syrup and final molasses – South African factories (Season 2017/18)
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**TABLE A1**

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

**SOUTH AFRICAN FACTORIES (SEASON 2017/18)**

| 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** | 166238 | - | - | 248540 | 137034 | 115936 | - | - | 184792 | 126287 | 96777 | - | - | 105940 |
| Refined % total sugar | 40.01 | - | - | - | 67.91 | - | - | - | - | - | - | - | - | - |
| Moisture all sugar | 0.07 | - | - | 0.09 | 0.04 | 0.06 | - | - | 0.09 | 0.13 | 0.08 | - | - | 0.06 |
| Pol all sugar | 99.97 | - | - | 99.05 | 99.79 | 99.40 | - | - | 99.37 | 99.38 | 99.31 | - | - | 99.52 |
| Tons cane crushed total | 1312874 | | | 1896859 | 1159181 | 1030432 | | | 1670459 | 1138089 | 866923 | | | 975136 |
| Tons cane crushed per tandem | | 924505 | 972354 | | | | 804425 | 866034 | | | | | 975136 | |
| Season started on | 12-Apr-17 | - | - | 12-Apr-17 | 12-Apr-17 | 19-Apr-17 | - | - | 20-Apr-17 | 04-Apr-17 | 20-Apr-17 | - | - | 10-Apr-17 |
| Season completed on | 03-Dec-17 | - | - | 18-Nov-17 | 15-Dec-17 | 11-Dec-17 | - | - | 10-Dec-17 | 03-Dec-17 | 11-Nov-17 | - | - | 03-Dec-17 |
| Length of season (days) | 235 | - | - | 219 | 247 | 236 | - | - | 232 | 241 | 205 | - | - | 237 |
| **TIME ACCOUNT** | | | | | | | | | | | | | | |
| Overall time efficiency % | 87.85 | 83.16 | 83.48 | 85.74 | 83.59 | 76.88 | 66.75 | 63.57 | 71.15 | 68.23 | 64.59 | - | 72.33 | 72.33 |
| Scheduled stops% gross available time | 0.56 | 4.49 | 4.04 | 4.26 | 5.56 | 5.25 | 8.87 | 9.12 | 9.00 | 7.91 | 7.75 | - | 8.07 | 8.07 |
| Lack of cane % gross available time | 5.96 | 3.77 | 4.85 | 4.31 | 2.39 | 10.63 | 8.46 | 9.62 | 9.05 | 6.75 | 9.38 | - | 7.09 | 7.09 |
| Other stops % gross available time | 5.58 | 8.12 | 7.10 | 7.61 | 7.85 | 6.51 | 15.40 | 16.72 | 16.07 | 16.96 | 17.81 | - | 11.68 | 11.68 |
| Foreign matter % gross available time | 0.05 | 0.47 | 0.53 | 0.50 | 0.61 | 0.73 | 0.52 | 0.97 | 0.75 | 0.15 | 0.47 | - | 0.83 | 0.83 |
| Lost time % available crush.time | 5.97 | 8.90 | 7.84 | 8.37 | 8.58 | 7.80 | 18.75 | 20.82 | 19.79 | 19.91 | 21.61 | - | 13.90 | 13.90 |
| Force majeure stops (hours) | 10 | 18 | 18 | 18 | 0 | 70 | 56 | 53 | 54 | 36 | 0 | - | 3 | 3 |
| **THROUGHPUTS PER CRUSHING HOUR #** | | | | | | | | | | | | | | |
| Tons cane | 264.84 | 214.12 | 223.78 | 436.57 | 228.64 | 239.07 | 220.57 | 243.83 | 458.03 | 287.43 | 272.41 | - | 237.69 | 237.69 |
| Tons fibre in bagasse | 36.31 | 29.19 | 30.52 | 59.53 | 31.45 | 33.76 | 36.25 | 39.52 | 74.73 | 46.40 | 42.48 | - | 39.68 | 39.68 |
| Tons brix in mixed juice(adj.) | 45.96 | 36.08 | 37.77 | 73.62 | 36.90 | 35.78 | 34.17 | 37.08 | 70.29 | 43.38 | 40.42 | - | 36.13 | 36.13 |
| Tons sucrose in mixed juice(adj.) | 38.57 | 31.38 | 32.87 | 62.45 | 31.78 | 30.80 | 28.95 | 31.36 | 55.19 | 36.90 | 34.95 | - | 30.78 | 30.78 |
| Tons non-suc. in mixed juice(adj.) | 6.08 | 4.70 | 4.89 | 9.56 | 5.12 | 4.98 | 5.20 | 5.74 | 10.79 | 6.48 | 5.47 | - | 5.34 | 5.34 |
| Tons of sugar produced | 32.43 | - | - | 55.76 | 27.03 | 26.90 | - | - | 47.01 | 31.89 | 30.41 | - | 25.82 | 25.82 |
| **COMPOSITION OF CANE CRUSHED** | | | | | | | | | | | | | | |
| Sucrose % cane | 15.47 | 14.96 | 15.04 | 15.00 | 14.40 | 13.30 | 13.36 | 13.11 | 13.23 | 13.25 | 13.38 | - | 13.33 | 13.33 |
| Pol % cane | 15.35 | 14.83 | 14.90 | 14.87 | 14.26 | 13.19 | 13.30 | 13.04 | 13.17 | 13.21 | 13.29 | - | 13.29 | 13.29 |
| Fibre % cane | 13.71 | 13.62 | 13.65 | 13.64 | 13.76 | 14.33 | 16.36 | 16.38 | 16.37 | 16.14 | 16.87 | - | 16.70 | 16.70 |
| Brix % cane | 18.10 | 17.38 | 17.47 | 17.43 | 16.96 | 15.53 | 16.00 | 15.81 | 15.90 | 15.75 | 15.4 | - | 15.80 | 15.80 |
| Ash % cane | 1.24 | - | - | 2.00 | 1.45 | 2.17 | - | - | 2.53 | 1.89 | 1.93 | - | - | - |
| ERC % cane | 12.96 | 12.60 | 12.67 | 12.64 | 11.97 | 11.10 | 10.85 | 10.57 | 10.70 | 10.83 | 11.24 | - | 10.92 | 10.92 |
| ERC % sucrose in cane | 84.57 | 84.24 | 84.26 | 84.25 | 83.10 | 83.45 | 81.17 | 80.62 | 80.89 | 81.75 | 83.99 | - | 81.91 | 81.91 |
| RV % cane | 14.03 | 13.61 | 13.68 | 13.65 | 12.99 | 12.01 | 11.85 | 11.57 | 11.70 | 11.80 | 12.11 | - | 11.88 | 11.88 |
| Merc % cane | 13.09 | 12.68 | 12.77 | 12.72 | 12.04 | 11.18 | 10.86 | 10.58 | 10.71 | 10.85 | 11.32 | - | 10.89 | 10.89 |
| **EXTRACTION** | | | | | | | | | | | | | | |
| Extraction (sucrose based) | 97.35 | 97.94 | 97.70 | 97.82 | 96.54 | 96.85 | 98.25 | 98.10 | 98.17 | 96.91 | 95.91 | - | 97.13 | 97.13 |
| Corrected reduced extraction | 96.60 | 97.40 | 97.09 | 97.24 | 95.77 | 96.45 | 98.34 | 98.19 | 98.26 | 97.02 | 95.94 | - | 97.34 | 97.34 |
| Imbibition % fibre | 380 | 317 | 299 | 308 | 381 | 375 | 348 | 352 | 350 | 340 | 291 | - | 392 | 392 |
| Diffusion Rate Index | 10 | 11 | 11 | 11 | - | 8 | - | - | - | - | - | - | - | - |
| Preparation index | - | 93 | 92 | 93 | 92 | 92 | 90 | 91 | 90 | 92 | - | - | 92 | 92 |
| Pol factor | 100.20 | 99.93 | 99.85 | 99.89 | 101.24 | 98.78 | 101.14 | 98.76 | 99.90 | 99.39 | 99.65 | - | 100.95 | 100.95 |
| Brix factor | 101.82 | 101.28 | 101.30 | 101.29 | 102.28 | 100.00 | 103.64 | 101.87 | 102.72 | 101.28 | 101.28 | - | 102.71 | 102.71 |
| **RECOVERIES** | | | | | | | | | | | | | | |
| Boiling house recovery (sucrose) | 84.06 | - | - | 88.45 | 84.87 | 86.80 | - | - | 84.63 | 85.90 | 86.39 | - | - | 83.48 |
| C R B | 82.81 | - | - | 86.39 | 84.27 | 85.73 | - | - | 85.10 | 85.95 | 85.4 | - | - | 83.96 |
| Overall recovery (sucrose) | 81.83 | - | - | 86.52 | 81.92 | 84.07 | - | - | 83.09 | 83.24 | 82.87 | - | - | 81.09 |
| Ton cane per ton sugar | 7.90 | - | - | 7.63 | 8.46 | 8.89 | - | - | 9.04 | 9.01 | 8.96 | - | - | 9.20 |
| Ton cane per ton $96^0$ pol sugar | 7.58 | - | - | 7.40 | 8.14 | 8.58 | - | - | 8.73 | 8.71 | 8.66 | - | - | 8.88 |
| Value Recovery % | 97.57 | - | - | 101.49 | 98.77 | 100.17 | - | - | 101.54 | 100.42 | 97.84 | - | - | 98.77 |
| Crystal Recovery Efficiency ( XRE ) | 100.39 | - | - | 105.40 | 102.31 | 62.06 | - | - | 106.55 | 105.54 | 101.47 | - | - | 103.14 |
| **BALANCES** | | | | | | | | | | | | | | |
| Sucrose lost % sucrose in cane | | | | | | | | | | | | | | |
| - lost in bagasse | 2.65 | - | - | 2.18 | 3.46 | 3.15 | - | - | 1.83 | 3.09 | 4.09 | - | - | 2.87 |
| - lost in filter cake | - | - | - | - | - | 0.23 | - | - | - | - | 1.76 | - | - | - |
| - lost in final molasses | 10.72 | - | - | 9.16 | 10.96 | 10.04 | - | - | 12.04 | 10.80 | 8.41 | - | - | 11.62 |
| - undetermined losses | 4.77 | - | - | 2.13 | 3.66 | 2.50 | - | - | 3.05 | 2.86 | 2.88 | - | - | 4.42 |
| Non sucrose ratio | 0.84 | - | - | 1.03 | 1.03 | 1.02 | - | - | 1.12 | 0.98 | 0.98 | - | - | 1.09 |
| Fructose ratio FM/MJ | 1.29 | - | - | 0.96 | 1.08 | 0.95 | - | - | 1.00 | 0.99 | 0.9 | - | - | 1.08 |
| Glucose ratio FM/MJ | 0.94 | - | - | 0.52 | 0.69 | 0.51 | - | - | 0.64 | 0.70 | 0.55 | - | - | 0.67 |

*** Cane diffuser**

**# 2017/18 season's throughputs, for factories with double tandems, were calculated using con-current crushing hours.**

**TABLE A1 (continued)**

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

**SOUTH AFRICAN FACTORIES (SEASON 2017/18)**

| 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** | - | - | 130146 | 153939 | 97796 | 146510 | - | - | 226147 | 68195 | 2004277 |
| Refined % total sugar | - | - | 100.00 | 100.00 | - | - | - | - | - | - | - |
| Moisture all sugar | - | - | 0.02 | 0.02 | 0.07 | 0.05 | - | - | 0.09 | 0.07 | 0.07 |
| Pol all sugar | - | - | 99.93 | 99.95 | 99.51 | 99.63 | - | - | 99.39 | 99.45 | 99.54 |
| Tons cane crushed total | | | 1238955 | 1375221 | 800772 | 1247158 | | | 2091272 | 584861 | 17388192 |
| Tons cane crushed per tandem | 380456 | 858499 | | | | | 1045684 | 1045588 | | | |
| Season started on | - | - | 23-Mar-17 | 08-Mar-17 | 01-Mar-17 | 07-Mar-17 | - | - | 23-Mar-17 | 23-May-17 | 01-Mar-17 |
| Season completed on | - | - | 12-Nov-17 | 23-Nov-17 | 13-Nov-17 | 09-Dec-17 | - | - | 16-Dec-17 | 16-Nov-17 | 16-Dec-17 |
| Length of season (days) | - | - | 234 | 260 | 257 | 277 | - | - | 268 | 177 | 241 |
| **TIME ACCOUNT** | | | | | | | | | | | |
| Overall time efficiency % | 76.40 | 81.85 | 82.37 | 79.71 | 87.09 | 83.75 | 80.94 | 84.28 | 84.57 | 68.84 | 81.85 |
| Scheduled stops% gross available time | 4.91 | 5.69 | 5.30 | 6.06 | 4.62 | 4.38 | 4.38 | 4.69 | 4.54 | 7.76 | 5.60 |
| Lack of cane % gross available time | 13.92 | 7.35 | 10.63 | 7.40 | 1.43 | 5.73 | 10.85 | 5.28 | 8.06 | 15.94 | 7.18 |
| Other stops % gross available time | 4.18 | 4.27 | 4.22 | 6.59 | 5.80 | 5.43 | 3.09 | 3.81 | 3.45 | 5.27 | 8.34 |
| Foreign matter % gross available time | 0.59 | 0.85 | 0.72 | 0.23 | 1.06 | 0.71 | 0.74 | 1.94 | 1.34 | 2.2 | 0.72 |
| Lost time % available crush.time | 5.19 | 4.96 | 5.07 | 7.64 | 6.25 | 6.09 | 3.68 | 4.33 | 4.01 | 7.11 | 9.64 |
| Force majeure stops (hours) | 5 | 5 | 5 | 0 | 5 | 0 | 15 | 5 | 10 | 0 | 209 |
| **THROUGHPUTS PER CRUSHING HOUR #** | | | | | | | | | | | |
| Tons cane | 89.69 | 186.54 | 269.20 | 274.75 | 133.77 | 224.46 | 203.87 | 195.84 | 390.28 | 199.73 | 273.29 |
| Tons fibre in bagasse | 14.49 | 28.79 | 42.14 | 38.64 | 18.09 | 32.79 | 32.30 | 31.04 | 61.85 | 30.86 | 40.83 |
| Tons brix in mixed juice(adj.) | 13.52 | 27.06 | 39.52 | 42.54 | 20.95 | 34.99 | 29.74 | 28.51 | 56.87 | 31.23 | 42.51 |
| Tons sucrose in mixed juice(adj.) | 11.62 | 23.35 | 34.07 | 37.35 | 18.30 | 30.61 | 25.49 | 24.37 | 48.68 | 27.13 | 36.69 |
| Tons non-suc. in mixed juice(adj.) | 1.90 | 3.71 | 5.46 | 5.21 | 2.65 | 4.38 | 4.26 | 4.14 | 8.20 | 4.1 | 5.83 |
| Tons of sugar produced | - | - | 28.28 | 30.75 | 16.34 | 26.37 | - | - | 42.20 | 23.29 | 31.50 |
| **COMPOSITION OF CANE CRUSHED** | | | | | | | | | | | |
| Sucrose % cane | 13.23 | 13.01 | 13.08 | 14.07 | 14.13 | 14.05 | 12.88 | 12.80 | 12.84 | 13.96 | 13.82 |
| Pol % cane | 13.14 | 12.92 | 12.98 | 13.92 | 14.05 | 13.95 | 12.79 | 12.73 | 12.76 | 13.95 | 13.73 |
| Fibre % cane | 16.35 | 16.43 | 16.40 | 14.81 | 13.64 | 14.76 | 16.27 | 16.49 | 16.38 | 15.45 | 15.21 |
| Brix % cane | 15.54 | 15.34 | 15.40 | 16.30 | 16.39 | 16.23 | 15.17 | 15.12 | 15.14 | 16.2 | 16.21 |
| Ash % cane | 2.43 | 2.35 | 2.38 | 1.85 | 1.17 | 1.55 | 1.11 | 1.15 | 1.13 | 2.83 | 1.80 |
| ERC % cane | 10.92 | 10.71 | 10.77 | 11.83 | 11.89 | 11.84 | 10.60 | 10.51 | 10.56 | 11.7 | 11.48 |
| ERC % sucrose in cane | 82.57 | 82.27 | 82.36 | 84.12 | 84.20 | 84.31 | 82.33 | 82.07 | 82.20 | 83.74 | 83.08 |
| RV % cane | 11.85 | 11.63 | 11.70 | 12.77 | 12.84 | 12.76 | 11.51 | 11.42 | 11.47 | 12.64 | 12.44 |
| Merc % cane | 10.98 | 10.79 | 10.85 | 12.00 | 12.02 | 11.98 | 10.72 | 10.63 | 10.67 | 11.75 | 11.56 |
| **EXTRACTION** | | | | | | | | | | | |
| Extraction (sucrose based) | 97.93 | 96.22 | 96.75 | 96.57 | 96.83 | 97.07 | 97.04 | 97.19 | 97.12 | 97.28 | 97.11 |
| Corrected reduced extraction | 98.01 | 96.24 | 96.81 | 96.00 | 96.10 | 96.71 | 97.15 | 97.31 | 97.23 | 97.15 | 96.88 |
| Imbibition % fibre | 428 | 315 | 351 | 298 | 263 | 340 | 282 | 284 | 283 | 424 | 336 |
| Diffusion Rate Index | 9 | 10 | 10 | 7 | - | 8 | 11 | 11 | 11 | 11 | 10 |
| Preparation index | - | - | - | - | 91 | - | - | - | - | - | 92 |
| Pol factor | 100.43 | 99.49 | 99.78 | 99.15 | 98.79 | 100.21 | 98.74 | 99.30 | 99.02 | 99.92 | 99.77 |
| Brix factor | 101.57 | 100.84 | 101.06 | 100.60 | 100.02 | 101.23 | 100.23 | 100.83 | 100.53 | 101.45 | 101.25 |
| **RECOVERIES** | | | | | | | | | | | |
| Boiling house recovery (sucrose) | - | - | 82.96 | 82.37 | 88.86 | 85.85 | - | - | 86.18 | 85.37 | 85.48 |
| C R B | - | - | 82.52 | 80.12 | 86.38 | 83.33 | - | - | 85.26 | 83.79 | 84.99 |
| Overall recovery (sucrose) | - | - | 80.25 | 79.54 | 86.04 | 83.33 | - | - | 83.69 | 83.05 | 83.00 |
| Ton cane per ton sugar | - | - | 9.52 | 8.94 | 8.19 | 8.51 | - | - | 9.25 | 8.58 | 8.68 |
| Ton cane per ton $96^0$ pol sugar | - | - | 9.15 | 8.58 | 7.90 | 8.20 | - | - | 8.93 | 8.28 | 8.37 |
| Value Recovery % | - | - | 98.21 | 95.81 | 101.23 | 98.24 | - | - | 101.34 | 99.38 | 99.66 |
| Crystal Recovery Efficiency ( XRE ) | - | - | 101.45 | 97.63 | 104.85 | 101.40 | - | - | 104.46 | 102.27 | 103.05 |
| **BALANCES** | | | | | | | | | | | |
| Sucrose lost % sucrose in cane | | | | | | | | | | | |
| - lost in bagasse | - | - | 3.25 | 3.43 | 3.17 | 2.93 | - | - | 2.88 | 2.72 | 2.89 |
| - lost in filter cake | - | - | 0.44 | 2.22 | 0.09 | 0.14 | - | - | 0.16 | - | 0.34 |
| - lost in final molasses | - | - | 11.78 | 12.10 | 8.89 | 9.57 | - | - | 11.41 | 12.26 | 10.72 |
| - undetermined losses | - | - | 4.28 | 2.69 | 1.81 | 3.98 | - | - | 1.85 | 1.98 | 3.05 |
| Non sucrose ratio | - | - | 1.04 | 1.12 | 0.97 | 1.05 | - | - | 1.07 | 1.2 | 1.00 |
| Fructose ratio FM/MJ | - | - | 0.98 | 1.20 | 0.90 | 1.07 | - | - | 1.24 | 1.38 | 1.05 |
| Glucose ratio FM/MJ | - | - | 0.58 | 0.77 | 0.32 | 0.56 | - | - | 0.86 | 0.86 | 0.67 |

*** Cane diffuser**

**# 2017/18 season's throughputs, for factories with double tandems, were calculated using con-current 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 2017/18)**

| 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** | - | - | 188085 | - | - | 245762 | 216350 | 125734 | 110120 | - | - | 196398 |
| Refined % total sugar | - | - | 64.98 | - | - | 38.44 | - | 10.66 | 18.70 | - | - | - |
| Moisture % all sugar | - | - | 0.05 | - | - | 0.08 | - | - | 0.06 | - | - | - |
| Pol % all sugar | - | - | 99.76 | - | - | 99.61 | 99.39 | 99.31 | 99.43 | - | - | 99.43 |
| Tons cane crushed total | | | 1504680 | | | 2162071 | 1738401 | 1154254 | 883901 | | | 1534443 |
| Tons cane crushed per tandem | 740686 | 763994 | | 645271 | 1516800 | | | | | 780539 | 753904 | |
| Season started on | - | - | 05-May-17 | - | - | 19-Apr-17 | 05-May-17 | 26-Apr-17 | 19-Apr-17 | - | - | 30-May-17 |
| Season completed on | - | - | 11-Dec-17 | - | - | 19-Dec-17 | 14-Dec-17 | 15-Nov-17 | 10-Dec-17 | - | - | 16-Dec-17 |
| Length of season (days) | - | - | 220 | - | - | 244 | 223 | 203 | 235 | - | - | 200 |
| **TIME ACCOUNT** | | | | | | | | | | | | |
| Overall time efficiency % | 75.37 | 78.80 | 77.08 | 82.74 | 92.21 | 87.49 | 83.07 | 82.95 | 86.20 | 78.25 | 76.68 | 77.47 |
| Scheduled stops% gross available time | 5.40 | 5.56 | 5.48 | 4.02 | 2.53 | 3.27 | 3.91 | 4.07 | 3.01 | 4.40 | 3.94 | 4.17 |
| Lack of cane % gross available time | 11.34 | 8.00 | 9.67 | 10.52 | 3.93 | 7.22 | 5.99 | 4.18 | 4.55 | 8.50 | 9.68 | 9.09 |
| Other stops % gross available time | 7.87 | 7.42 | 7.64 | 1.46 | 0.90 | 1.18 | 6.83 | 8.53 | 6.01 | 8.53 | 8.71 | 8.62 |
| Foreign matter % gross available time | 0.03 | 0.23 | 0.13 | 1.26 | 0.43 | 0.84 | 0.20 | 0.27 | 0.24 | 0.32 | 0.98 | 0.65 |
| Lost time % available crush.time | 9.45 | 8.60 | 9.02 | 1.73 | 0.97 | 1.33 | 7.60 | 9.32 | 6.52 | 9.83 | 10.21 | 10.01 |
| Force majeure stops (hours) | 9 | 4 | 7 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| **THROUGHPUTS PER CRUSHING HOUR #** | | | | | | | | | | | | |
| Tons cane | 186.20 | 179.94 | 351.11 | 142.57 | 299.20 | 436.54 | 398.60 | 283.10 | 184.60 | 207.42 | 206.47 | 407.76 |
| Tons fibre in bagasse | 24.19 | 25.47 | 47.23 | 17.95 | 41.34 | 58.72 | 50.08 | 39.27 | 25.93 | 31.55 | 31.37 | 61.99 |
| Tons brix in mixed juice | 29.95 | 29.90 | 56.82 | 22.42 | 47.27 | 68.88 | 63.51 | 43.78 | 29.82 | 33.16 | 32.91 | 65.09 |
| Tons pol in mixed juice | 25.87 | 25.89 | 51.76 | 18.69 | 39.03 | 58.87 | 54.44 | 37.38 | 25.87 | 29.03 | 28.95 | 57.98 |
| Tons non-pol. in mixed juice | 4.08 | 4.01 | 7.69 | 3.73 | 8.24 | 11.85 | 9.07 | 6.39 | 3.94 | 4.13 | 3.96 | 7.97 |
| Tons of sugar produced | - | - | 46.23 | - | - | 51.22 | 49.61 | 30.84 | 23.00 | - | - | 52.98 |
| **COMPOSITION OF CANE CRUSHED** | | | | | | | | | | | | |
| Pol % cane | 14.49 | 14.60 | 14.54 | 13.55 | 13.52 | 13.53 | 14.16 | 13.96 | 14.45 | 14.43 | 14.43 | 14.43 |
| Fibre % cane | 13.87 | 14.26 | 14.07 | 12.86 | 13.70 | 13.45 | 14.10 | 14.16 | 14.14 | 15.20 | 15.19 | 15.19 |
| Brix % cane | 16.19 | 16.37 | 17.00 | 16.46 | 16.60 | 16.56 | 16.80 | 16.54 | 17.04 | 16.84 | 16.71 | 16.78 |
| Ash % cane | 1.51 | 1.51 | 1.51 | 2.22 | 2.22 | 2.22 | 1.17 | 1.56 | 2.66 | - | - | - |
| ERC % cane | 12.58 | 12.07 | 12.03 | 10.96 | 10.79 | 10.84 | 11.69 | 11.53 | 11.99 | 12.06 | 12.14 | 12.10 |
| ERC % pol in cane | 86.84 | 82.70 | 82.70 | 80.85 | 79.82 | 80.13 | 82.52 | 82.56 | 82.99 | 83.55 | 84.12 | 83.83 |
| **EXTRACTION** | | | | | | | | | | | | |
| Extraction (pol based) | 95.90 | 96.56 | 96.24 | 96.74 | 96.74 | 96.57 | 96.43 | 94.56 | 96.99 | 96.97 | 96.97 | 97.06 |
| Corrected reduced extraction | 94.68 | 95.82 | 95.28 | 95.76 | 96.18 | 95.86 | 95.29 | 93.56 | 96.40 | 96.70 | 96.69 | 96.80 |
| Imbibition % fibre | 372 | 403 | 388 | 381 | 368 | 372 | 333 | 215 | 335 | 374 | 360 | 367 |
| Diffusion Rate Index | - | - | - | - | - | - | - | 8 | - | - | - | - |
| Preparation index | 90 | 90 | 90 | - | - | - | 91 | - | - | 92 | 92 | 92 |
| Pol factor | 99.00 | 99.68 | 99.34 | 83.38 | 109.09 | 99.88 | 100.28 | 98.02 | 98.49 | 100.71 | 100.27 | 100.49 |
| Brix factor | 96.35 | 97.47 | 101.18 | 83.75 | 109.40 | 100.29 | 101.35 | 99.92 | 100.79 | 103.24 | 102.09 | 102.67 |
| **RECOVERIES** | | | | | | | | | | | | |
| Boiling house recovery (pol based) | - | - | 89.11 | - | - | 86.67 | 90.57 | 81.93 | 88.38 | - | - | 90.85 |
| Overall recovery (pol based) | - | - | 85.76 | - | - | 83.70 | 87.34 | 77.48 | 85.72 | - | - | 88.18 |
| Ton cane per ton sugar | - | - | 8.44 | - | - | 8.80 | 8.04 | 9.18 | 8.03 | - | - | 7.81 |
| Ton cane per ton $96^0$ pol sugar | - | - | 7.70 | - | - | 8.48 | 7.76 | 8.87 | 7.75 | - | - | 7.54 |
| **BALANCES** | | | | | | | | | | | | |
| Pol lost % pol in cane | | | | | | | | | | | | |
| - lost in bagasse | - | - | 3.76 | - | - | 3.43 | 3.57 | 5.44 | 3.01 | - | - | 2.94 |
| - lost in filter cake | - | - | 0.11 | - | - | - | 0.46 | 0.15 | 0.05 | - | - | - |
| - lost in final molasses | - | - | 7.77 | - | - | 10.61 | 7.54 | 11.66 | 9.27 | - | - | 7.46 |
| - undetermined losses | - | - | 2.60 | - | - | 2.26 | 1.09 | 5.28 | 1.95 | - | - | 1.42 |
| Non pol ratio | - | - | 1.05 | - | - | 1.13 | 1.02 | 1.04 | 0.94 | - | - | 0.99 |

*** Cane diffuser**

**# 2017/18 season's throughputs, for factories with double tandems, were calculated using con-current 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 2017/18)**

| 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** | - | - | 193852 | - | - | 353503 | 45621 | 71357 | 75207 | 50646 | 167623 |
| Refined % total sugar | - | - | - | - | - | 21.52 | - | - | - | - | - |
| Moisture % all sugar | - | - | - | - | - | 0.10 | 0.09 | 0.08 | - | 0.10 | - |
| Pol % all sugar | - | - | - | - | - | 99.46 | 99.25 | 99.37 | 99.40 | 99.17 | 99.19 |
| Tons cane crushed total | | | 1566539 | | | 2913201 | 453500 | 729690 | 686043 | 442213 | 1416110 |
| Tons cane crushed per tandem | 1138907 | 427632 | | 1538413 | 1374788 | | | | | | |
| Season started on | - | - | 16-May-17 | - | - | 19-Apr-17 | 21-Jun-17 | 12-Jun-17 | 29-May-17 | 15-May-17 | 18-May-17 |
| Season completed on | - | - | 23-Dec-17 | - | - | 10-Nov-17 | 04-Mar-18 | 01-Mar-18 | 19-Dec-17 | 17-Nov-17 | 22-Dec-17 |
| Length of season (days) | - | - | 221 | - | - | 205 | 256 | 262 | 203 | 186 | 218 |
| **TIME ACCOUNT** | | | | | | | | | | | |
| Overall time efficiency % | 84.78 | 59.92 | 73.21 | 91.72 | 85.69 | 88.71 | 74.68 | 85.48 | 75.78 | 68.65 | 84.11 |
| Scheduled stops% gross available time | 2.95 | 5.32 | 4.05 | 3.51 | 3.61 | 3.56 | 2.46 | 3.60 | 0.67 | 4.17 | 1.50 |
| Lack of cane % gross available time | 5.65 | 24.64 | 14.48 | 1.85 | 3.88 | 2.87 | 17.85 | 5.30 | 19.53 | 19.61 | 9.91 |
| Other stops % gross available time | 6.60 | 10.11 | 8.23 | 2.90 | 6.81 | 4.85 | 4.95 | 5.56 | 3.49 | 7.34 | 4.33 |
| Foreign matter % gross available time | 0.03 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.06 | 0.06 | 0.53 | 0.23 | 0.15 |
| Lost time % available crush.time | 7.22 | 14.44 | 10.11 | 3.07 | 7.36 | 5.19 | 6.22 | 6.11 | 4.40 | 9.66 | 4.90 |
| Force majeure stops (hours) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 25 | 5 | 0 |
| **THROUGHPUTS PER CRUSHING HOUR #** | | | | | | | | | | | |
| Tons cane | 253.06 | 154.57 | 215.57 | 341.29 | 327.61 | 646.29 | 102.70 | 139.82 | 195.95 | 144.63 | 355.65 |
| Tons fibre in bagasse | 36.32 | 21.82 | 30.80 | 47.95 | 44.06 | 88.97 | 15.07 | 19.34 | 24.67 | 21.41 | 51.56 |
| Tons brix in mixed juice | 41.02 | 24.75 | 34.83 | 54.00 | 51.83 | 102.25 | 14.19 | 18.88 | 29.43 | 21.67 | 53.63 |
| Tons pol in mixed juice | 35.81 | 21.70 | 60.88 | 46.69 | 44.91 | 91.66 | 11.93 | 15.86 | 24.83 | 18.81 | 46.44 |
| Tons non-pol. in mixed juice | 5.21 | 3.05 | 4.39 | 7.31 | 6.92 | 13.75 | 2.26 | 3.02 | 4.60 | 2.86 | 7.19 |
| Tons of sugar produced | - | - | 53.35 | - | - | 81.23 | 10.33 | 13.67 | 21.48 | 16.56 | 42.10 |
| **COMPOSITION OF CANE CRUSHED** | | | | | | | | | | | |
| Pol % cane | 14.51 | 14.49 | 14.51 | 14.32 | 14.41 | 14.36 | 12.24 | 12.03 | 13.18 | 13.45 | 13.40 |
| Fibre % cane | 14.70 | 14.49 | 14.64 | 14.26 | 14.25 | 14.25 | 16.68 | 16.68 | 13.37 | 15.95 | 14.50 |
| Brix % cane | 17.02 | 16.99 | 17.01 | 16.86 | 16.93 | 16.90 | 14.89 | 14.71 | 15.98 | 15.87 | 15.80 |
| Ash % cane | 0.83 | 0.83 | 0.83 | - | - | - | 2.58 | 2.12 | 1.67 | 1.74 | 1.31 |
| ERC % cane | 12.09 | 12.08 | 12.09 | 11.89 | 11.98 | 11.93 | 9.74 | 9.52 | 10.65 | 11.08 | 11.09 |
| ERC % pol in cane | 83.31 | 83.35 | 83.32 | 83.03 | 83.19 | 83.10 | 79.62 | 79.17 | 80.83 | 82.37 | 82.73 |
| **EXTRACTION** | | | | | | | | | | | |
| Extraction (pol based) | 97.49 | 97.49 | 97.33 | 95.54 | 95.54 | 95.36 | 94.98 | 94.32 | 96.15 | 96.75 | 97.44 |
| Corrected reduced extraction | 97.08 | 97.03 | 96.87 | 94.71 | 94.45 | 94.37 | 94.96 | 94.01 | 95.10 | 96.54 | 97.18 |
| Imbibition % fibre | 370 | 342 | 362 | 260 | 288 | 273 | 238 | 291 | 229 | 256 | 337 |
| Diffusion Rate Index | - | - | - | - | - | - | - | - | - | - | - |
| Preparation index | 92 | 92 | 92 | 90 | 89 | 90 | 84 | 82 | 89 | 90 | - |
| Pol factor | 100.10 | 99.65 | 99.98 | 97.83 | 98.33 | 98.07 | 97.57 | 97.13 | 96.70 | 99.53 | 99.50 |
| Brix factor | 101.58 | 101.36 | 101.52 | 98.54 | 98.91 | 98.71 | 99.14 | 98.54 | 98.72 | 101.91 | 100.90 |
| **RECOVERIES** | | | | | | | | | | | |
| Boiling house recovery (pol based) | - | - | 87.60 | - | - | 88.14 | 85.91 | 85.66 | 85.99 | 87.31 | 89.91 |
| Overall recovery (pol based) | - | - | 85.26 | - | - | 84.05 | 81.60 | 80.79 | 82.67 | 84.47 | 87.61 |
| Ton cane per ton sugar | - | - | 8.08 | - | - | 8.24 | 9.94 | 10.23 | 9.12 | 8.73 | 8.45 |
| Ton cane per ton $96^0$ pol sugar | - | - | 7.76 | - | - | 7.95 | 9.62 | 9.88 | 8.81 | 8.45 | 8.18 |
| **BALANCES** | | | | | | | | | | | |
| Pol lost % pol in cane | | | | | | | | | | | |
| - lost in bagasse | - | - | 2.67 | - | - | 4.64 | 5.02 | 5.68 | 3.85 | 3.25 | 2.56 |
| - lost in filter cake | - | - | 0.26 | - | - | 0.42 | 0.31 | 0.63 | 0.52 | 0.25 | - |
| - lost in final molasses | - | - | 7.92 | - | - | 8.45 | 9.02 | 10.08 | 9.24 | 9.37 | 8.35 |
| - undetermined losses | - | - | 3.89 | - | - | 2.44 | 4.05 | 2.80 | 3.71 | 2.65 | 1.47 |
| Non pol ratio | - | - | 0.96 | - | - | 0.99 | 1.00 | 1.07 | 0.87 | 1.04 | 0.57 |

*** Cane diffuser**

**# 2017/18 season's throughputs, for factories with double tandems, were calculated using con-current crushing hours.**

**TABLE B1**

**ANALYSIS OF BAGASSE,JUICES,FILTER CAKE,SYRUP AND FINAL MOLASSES**

**SOUTH AFRICAN FACTORIES (SEASON 2017/18)**

| 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 | 1.36 | 1.17 | 1.28 | 1.23 | 1.67 | 1.40 | 0.68 | 0.73 | 0.70 | 1.19 | 1.67 | - | 1.07 | 1.07 |
| Moisture % bagasse | 52.05 | 46.03 | 47.24 | 46.66 | 51.04 | 50.89 | 50.84 | 50.90 | 50.87 | 51.15 | 49.60 | - | 51.74 | 51.74 |
| Fibre % bagasse | 45.78 | 51.93 | 50.48 | 51.18 | 46.18 | 47.23 | 47.68 | 47.35 | 47.51 | 46.95 | 47.73 | - | 46.59 | 46.59 |
| Ash % bagasse | 2.54 | - | - | 3.33 | 3.73 | - | - | - | - | 4.13 | - | - | - | - |
| LCV (kJ per kg bagasse) # | 6945 | - | - | 7987 | 6926 | - | - | - | - | 6859 | - | - | - | - |
| **MIXED JUICE** | | | | | | | | | | | | | | |
| Mixed juice(adj.) % cane | 122.00 | 116.92 | 113.85 | 115.35 | 122.76 | 123.01 | 123.46 | 123.56 | 123.51 | 120.66 | 112.64 | - | 129.99 | 129.99 |
| Brix % mixed juice(adj.) | 14.23 | 14.41 | 14.82 | 14.62 | 13.15 | 12.17 | 12.55 | 12.31 | 12.42 | 12.51 | 13.17 | - | 11.69 | 11.69 |
| Sucrose purity (MJ adj.) | 86.76 | 86.98 | 87.05 | 87.01 | 86.13 | 86.08 | 84.73 | 84.57 | 84.64 | 85.06 | 86.47 | - | 85.21 | 85.21 |
| Apparent purity(MJ adj.) | 86.09 | 86.20 | 86.24 | 86.22 | 85.29 | 85.31 | 84.35 | 84.10 | 84.22 | 84.79 | 85.85 | - | 84.94 | 84.94 |
| Purity difference(MJ adj. - DAC) | -0.11 | -0.26 | -0.30 | -0.28 | 0.35 | -0.64 | -0.82 | -0.99 | -0.91 | -0.67 | -0.11 | - | -0.67 | -0.67 |
| (Glucose + fructose) % sucrose(MJ unadj) | 4.22 | 4.22 | 4.23 | 4.23 | 4.47 | 4.45 | 4.80 | 5.06 | 4.93 | 4.45 | 4.32 | - | 3.85 | 3.85 |
| Suspended solids % MJ(unadj.) | 0.09 | 0.34 | 0.33 | 0.33 | 0.11 | 0.18 | 0.64 | 0.65 | 0.65 | 0.07 | 1.31 | - | 0.29 | 0.29 |
| Pol/sucrose ratio (MJ unadj.) | 0.9923 | 0.9910 | 0.9907 | 0.9909 | 0.9904 | 0.9910 | 0.9955 | 0.9946 | 0.9951 | 0.9969 | 0.99 | - | 0.9968 | 0.9968 |
| **CLARIFIED JUICE** | | | | | | | | | | | | | | |
| Brix % clarified juice | 14.39 | - | - | 14.29 | 12.77 | 12.01 | - | - | 12.85 | 12.41 | 12.43 | - | - | 11.71 |
| Apparent purity (%) | 86.66 | - | - | 85.85 | 85.74 | 83.97 | - | - | 82.14 | 83.88 | 85.17 | - | - | 83.94 |
| Purity difference(CJ - MJ) | 0.57 | - | - | -0.37 | 0.63 | -1.34 | - | - | -2.08 | -0.91 | -0.68 | - | - | -1.00 |
| Average pH | 7.1 | - | - | 7.0 | 7.0 | 7.2 | - | - | 7.2 | 7.1 | 7.00 | - | - | 7.1 |
| **CLARIFIER MUD** | | | | | | | | | | | | | | |
| Tons clarifier mud | 70461 | 42689 | 42460 | 85149 | 30101 | 0 | 66079 | 61445 | 127524 | 88948 | 0 | - | 94382 | 94382 |
| Pol % clarifier mud | 12.75 | 12.32 | 12.27 | 12.29 | 10.96 | 0.00 | 11.05 | 11.01 | 11.03 | 10.36 | 0.00 | - | 9.99 | 9.99 |
| Brix % clarifier mud | 15.02 | 14.73 | 14.67 | 14.70 | 13.35 | 0.00 | 13.49 | 13.47 | 13.48 | 12.26 | 0.00 | - | 12.17 | 12.17 |
| Insoluble solids % clarifier mud | 2.12 | 8.37 | 8.27 | 8.32 | 4.92 | 0.00 | 9.99 | 8.06 | 9.06 | 1.33 | 0.00 | - | 3.39 | 3.39 |
| **FILTER CAKE** | | | | | | | | | | | | | | |
| Pol % filter cake | - | - | - | - | - | 1.50 | - | - | - | - | 2.68 | - | - | - |
| Moisture % filter cake | - | - | - | - | - | 70.00 | - | - | - | - | - | - | - | - |
| Filter cake % cane | - | - | - | - | - | 2.08 | - | - | - | - | 8.77 | - | - | - |
| Filter wash index | 98.86 | - | - | 102.28 | 102.95 | 101.31 | - | - | 96.69 | 100.81 | 105.98 | - | - | 99.86 |
| Purity difference(CJ - filtrate) | - | - | - | - | - | 5.52 | - | - | 1.33 | - | 0.31 | - | - | - |
| **SYRUP** | | | | | | | | | | | | | | |
| Brix % syrup | 68.07 | - | - | 68.23 | 69.82 | 60.32 | - | - | 63.31 | 66.60 | 63.69 | - | - | 69.27 |
| Apparent purity (%) | 84.58 | - | - | 85.66 | 85.31 | 84.15 | - | - | 82.01 | 84.30 | 85.43 | - | - | 84.49 |
| Purity difference(Syrup - MJ) | -1.51 | - | - | -0.56 | 0.20 | -1.16 | - | - | -2.21 | -0.49 | -0.42 | - | - | -0.45 |
| Average pH | 6.1 | - | - | 5.9 | 6.1 | 6.2 | - | - | 6.0 | 6.3 | 6.2 | - | - | 6.1 |
| **FINAL MOLASSES** | | | | | | | | | | | | | | |
| Refractometer brix | 82.69 | - | - | 87.77 | 83.90 | 80.93 | - | - | 84.82 | 84.27 | 83.78 | - | - | 85.26 |
| Pol/refractometer brix purity (%) | 35.13 | - | - | 33.13 | 37.23 | 34.71 | - | - | 36.51 | 37.31 | 34.85 | - | - | 37.37 |
| Sucrose/refractometer brix purity (%) | 39.54 | - | - | 38.97 | 40.41 | 39.12 | - | - | 38.06 | 39.58 | 37.05 | - | - | 39.22 |
| Conductivity ash % | 12.63 | - | - | 17.54 | 13.72 | 14.32 | - | - | 13.50 | 14.66 | 16.53 | - | - | 14.41 |
| (Glucose + fructose)/ash ratio | 1.16 | - | - | 0.67 | 0.89 | 0.71 | - | - | 0.89 | 0.81 | 0.65 | - | - | 0.70 |
| Fructose % | 8.48 | - | - | 7.65 | 7.44 | 6.59 | - | - | 7.03 | 6.95 | 6.69 | - | - | 6.21 |
| Glucose % | 6.15 | - | - | 4.12 | 4.73 | 3.56 | - | - | 4.30 | 4.97 | 4.11 | - | - | 3.82 |
| TPD based on molasses (made) | 8.1 | - | - | 4.3 | 8.1 | 4.7 | - | - | 5.9 | 5.8 | 2.0 | - | - | 5.1 |
| TPD based on mixed juice | 6.5 | - | - | 5.3 | 8.0 | 5.4 | - | - | 5.9 | 5.7 | 2.9 | - | - | 4.9 |
| Final molasses @ $85^0$ brix % cane | 4.94 | - | - | 4.15 | 4.59 | 4.02 | - | - | 4.99 | 4.25 | 3.57 | - | - | 4.65 |
| Pol/sucrose ratio | 0.9057 | - | - | 0.8746 | 0.9257 | 0.9069 | - | - | 0.9371 | 0.9686 | 0.9451 | - | - | 0.9687 |

*** 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 2017/18)**

| SYMBOLS OF FACTORIES | GH-A * | GH-B | GH-AVE | NB | UC * | ES * | SZ-A * | SZ-B * | SZ-AVE | UK * | INDUSTRY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FINAL BAGASSE** | | | | | | | | | | | |
| Pol % bagasse | 0.81 | 1.52 | 1.29 | 1.52 | 1.59 | 1.33 | 1.22 | 1.14 | 1.18 | 1.18 | 1.27 |
| Moisture % bagasse | 50.86 | 49.91 | 50.21 | 53.07 | 49.43 | 50.67 | 47.34 | 47.79 | 47.57 | 50.18 | 50.23 |
| Fibre % bagasse | 47.74 | 47.54 | 47.60 | 44.37 | 48.00 | 47.26 | 50.79 | 50.42 | 50.61 | 48.04 | 47.69 |
| Ash % bagasse | - | - | 2.30 | 3.82 | 3.88 | 4.37 | - | - | 3.94 | 8.76 | - |
| LCV (kJ per kg bagasse) # | - | - | 7378 | 6497 | 7240 | 6908 | - | - | 7637 | 6218 | - |
| **MIXED JUICE** | | | | | | | | | | | |
| Mixed juice(adj.) % cane | 135.30 | 116.15 | 122.03 | 110.24 | 107.51 | 118.82 | 113.49 | 113.60 | 113.55 | 133.63 | 118.97 |
| Brix % mixed juice(adj.) | 11.14 | 12.49 | 12.03 | 14.04 | 14.57 | 13.12 | 12.85 | 12.81 | 12.83 | 11.70 | 13.07 |
| Sucrose purity (MJ adj.) | 85.94 | 86.29 | 86.20 | 87.76 | 87.33 | 87.47 | 85.69 | 85.48 | 85.59 | 86.87 | 86.29 |
| Apparent purity(MJ adj.) | 85.33 | 85.63 | 85.54 | 86.79 | 86.83 | 86.86 | 85.09 | 84.99 | 85.04 | 86.80 | 85.68 |
| Purity difference(MJ adj. - DAC) | -0.14 | 0.28 | 0.15 | 0.12 | 0.05 | 0.00 | -0.52 | -0.52 | -0.52 | -0.61 | -0.29 |
| (Glucose + fructose) % sucrose(MJ unadj) | 4.37 | 4.77 | 4.65 | 4.29 | 3.66 | 3.79 | 4.62 | 4.69 | 4.66 | 3.42 | 4.31 |
| Suspended solids % MJ(unadj.) | 0.15 | 0.86 | 0.61 | 0.67 | 0.11 | 0.13 | 0.38 | 0.56 | 0.47 | 0.18 | 0.46 |
| Pol/sucrose ratio (MJ unadj.) | 0.9929 | 0.9923 | 0.9923 | 0.9891 | 0.9943 | 0.9930 | 0.9930 | 0.9942 | 0.9936 | 0.9992 | 0.9930 |
| **CLARIFIED JUICE** | | | | | | | | | | | |
| Brix % clarified juice | - | - | 12.19 | 14.23 | 14.95 | 13.26 | - | - | 12.41 | 11.62 | 13.02 |
| Apparent purity (%) | - | - | 85.07 | 87.18 | 86.13 | 86.57 | - | - | 84.08 | 85.94 | 85.03 |
| Purity difference(CJ - MJ) | - | - | -0.47 | 0.37 | -0.70 | -0.29 | - | - | -0.96 | -0.86 | -0.64 |
| Average pH | - | - | 6.9 | 7.0 | 7.1 | 7.3 | - | - | 6.99 | 7.0 | 7.1 |
| **CLARIFIER MUD** | | | | | | | | | | | |
| Tons clarifier mud | 0 | 0 | 0 | 0 | 666 | 0 | 0 | 0 | 0 | 44800 | 541368 |
| Pol % clarifier mud | 0.00 | 0.00 | 0.00 | 0.00 | 11.11 | 0.00 | 0.00 | 0.00 | 0.00 | 9.08 | 6.26 |
| Brix % clarifier mud | 0.00 | 0.00 | 0.00 | 0.00 | 13.51 | 0.00 | 0.00 | 0.00 | 0.00 | 10.76 | 7.52 |
| Insoluble solids % clarifier mud | 0.00 | 0.00 | 0.00 | 0.00 | 4.20 | 0.00 | 0.00 | 0.00 | 0.00 | 3.08 | 2.60 |
| **FILTER CAKE** | | | | | | | | | | | |
| Pol % filter cake | - | - | 1.78 | 5.00 | 3.65 | 1.76 | - | - | 1.77 | - | 3.08 |
| Moisture % filter cake | - | - | 70.00 | 75.00 | 71.44 | 73.87 | - | - | 57.31 | - | 50.59 |
| Filter cake % cane | - | - | 3.26 | 6.26 | 0.35 | 1.10 | - | - | 1.20 | - | 1.53 |
| Filter wash index | - | - | 98.70 | 98.70 | 97.44 | 98.93 | - | - | 103.41 | 100.70 | 100.67 |
| Purity difference(CJ - filtrate) | - | - | 1.53 | 1.14 | 6.79 | 1.48 | - | - | 1.26 | - | 2.42 |
| **SYRUP** | | | | | | | | | | | |
| Brix % syrup | - | - | 64.08 | 68.24 | 64.94 | 66.94 | - | - | 66.11 | 67.99 | 66.19 |
| Apparent purity (%) | - | - | 85.11 | 86.34 | 87.01 | 86.57 | - | - | 84.47 | 86.39 | 84.94 |
| Purity difference(Syrup - MJ) | - | - | -0.43 | -0.46 | 0.18 | -0.29 | - | - | -0.57 | -0.41 | -0.70 |
| Average pH | - | - | 6.0 | 5.9 | 6.2 | 6.2 | - | - | 5.9 | 5.8 | 6.1 |
| **FINAL MOLASSES** | | | | | | | | | | | |
| Refractometer brix | - | - | 81.90 | 80.31 | 83.72 | 82.43 | - | - | 82.19 | 83.61 | 83.66 |
| Pol/refractometer brix purity (%) | - | - | 40.16 | 36.68 | 36.52 | 37.64 | - | - | 37.67 | 42.52 | 36.85 |
| Sucrose/refractometer brix purity (%) | - | - | 41.71 | 44.01 | 40.07 | 39.60 | - | - | 39.47 | 41.21 | 39.51 |
| Conductivity ash % | - | - | 13.38 | 11.73 | 13.11 | 12.50 | - | - | 12.07 | 13.07 | 13.68 |
| (Glucose + fructose)/ash ratio | - | - | 0.76 | 1.01 | 0.63 | 0.79 | - | - | 1.09 | 0.82 | 0.84 |
| Fructose % | - | - | 6.37 | 7.45 | 6.22 | 6.56 | - | - | 7.78 | 6.63 | 7.13 |
| Glucose % | - | - | 3.80 | 4.60 | 2.12 | 3.50 | - | - | 5.41 | 4.10 | 4.40 |
| TPD based on molasses (made) | - | - | 8.0 | 8.5 | 5.5 | 7.1 | - | - | 8.8 | 10.2 | 6.8 |
| TPD based on mixed juice | - | - | 8.9 | 8.2 | 7.4 | 7.8 | - | - | 8.1 | 9.5 | 6.8 |
| Final molasses @ $85^0$ brix % cane | - | - | 4.35 | 4.55 | 3.69 | 3.99 | - | - | 4.37 | 4.89 | 4.39 |
| Pol/sucrose ratio | - | - | 0.9684 | 0.9119 | 0.9245 | 0.9346 | - | - | 0.9376 | 0.9821 | 0.9326 |

*** Cane diffuser**

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

**TABLE B2**

**ANALYSIS OF BAGASSE,JUICES,FILTER CAKE,SYRUP AND FINAL MOLASSES**

**SWAZILAND, MALAWI , ZIMBABWE ,ZAMBIA ,TANZANIA AND MOZAMBIQUE FACTORIES**

**(SEASON 2017/18)**

| 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 | 2.14 | 1.66 | 1.89 | 1.65 | 1.60 | 1.61 | 1.91 | 2.48 | 1.50 | 1.35 | 1.27 | 1.31 |
| Moisture % bagasse | 50.08 | 51.53 | 50.84 | 50.08 | 50.62 | 50.47 | 49.21 | 51.15 | 48.54 | 50.45 | 50.65 | 50.55 |
| Fibre % bagasse | 46.76 | 45.96 | 46.33 | 47.17 | 46.66 | 46.80 | 47.53 | 45.33 | 48.40 | 46.91 | 46.96 | 46.94 |
| Ash % bagasse | - | - | 3.04 | - | - | 4.10 | 2.67 | - | 4.80 | - | - | - |
| LCV (kJ per kg bagasse) # | - | - | 7100 | - | - | 7003 | 7484 | - | 7240 | - | - | - |
| **MIXED JUICE** | | | | | | | | | | | | |
| Mixed juice % cane | 120.53 | 125.71 | 123.16 | 121.26 | 121.64 | 121.53 | 115.47 | 99.27 | 118.02 | 124.54 | 122.36 | 123.47 |
| Brix % mixed juice | 13.34 | 12.95 | 13.14 | 12.97 | 12.99 | 12.98 | 13.80 | 15.58 | 13.69 | 12.84 | 13.03 | 12.93 |
| Apparent purity (%) | 86.37 | 86.58 | 86.47 | 83.36 | 82.56 | 82.80 | 85.71 | 85.39 | 86.77 | 87.54 | 87.97 | 87.75 |
| Purity difference(MJ - DAC) | -0.68 | -0.59 | -0.63 | 0.67 | 0.92 | 0.78 | 0.49 | -0.67 | -0.02 | -0.30 | 0.03 | -0.14 |
| Suspended solids % mixed juice | 0.73 | 0.29 | 0.50 | 0.22 | 0.24 | 0.23 | 1.33 | 0.29 | 0.08 | 0.14 | 0.14 | 0.14 |
| **CLARIFIED JUICE** | | | | | | | | | | | | |
| Brix % clarified juice | - | - | 11.22 | - | - | 13.10 | 13.80 | 15.61 | 14.06 | - | - | 13.07 |
| Apparent purity (%) | - | - | 85.82 | - | - | 82.94 | 85.11 | 85.84 | 87.00 | - | - | 86.99 |
| Purity difference(CJ - MJ) | - | - | -0.65 | - | - | 0.14 | -0.60 | 0.45 | 0.23 | - | - | -0.76 |
| Average pH | - | - | 7.1 | - | - | 7.1 | 6.9 | 7.0 | 6.9 | - | - | 7.0 |
| **CLARIFIER MUD** | | | | | | | | | | | | |
| Tons clarifier mud | 0 | 0 | 0 | 1033 | 68071 | 69104 | 0 | 0 | 0 | 55291 | 52074 | 107365 |
| Pol % clarifier mud | 0.00 | 0.00 | 0.00 | 11.33 | 10.93 | 10.94 | 0.00 | 0.00 | 0.00 | 11.96 | 11.95 | 11.95 |
| Brix % clarifier mud | 0.00 | 0.00 | 0.00 | 13.55 | 13.48 | 13.48 | 0.00 | 0.00 | 0.00 | 13.93 | 13.93 | 13.93 |
| Insoluble solids % clarifier mud | 0.00 | 0.00 | 0.00 | 4.94 | 8.99 | 8.93 | 0.00 | 0.00 | 0.00 | 2.62 | 2.64 | 2.63 |
| **FILTER CAKE** | | | | | | | | | | | | |
| Pol % filter cake | - | - | 0.59 | - | - | - | 1.13 | 1.60 | - | - | - | - |
| Moisture % filter cake | - | - | 74.65 | - | - | - | 75.13 | - | - | - | - | - |
| Filter cake % cane | - | - | 2.68 | - | - | - | 5.77 | 1.35 | - | - | - | - |
| Filter wash index | - | - | 117.11 | - | - | 99.11 | 99.99 | 99.78 | 97.35 | - | - | 98.92 |
| Purity difference(CJ - filtrate) | - | - | 1.54 | - | - | - | 0.75 | 5.52 | 2.13 | - | - | - |
| **SYRUP** | | | | | | | | | | | | |
| Brix % syrup | - | - | 65.58 | - | - | 67.88 | 66.55 | 66.37 | 66.89 | - | - | 64.73 |
| Apparent purity (%) | - | - | 86.36 | - | - | 81.60 | 85.29 | 85.06 | 86.86 | - | - | 87.24 |
| Purity difference(Syrup - MJ) | - | - | -0.11 | - | - | -1.20 | -0.42 | -0.33 | 0.09 | - | - | -0.51 |
| Average pH | - | - | 5.9 | - | - | 5.6 | 5.8 | 6.1 | 6.1 | - | - | 6.2 |
| **FINAL MOLASSES** | | | | | | | | | | - | - | |
| Refractometer brix | - | - | 84.58 | - | - | 84.01 | 85.35 | 82.51 | 84.08 | - | - | 88.41 |
| Pol/refractometer brix purity | - | - | 33.22 | - | - | 33.22 | 32.00 | 41.58 | 40.69 | - | - | 36.61 |
| Purity difference(true-target) | - | - | - | - | - | - | - | - | - | - | - | - |
| Reducing sugars % $ | - | - | - | - | - | - | - | - | - | - | - | - |
| Sulphated ash % | - | - | - | - | - | - | - | - | - | - | - | - |
| Reducing sugars/ash ratio | - | - | 0.91 | - | - | 1.29 | 0.85 | 0.68 | 0.84 | - | - | - |
| Final molasses at $85^0$ brix % cane | - | - | 4.00 | - | - | 5.26 | 3.93 | 4.61 | 3.87 | - | - | 3.46 |

*** 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 2017/18)**

| SYMBOLS OF FACTORIES | TR-A* | TR-B | TR-AVE | NK-A | NK-B | NK-AVE | MW | RU | MA | MB | XN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FINAL BAGASSE** | | | | | | | | | | | |
| Pol % bagasse | 1.17 | 1.42 | 1.24 | 2.08 | 2.41 | 2.23 | 1.95 | 2.31 | 1.93 | 1.42 | 1.10 |
| Moisture % bagasse | 51.32 | 52.45 | 51.63 | 50.90 | 49.59 | 50.30 | 50.07 | 49.13 | 48.54 | 49.16 | 51.37 |
| Fibre % bagasse | 46.09 | 44.48 | 45.64 | 45.72 | 46.55 | 46.10 | 46.54 | 46.80 | 47.82 | 47.97 | 46.33 |
| Ash % bagasse | - | - | - | - | - | - | 4.28 | 3.33 | 2.28 | 3.22 | - |
| LCV (kJ per kg bagasse) # | - | - | - | - | - | - | 7008 | 7355 | 7684 | 7407 | - |
| **MIXED JUICE** | | | | | | | | | | | |
| Mixed juice % cane | 122.60 | 116.51 | 120.94 | 105.81 | 109.80 | 107.69 | 103.33 | 110.68 | 102.46 | 106.12 | 117.75 |
| Brix % mixed juice | 13.22 | 13.75 | 13.36 | 14.95 | 14.41 | 14.69 | 13.37 | 12.20 | 14.66 | 14.15 | 12.81 |
| Apparent purity (%) | 87.30 | 87.68 | 87.40 | 86.46 | 86.65 | 86.55 | 84.10 | 83.99 | 84.37 | 86.82 | 86.59 |
| Purity difference(MJ - DAC) | 0.74 | 0.91 | 0.79 | 0.93 | 1.07 | 1.00 | 0.59 | 1.05 | 0.16 | 0.06 | 0.58 |
| Suspended solids % mixed juice | 0.29 | 0.32 | 0.29 | 0.23 | 0.73 | 0.47 | 1.94 | 2.57 | 0.76 | 1.08 | 0.13 |
| **CLARIFIED JUICE** | | | | | | | | | | | |
| Brix % clarified juice | - | - | 14.31 | - | - | 14.58 | 14.22 | 12.66 | 14.67 | 14.14 | 12.69 |
| Apparent purity (%) | - | - | 87.33 | - | - | 86.71 | 86.58 | 84.50 | 84.80 | 87.41 | 86.56 |
| Purity difference(CJ - MJ) | - | - | -0.07 | - | - | 0.16 | 2.48 | 0.51 | 0.43 | 0.59 | -0.03 |
| Average pH | - | - | 7.0 | - | - | 6.9 | 6.9 | 6.9 | 7.0 | 7.1 | 7.2 |
| **CLARIFIER MUD** | | | | | | | | | | | |
| Tons clarifier mud | 0 | 0 | 0 | 7846 | 0 | 7846 | 0 | 0 | 0 | 0 | 71216 |
| Pol % clarifier mud | 0.00 | 0.00 | 0.00 | 11.78 | 0.00 | 11.78 | 0.00 | 0.00 | 0.00 | 0.00 | 10.63 |
| Brix % clarifier mud | 0.00 | 0.00 | 0.00 | 13.70 | 0.00 | 13.70 | 0.00 | 0.00 | 0.00 | 0.00 | 12.62 |
| Insoluble solids % clarifier mud | 0.00 | 0.00 | 0.00 | 7.07 | 0.00 | 7.07 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 |
| **FILTER CAKE** | | | | | | | | | | | |
| Pol % filter cake | - | - | 1.48 | - | - | 2.27 | 1.00 | 1.42 | 1.61 | 1.20 | - |
| Moisture % filter cake | - | - | - | - | - | - | - | 0.00 | 78.24 | 70.05 | - |
| Filter cake % cane | - | - | 2.52 | - | - | 2.65 | 3.79 | 5.37 | 4.30 | 2.84 | - |
| Filter wash index | - | - | 93.35 | - | - | 100.76 | 94.05 | 96.39 | 99.92 | 100.10 | 100.92 |
| Purity difference(CJ - filtrate) | - | - | 2.28 | - | - | 0.63 | 4.18 | 2.57 | 2.53 | 0.82 | - |
| **SYRUP** | | | | | | | | | | | |
| Brix % syrup | - | - | 65.11 | - | - | 63.89 | 64.88 | 64.38 | 65.89 | 68.45 | 64.57 |
| Apparent purity (%) | - | - | 86.93 | - | - | 87.15 | 85.48 | 85.06 | 84.62 | 86.67 | 86.47 |
| Purity difference(Syrup - MJ) | - | - | -0.47 | - | - | 0.60 | 1.38 | 1.07 | 0.25 | -0.15 | -0.12 |
| Average pH | - | - | 6.3 | - | - | 6.1 | 6.3 | 6.4 | 6.0 | 6.1 | 6.2 |
| **FINAL MOLASSES** | | | | | | | | | | | |
| Refractometer brix | - | - | 88.70 | - | - | 88.61 | 79.09 | 82.37 | 84.00 | 84.78 | 82.14 |
| Pol/refractometer brix purity | - | - | 37.14 | - | - | 37.06 | 34.21 | 35.02 | 37.44 | 38.92 | 32.87 |
| Purity difference(true-target) | - | - | - | - | - | - | - | - | - | - | - |
| Reducing sugars % $ | - | - | - | - | - | - | - | - | - | - | - |
| Sulphated ash % | - | - | - | - | - | - | - | - | - | - | - |
| Reducing sugars/ash ratio | - | - | - | - | - | 0.83 | 1.31 | 1.07 | 0.85 | - | - |
| Final molasses at $85^0$ brix % cane | - | - | 3.64 | - | - | 3.85 | 3.79 | 4.07 | 3.83 | 3.81 | 4.01 |

*** 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 2017/18)**

| 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.) | 1.29 | - | 1.17 | 1.01 | 1.08 | 0.99 | 1.00 | 1.26 | 1.06 | 1.29 | 1.00 | 1.06 | 1.16 | 1.10 | 0.99 |
| Refractometer brix of massecuite | 92.23 | 92.00 | 91.99 | 93.47 | 93.02 | 92.11 | 93.36 | 92.83 | 92.50 | 92.42 | 92.35 | 92.59 | 93.18 | 92.32 | 92.60 |
| Purity of massecuite (%) | 86.83 | 85.00 | 86.55 | 84.97 | 83.64 | 84.78 | 85.53 | 85.01 | 86.66 | 86.91 | 87.65 | 86.05 | 85.49 | 86.49 | 85.84 |
| Purity of A - molasses (%) | 72.85 | 69.00 | 71.77 | 72.07 | 67.68 | 67.38 | 67.15 | 67.70 | 72.46 | 73.47 | 72.38 | 71.42 | 69.37 | 71.48 | 70.60 |
| Purity drop (%) | 13.98 | 16.00 | 14.78 | 12.90 | 15.96 | 17.40 | 18.38 | 17.31 | 14.20 | 13.44 | 15.27 | 14.63 | 16.12 | 15.01 | 15.24 |
| Exhaustion (%) | 59.30 | 60.72 | 60.49 | 54.36 | 59.04 | 62.92 | 65.42 | 63.04 | 59.50 | 58.29 | 63.08 | 59.49 | 61.56 | 60.85 | 60.38 |
| Pty of A-massecuite - purity syrup (%) | 2.25 | -0.66 | 1.24 | 0.82 | 1.63 | 0.48 | 0.10 | 0.52 | 1.55 | 0.57 | 0.64 | -0.52 | 1.02 | 0.10 | 0.90 |
| Pty of remelt (%) | 87.48 | 81.00 | 87.14 | 85.18 | 86.87 | 86.33 | 82.59 | 86.56 | 87.94 | 87.09 | 86.84 | 86.24 | 86.05 | 86.07 | 85.78 |
| **B - MASSECUITE** | | | | | | | | | | | | | | | |
| $m^3$ per ton brix in mixed juice(adj.) | 0.72 | - | 0.45 | 0.44 | 0.40 | 0.41 | 0.31 | 0.32 | 0.42 | 0.57 | 0.37 | 0.37 | 0.42 | 0.50 | 0.39 |
| Refractometer brix of massecuite | 93.95 | 94.00 | 93.98 | 96.24 | 95.32 | 94.54 | 94.49 | 94.03 | 94.73 | 95.03 | 93.80 | 94.89 | 94.39 | 94.45 | 94.56 |
| Purity of massecuite (%) | 73.17 | 70.00 | 71.68 | 70.51 | 70.11 | 68.91 | 68.18 | 69.64 | 73.01 | 73.26 | 72.27 | 71.91 | 70.03 | 71.83 | 71.40 |
| Purity of B - molasses (%) | 52.83 | 48.00 | 50.24 | 49.23 | 47.97 | 48.73 | 47.92 | 48.21 | 52.79 | 52.36 | 49.32 | 48.73 | 49.24 | 54.21 | 50.41 |
| Purity drop (%) | 20.34 | 22.00 | 21.44 | 21.28 | 22.14 | 20.18 | 20.26 | 21.43 | 20.22 | 20.90 | 22.95 | 23.18 | 20.79 | 17.62 | 20.99 |
| Exhaustion (%) | 58.93 | 60.44 | 60.11 | 59.44 | 60.69 | 57.12 | 57.06 | 59.42 | 58.66 | 59.88 | 62.66 | 62.87 | 58.49 | 53.57 | 59.29 |
| **C - MASSECUITE** | | | | | | | | | | | | | | | |
| $m^3$ per ton brix in mixed juice(adj.) | 0.72 | - | 0.39 | 0.25 | 0.25 | 0.28 | 0.28 | 0.30 | 0.29 | 0.28 | 0.20 | 0.24 | 0.29 | 0.30 | 0.28 |
| Refractometer brix of massecuite | 96.29 | 97.00 | 96.53 | 97.12 | 97.24 | 96.04 | 96.55 | 96.70 | 97.26 | 97.02 | 97.89 | 97.26 | 96.10 | 97.45 | 94.57 |
| Purity of massecuite (%) | 58.89 | 54.00 | 54.95 | 55.05 | 54.85 | 56.16 | 52.97 | 56.39 | 57.59 | 57.53 | 53.32 | 55.15 | 56.87 | 57.58 | 56.50 |
| Purity of C - molasses (%) | 35.78 | 33.92 | 37.20 | 35.48 | 35.73 | 38.34 | 35.02 | 37.99 | 40.39 | 40.17 | 37.00 | 37.00 | 37.02 | 40.47 | 37.01 |
| Exhaustion (%) | 61.10 | 56.27 | 51.44 | 55.11 | 54.23 | 51.46 | 52.15 | 52.63 | 50.10 | 50.44 | 48.57 | 52.24 | 55.41 | 49.91 | 54.76 |
| **TOTAL VOLUME ALL RAW MASSECUITES** | | | | | | | | | | | | | | | |
| $m^3$ per ton brix in mixed juice(adj.) | 2.73 | - | 2.02 | 1.70 | 1.73 | 1.68 | 1.59 | 1.88 | 1.88 | 2.13 | 1.57 | 1.68 | 1.87 | 1.90 | 1.67 |
| **WHITE SUGAR MASSECUITES** | | | | | | | | | | | | | | | |
| Massecuite (kg sugar per $m^3$ ) | - | - | 494.69 | - | - | - | - | - | 547.77 | - | - | - | - | - | 525.64 |
| Tons limestone per 1000 tons white sugar | - | - | 97.46 | - | - | - | - | - | 35.65 | - | - | - | - | - | 61.42 |
| Tons coke per 1000 tons white sugar | - | - | 7.20 | - | - | - | - | - | - | - | - | - | - | - | 7.20 |
| Tons phosphoric acid per 1000 tons white sugar | - | - | 0.24 | - | - | - | - | - | - | 1.57 | - | - | - | - | 1.07 |
| Tons sulphur per 1000 tons white sugar | 0.65 | - | 0.08 | - | - | - | - | - | - | 0.17 | - | - | - | - | 0.25 |
| Phosphoric acid ppm mixed juice(unadj.) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Flocculant ppm mixed juice(unadj.) | 4.00 | 4.59 | 3.42 | 8.44 | 2.69 | 3.60 | 1.47 | 3.06 | 3.23 | 9.69 | 2.67 | 6.46 | 5.11 | 1.72 | 4.48 |
| Tons lime per 1000 tons cane | 2.49 | 1.98 | - | 0.68 | 1.03 | 1.00 | - | 1.31 | - | 0.70 | 0.65 | 0.65 | 0.64 | 0.83 | 1.09 |
| Enzyme (ppm sugar) | - | - | - | - | - | - | 86.28 | 8.87 | - | - | - | 5.47 | 50.85 | 18.83 | 13.00 |
| **ADDITIONAL FUELS PER 1000 TONS CANE** | | | | | | | | | | | | | | | |
| Tons of coal | 40.47 | 1.96 | 23.26 | 2.21 | 7.78 | 11.24 | - | 24.87 | 13.08 | 11.75 | 1.66 | 1.59 | 16.56 | 6.82 | 12.05 |
| Tons of wood | - | 0.04 | 0.12 | - | 0.36 | 8.14 | 0.27 | 0.04 | - | 20.92 | 0.63 | 0.53 | - | - | 3.62 |
| Converted into bagasse * | 161.88 | 7.90 | 93.17 | 8.83 | 31.55 | 54.73 | 0.33 | 99.51 | 52.30 | 72.09 | 7.37 | 7.01 | 66.23 | 27.30 | 52.55 |

*** 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 2017/18)**

| 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) | 1.13 | 0.98 | 0.79 | 1.20 | 0.94 | 1.06 | - | 1.11 | 1.04 | 1.18 | 1.02 | 0.99 | - |
| Refractometer brix of massecuite | 93.63 | 92.83 | 93.05 | 94.20 | 91.28 | 93.12 | 92.80 | 92.09 | 92.57 | 93.30 | 92.85 | 92.39 | 91.91 |
| Purity of massecuite (%) | 88.78 | 84.71 | 86.21 | 88.22 | 87.81 | 88.91 | 87.23 | 87.64 | 86.46 | 87.30 | 85.60 | 85.70 | 87.45 |
| Purity of A - molasses (%) | 70.63 | 67.58 | 69.52 | 72.36 | 75.44 | 74.98 | 73.13 | 74.33 | 70.29 | 72.26 | 70.07 | 68.15 | 71.09 |
| Purity drop (%) | 18.15 | 17.13 | 16.69 | 15.86 | 12.37 | 13.93 | 14.10 | 13.31 | 16.17 | 15.04 | 15.53 | 17.55 | 16.36 |
| Exhaustion (%) | 69.61 | 62.37 | 63.52 | 65.04 | 57.36 | 62.62 | 60.16 | 59.16 | 62.95 | 62.11 | 60.62 | 64.30 | 64.71 |
| Purity of A-massecuite - pty syrup (%) | 2.42 | 3.11 | 0.92 | 3.16 | 0.95 | 1.67 | 0.30 | 0.49 | 0.98 | 2.24 | 0.98 | -0.97 | 0.98 |
| Purity of remelt (%) | 85.59 | 86.83 | 84.92 | 86.95 | 88.92 | 89.31 | 85.63 | 83.35 | 88.58 | 90.19 | 87.92 | 84.48 | 85.66 |
| **B - MASSECUITE** | | | | | | | | | | | | | |
| $m^3$ per ton brix in mixed juice (adj) | 0.47 | 0.45 | 0.41 | 0.39 | 0.51 | 0.44 | - | 0.47 | 0.44 | 0.59 | 0.37 | 0.31 | - |
| Refractometer brix of massecuite | 94.99 | 94.31 | 94.58 | 95.27 | 93.10 | 92.79 | 94.09 | 94.23 | 95.09 | 94.21 | 94.28 | 94.64 | 93.16 |
| Purity of massecuite (%) | 70.64 | 68.42 | 70.79 | 72.02 | 73.53 | 75.36 | 72.24 | 73.09 | 71.46 | 71.46 | 70.41 | 69.12 | 72.51 |
| Purity of B - molasses (%) | 49.00 | 44.41 | 47.20 | 55.09 | 55.48 | 55.52 | 53.32 | 53.36 | 50.90 | 52.84 | 48.32 | 48.77 | 51.05 |
| Purity drop (%) | 21.64 | 24.01 | 23.59 | 16.93 | 18.05 | 19.84 | 18.92 | 19.73 | 20.56 | 18.62 | 22.08 | 20.35 | 21.46 |
| Exhaustion (%) | 60.07 | 63.13 | 63.11 | 52.34 | 55.14 | 59.19 | 56.11 | 57.88 | 58.60 | 55.25 | 60.70 | 57.47 | 60.46 |
| **C - MASSECUITE** | | | | | | | | | | | | | |
| $m^3$ per ton brix in mixed juice (adj) | 0.24 | 0.32 | 0.21 | 0.23 | 0.26 | - | - | 0.27 | 0.25 | 0.31 | 0.23 | 0.82 | - |
| Refractometer brix of massecuite | 97.87 | 97.32 | 98.27 | 97.42 | 95.99 | 96.48 | 97.01 | 96.46 | 97.35 | 97.21 | 96.94 | 95.32 | 94.87 |
| Purity of massecuite (%) | 50.78 | 52.58 | 50.90 | 57.92 | 61.06 | 56.36 | 56.59 | 57.50 | 53.82 | 53.59 | 53.85 | 56.32 | 53.16 |
| Purity of C - molasses (%) | 33.22 | 33.22 | 32.00 | 41.58 | 40.69 | 36.61 | 37.14 | 37.06 | 34.21 | 35.02 | 37.44 | 38.92 | 32.87 |
| Exhaustion (%) | 51.78 | 55.13 | 54.61 | 48.28 | 56.25 | 55.27 | 54.68 | 56.48 | 55.37 | 53.32 | 48.71 | 50.57 | 56.86 |
| **TOTAL VOLUME ALL RAW MASSECUITES** | | | | | | | | | | | | | |
| $m^3$ per ton brix in mixed juice | 1.80 | 1.75 | 1.41 | 1.82 | 1.72 | - | - | 1.84 | 1.73 | 2.07 | 1.62 | 2.13 | - |
| **WHITE SUGAR MASSECUITES** | | | | | | | | | | | | | |
| Massecuite (kg sugar per $m^3$ ) | 730.96 | 265.25 | - | 385.00 | 449.77 | - | - | 695.64 | - | - | - | - | - |
| Tons phosphoric acid per 1000 tons white sugar | - | - | - | 1.66 | - | - | - | 0.29 | - | - | - | - | - |
| Tons sulphur per 1000 tons white sugar | - | 0.16 | - | - | - | - | - | 0.09 | - | - | - | - | - |
| Phosphoric acid ppm mixed juice(unadj.) | 131.03 | - | - | - | - | - | - | - | - | - | - | - | - |
| Flocculant ppm mixed juice(unadj.) | 5.40 | - | 3.74 | - | 1.72 | 3.78 | 3.55 | 2.94 | 4.10 | 3.27 | 4.33 | 7.39 | 5.35 |
| Tons lime per 1000 tons cane | - | 0.90 | 0.66 | 1.19 | - | 0.62 | 0.59 | 0.88 | 0.77 | 0.95 | 1.07 | 0.66 | 0.66 |
| Enzyme (ppm sugar) | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **ADDITIONAL FUELS PER 1000 TONS CANE** | | | | | | | | | | | | | |
| Tons of coal | 3.97 | 1.44 | - | - | - | 4.85 | 14.84 | - | - | - | 0.55 | 1.63 | 0.36 |
| Tons of wood | 37.71 | 22.54 | - | 0.43 | 0.07 | 0.01 | - | 0.04 | 0.03 | - | - | 0.01 | 0.07 |
| Converted into bagasse * | 61.12 | 32.80 | - | 0.52 | 0.09 | 19.42 | 59.35 | 0.05 | 0.04 | - | 2.21 | 6.53 | 1.53 |

*** 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)**

| | 2017/2018 | 2016/2017 | 2015/2016 | 2014/2015 | 2013/2014 |
|---|---|---|---|---|---|
| **Throughput and time efficiency #** | | | | | |
| Tons cane per hour | 273.29 | 265.19 | 266.69 | 273.05 | 285.76 |
| Tons fibre in bagasse per hour | 40.83 | 41.46 | 40.50 | 40.55 | 42.33 |
| Overall time efficiency | 81.85 | 80.48 | 80.83 | 81.44 | 79.31 |
| **Cane** | | | | | |
| Sucrose % cane | 13.82 | 12.97 | 13.41 | 14.25 | 13.84 |
| Fibre % cane | 15.21 | 15.94 | 15.37 | 15.07 | 15.04 |
| **Mixed juice** | | | | | |
| Sucrose purity(MJ adj.) | 86.29 | 84.80 | 85.15 | 86.12 | 86.91 |
| (Glucose + Fructose)/ash in M.J.(unadj.) | 0.85 | 0.97 | 0.99 | 1.03 | 0.95 |
| **Milling** | | | | | |
| Imbibition % fibre | 336 | 324 | 331 | 325 | 331 |
| Extraction (sucrose based) | 97.11 | 96.75 | 97.03 | 97.19 | 97.23 |
| Pol % bagasse | 1.27 | 1.27 | 1.23 | 1.28 | 1.22 |
| Moisture % bagasse | 50.23 | 50.81 | 50.78 | 50.58 | 50.66 |
| Bagasse % cane | 31.32 | 33.26 | 32.27 | 31.43 | 31.37 |
| LCV bagasse kJ/kg | 7283 | 7184 | 7099 | 7159 | 7116 |
| | | | | | |
| **Recoveries** | | | | | |
| Boiling house recovery (sucrose based) | 85.47 | 83.67 | 84.65 | 86.00 | 87.23 |
| Overall recovery (sucrose based) | 83.00 | 80.95 | 82.14 | 83.58 | 84.81 |
| Tons cane per ton sugar | 8.68 | 9.48 | 9.04 | 8.36 | 8.48 |
| **Filter cake** | | | | | |
| Pol % filter cake | 3.08 | 2.62 | 2.69 | 2.28 | 2.19 |
| Filter cake % cane | 1.53 | 1.84 | 1.07 | 1.44 | 1.61 |
| **Final molasses** | | | | | |
| Brix % final molasses | 83.63 | 82.98 | 83.41 | 83.32 | 83.53 |
| Sucrose/refractometer brix purity | 39.51 | 36.17 | 39.19 | 39.76 | 38.53 |
| Final molasses @ $85^0$ brix % cane | 4.39 | 4.61 | 4.70 | 4.48 | 4.02 |
| **Average sugar polarisation** | 99.53 | 99.59 | 99.59 | 99.54 | 99.57 |
| **Sucrose lost % sucrose in cane** | | | | | |
| Lost in bagasse | 2.89 | 3.25 | 2.97 | 2.81 | 2.77 |
| Lost in filter cake | 0.34 | 0.37 | 0.21 | 0.23 | 0.26 |
| Lost in final molasses | 10.72 | 11.84 | 11.66 | 10.62 | 9.52 |
| Undetermined losses | 3.05 | 3.58 | 3.02 | 2.76 | 2.64 |
| Lost in boiling house | 14.11 | 15.79 | 14.89 | 13.61 | 12.42 |
| Total losses | 17.00 | 19.04 | 17.86 | 16.42 | 15.19 |
| **M3 massecuite per ton Bx in M.J.** | | | | | |
| A - massecuite | 0.99 | 0.97 | 0.94 | 0.94 | 0.96 |
| B - massecuite | 0.39 | 0.39 | 0.39 | 0.38 | 0.37 |
| C - massecuite | 0.28 | 0.32 | 0.24 | 0.23 | 0.22 |
| Total | 1.67 | 1.69 | 1.57 | 1.55 | 1.55 |
| **Exhaustion of massecuites** | | | | | |
| A - massecuite | 60.38 | 59.03 | 59.90 | 61.28 | 62.45 |
| B - massecuite | 59.29 | 58.83 | 58.99 | 59.56 | 60.44 |
| C - massecuite | 54.76 | 55.34 | 53.55 | 53.40 | 53.92 |
| Brix of syrup | 66.19 | 65.39 | 65.81 | 66.42 | 66.26 |

**# 2017/18 season's throughputs, for factories with double tandems, were calculated using con-current crushing hours.**

**TABLE E**

**AVERAGE MANUFACTURING RESULTS BY MONTHLY PERIODS**

**FOR SOUTH AFRICAN FACTORIES ( SEASON 2017/18 )**

| End of month period | | 01 APR 2017 | 29 APR 2017 | 27 MAY 2017 | 01 JUL 2017 | 29 JUL 2017 | 02 SEP 2017 | 30 SEP 2017 | 28 OCT 2017 | 02 DEC 2017 | 30 DEC 2017 | 03 FEB 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tons of sugar made and estimated** | **Month** | 37124 | 115337 | 184213 | 320813 | 282128 | 354483 | 252733 | 227320 | 209909 | 20215 | - |
| | **To-date** | 37124 | 152461 | 336675 | 657488 | 939616 | 1294099 | 1546832 | 1774152 | 1984062 | 2004277 | 2004277 |
| **Tons cane crushed** | **Month** | 397743 | 1182519 | 1753320 | 2798820 | 2356290 | 2831331 | 2031332 | 1928285 | 1880422 | 228129 | - |
| | **To-date** | 397743 | 1580262 | 3333581 | 6132402 | 8488692 | 11320023 | 13351355 | 15279640 | 17160062 | 17388192 | 17388192 |
| **Tons cane crushed per hour (actual crushing)** | **Month** | 199.14 | 252.01 | 275.04 | 296.95 | 295.85 | 285.84 | 273.48 | 269.55 | 255.04 | 174.05 | - |
| | **To-date** | 199.14 | 236.22 | 255.16 | 272.68 | 278.74 | 280.48 | 279.39 | 278.11 | 275.38 | 273.29 | 273.29 |
| **Sucrose % cane** | **Month** | 11.97 | 12.17 | 12.92 | 13.48 | 14.02 | 14.68 | 14.84 | 14.21 | 13.79 | 12.12 | - |
| | **To-date** | 11.97 | 12.12 | 12.54 | 12.97 | 13.26 | 13.62 | 13.80 | 13.85 | 13.85 | 13.82 | 13.82 |
| **Fibre % cane** | **Month** | 15.92 | 15.17 | 15.03 | 14.46 | 14.46 | 14.93 | 15.60 | 16.01 | 16.31 | 16.34 | - |
| | **To-date** | 15.92 | 15.36 | 15.19 | 14.86 | 14.75 | 14.79 | 14.91 | 15.05 | 15.19 | 15.21 | 15.21 |
| **RV % cane** | **Month** | 10.55 | 10.74 | 11.47 | 12.17 | 12.68 | 13.32 | 13.51 | 12.71 | 12.31 | 11.12 | - |
| | **To-date** | 10.55 | 10.70 | 11.10 | 11.60 | 11.90 | 12.26 | 12.45 | 12.48 | 12.46 | 12.45 | 12.46 |
| **Tons cane per ton sugar** | **Month** | 10.71 | 10.25 | 9.52 | 8.72 | 8.35 | 7.99 | 8.04 | 8.48 | 8.96 | 11.29 | - |
| | **To-date** | 10.71 | 10.37 | 9.90 | 9.33 | 9.03 | 8.75 | 8.63 | 8.61 | 8.65 | 8.68 | 8.68 |
| **Extraction (sucrose based)** | **Month** | 96.43 | 96.84 | 97.08 | 97.20 | 97.36 | 97.29 | 97.18 | 96.93 | 96.89 | 96.33 | - |
| | **To-date** | 96.43 | 96.74 | 96.92 | 97.05 | 97.14 | 97.18 | 97.18 | 97.15 | 97.12 | 97.11 | 97.11 |
| **Imbibition % fibre** | **Month** | 320 | 341 | 337 | 345 | 342 | 330 | 329 | 331 | 338 | 326 | - |
| | **To-date** | 320 | 336 | 337 | 340 | 341 | 338 | 337 | 336 | 336 | 336 | 336 |
| **Pol % bagasse** | **Month** | 1.27 | 1.22 | 1.21 | 1.26 | 1.25 | 1.30 | 1.32 | 1.31 | 1.28 | 1.36 | - |
| | **To-date** | 1.27 | 1.23 | 1.22 | 1.24 | 1.24 | 1.26 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 |
| **Moisture % bagasse** | **Month** | 51.69 | 50.91 | 50.54 | 50.43 | 49.96 | 49.88 | 50.04 | 49.93 | 50.17 | 51.51 | - |
| | **To-date** | 51.69 | 51.12 | 50.82 | 50.65 | 50.46 | 50.32 | 50.27 | 50.23 | 50.22 | 50.24 | 50.24 |
| **Boiling house recovery (sucrose based)** | **Month** | 80.63 | 82.45 | 83.34 | 87.16 | 87.35 | 87.32 | 85.79 | 85.25 | 82.95 | 75.11 | - |
| | **To-date** | 80.63 | 82.00 | 82.72 | 84.83 | 85.58 | 86.05 | 86.00 | 85.91 | 85.59 | 85.47 | 85.47 |
| **Overall recovery (sucrose based)** | **Month** | 77.76 | 79.85 | 80.90 | 84.72 | 85.04 | 84.95 | 83.36 | 82.64 | 80.37 | 72.35 | - |
| | **To-date** | 77.76 | 79.33 | 80.18 | 82.33 | 83.13 | 83.62 | 83.58 | 83.46 | 83.12 | 83.00 | 83.00 |
| **Mixed juice sucrose purity** | **Month** | 85.00 | 84.09 | 84.74 | 86.58 | 86.98 | 87.25 | 86.88 | 86.69 | 85.61 | 83.63 | - |
| | **To-date** | 85.00 | 84.31 | 84.54 | 85.50 | 85.93 | 86.28 | 86.38 | 86.42 | 86.33 | 86.30 | 86.30 |
| **Pol/sucrose ratio in mixed juice** | **Month** | 0.9863 | 0.9849 | 0.9873 | 0.9906 | 0.9928 | 0.9954 | 0.9943 | 0.9970 | 0.9972 | 0.9921 | - |
| | **To-date** | 0.9863 | 0.9852 | 0.9863 | 0.9884 | 0.9897 | 0.9912 | 0.9917 | 0.9924 | 0.9930 | 0.9930 | 0.9930 |
| **Sucrose/refractometer brix purity in final molasses** | **Month** | 40.76 | 38.57 | 38.54 | 38.49 | 38.84 | 39.36 | 39.65 | 40.71 | 40.39 | 45.04 | - |
| | **To-date** | 40.76 | 39.11 | 38.78 | 38.65 | 38.70 | 38.87 | 39.00 | 39.22 | 39.38 | 39.51 | 39.51 |
| **Sucrose lost in final molasses % sucrose in cane** | **Month** | 13.76 | 11.44 | 12.06 | 10.25 | 9.73 | 9.55 | 10.30 | 11.04 | 12.23 | 14.73 | - |
| | **To-date** | 13.76 | 12.03 | 12.04 | 11.19 | 10.76 | 10.43 | 10.41 | 10.49 | 10.68 | 10.72 | 10.72 |
| **Undetermined lost sucrose % sucrose in cane** | **Month** | 4.47 | 5.41 | 3.49 | 1.93 | 2.23 | 2.47 | 3.20 | 2.82 | 4.06 | 9.17 | - |
| | **To-date** | 4.47 | 5.17 | 4.26 | 3.15 | 2.88 | 2.78 | 2.85 | 2.84 | 2.98 | 3.06 | 3.05 |
| **Pol/sucrose ratio FM** | **Month** | 0.9326 | 0.9071 | 0.9100 | 0.9193 | 0.9297 | 0.9303 | 0.9357 | 0.9497 | 0.9539 | 0.9768 | - |
| | **To-date** | 0.9326 | 0.9136 | 0.9115 | 0.9152 | 0.9192 | 0.9221 | 0.9244 | 0.9279 | 0.9314 | 0.9326 | 0.9326 |

**TABLE F**
**CANE VARIETIES AND RAINFALL**
**(SEASON 2017/18)**
**PERCENTAGE BY MASS**

| | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | NCo | MIXED | UNKNOWN | | * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Factories** | **12** | **14** | **16** | **17** | **19** | **21** | **22** | **23** | **25** | **26** | **27** | **29** | **30** | **31** | **32** | **35** | **36** | **39** | **41** | **43** | **46** | **47** | **48** | **376** | **VARIETY** | **AND OTHER** | **BURNT** | **RAINFALL** |
| **ML** | | 3.5 | | | 7.0 | | 0.3 | 8.7 | 13.9 | 0.5 | | | | | 2.2 | | 32.2 | | 4.7 | | 4.8 | | | | 3.3 | 18.9 | 97.2 | 251 |
| **KM** | | 7.3 | | | 12.4 | | 0.5 | 8.1 | 8.7 | 0.4 | | | 0.5 | | 1.1 | | 25.7 | | 7.2 | | 1.9 | | | | 7.9 | 18.4 | 88.2 | 209 |
| **PG** | | 1.9 | | | 0.9 | | 0.3 | 5.4 | 6.5 | 0.5 | | 0.1 | 0.4 | | 0.2 | | 19.2 | | 25.7 | 1.8 | 3.8 | 0.0 | 0.0 | | 17.1 | 16.3 | 99.4 | 204 |
| **UF** | | 0.1 | | 1.2 | 16.4 | 0.2 | 0.2 | 5.5 | 5.4 | 0.6 | 3.0 | 0.1 | | | | 0.1 | 10.6 | 0.2 | 16.8 | 0.5 | 0.1 | | | 1.5 | 7.2 | 30.4 | 94.2 | 606 |
| **FX** | 2.3 | 0.1 | 0.1 | 1.4 | 2.7 | 1.5 | | 0.6 | 2.1 | | 6.6 | 0.4 | 0.1 | 0.8 | 0.1 | 0.5 | 4.9 | 0.1 | 18.2 | 0.1 | | 0.2 | 0.3 | 1.8 | 2.8 | 52.2 | 93.6 | 784 |
| **AK** | 8.6 | 0.1 | 1.0 | 0.3 | | 0.3 | | | 0.1 | | 9.4 | 0.2 | | 5.2 | | 0.5 | 1.2 | 23.8 | 9.3 | | | 0.1 | 2.4 | 1.1 | 6.2 | 30.2 | 98.4 | 623 |
| **DL** | 12.1 | | 2.6 | 0.3 | 0.6 | 0.3 | 0.2 | | | | 10.0 | 0.6 | | 12.4 | | 0.1 | 1.8 | 36.9 | 3.6 | | | 0.7 | 0.4 | 2.4 | 1.0 | 13.9 | 93.5 | 1243 |
| **MS** | 6.6 | | 0.9 | 0.5 | 0.1 | 0.4 | | | | | 3.0 | 0.3 | | 13.2 | | 1.3 | 0.3 | 33.1 | 14.2 | | | 1.5 | 3.8 | 2.4 | 5.5 | 12.9 | 77.8 | 781 |
| **GH** | 8.8 | | 4.3 | 1.0 | 0.4 | 0.2 | | | 0.1 | | 5.1 | 0.2 | 0.1 | 6.2 | | 0.7 | 1.3 | 25.2 | 3.3 | | | 1.0 | 1.3 | 5.3 | 9.8 | 25.8 | 86.4 | 941 |
| **NB** | 48.6 | | 2.5 | | | 0.1 | | | | | | | | 8.7 | | 6.2 | 1.1 | 3.3 | 3.8 | | | 0.3 | 11.7 | | 0.4 | 13.3 | 96.8 | 861 |
| **UC** | 30.6 | | 3.6 | | | | | | | | | | | 11.6 | | 2.6 | 1.4 | 6.9 | 3.2 | | | 0.1 | 21.8 | | 0.3 | 18.0 | 99.9 | 496 |
| **ES** | 40.5 | | 1.1 | | | | | | | | 0.1 | | 0.1 | 17.6 | 0.1 | 1.3 | 1.2 | 1.8 | 1.6 | | | 0.1 | 13.9 | | 0.8 | 19.9 | 88.8 | 499 |
| **SZ** | 23.3 | | 0.7 | | | 0.4 | | | | | 2.5 | 0.2 | | 0.9 | | | 0.2 | 17.8 | 3.6 | | | 1.7 | 0.7 | 0.6 | 11.3 | 36.2 | 76.5 | 1087 |
| **UK** | 24.2 | | | | | 0.2 | | | | | | | | 4.0 | | | 0.3 | 16.1 | 1.4 | | | 0.4 | 0.7 | 0.5 | 3.7 | 48.5 | 93.5 | 645 |
| **Average** | 14.7 | *0.9* | *1.2* | *0.3* | *2.9* | *0.3* | *0.1* | *2.0* | *2.6* | *0.1* | *2.8* | *0.2* | *0.1* | *5.8* | *0.3* | *1.0* | *7.2* | *11.8* | *8.3* | *0.2* | *0.8* | *0.4* | *4.1* | *1.1* | *5.5* | *25.4* | *91.7* | |
| **MH** | | 0.3 | | | 3.1 | | | 19.9 | 54.9 | 0.5 | | | | | | | 5.9 | | 0.9 | 0.1 | | | | 5.6 | 3.2 | 5.5 | 100.0 | 264 |
| **UB** | | 1.2 | | | | | | 21.1 | 40.4 | 0.1 | | | | | | | 4.4 | | 4.9 | 0.2 | 4.1 | | | 2.2 | 16.0 | 3.6 | | 225 |
| **SM** | | 0.1 | | | 0.4 | | | 17.5 | 52.4 | 0.3 | | | | | | | 9.5 | | 4.5 | | 6.5 | | | 2.6 | 2.8 | 3.4 | | 258 |
| **NH** | | 13.9 | | | | | | | 13.7 | | | | | | 29.1 | 1.0 | 1.1 | | 0.1 | | | | | | 4.2 | 37.0 | - | 112 |
| **DW** | | 13.5 | | | | | | | | | | | | | | | | | 6.7 | | | | | 3.7 | 2.5 | 73.6 | - | 260 |
| **HV** | | 67.0 | | | | | | | | | | | | | | | | | | | | | | 6.0 | 1.0 | 26.0 | - | 128 |
| **TR** | | 58.5 | | | | | | | | | | | | | | | | | | | | | | 2.7 | 2.0 | 36.8 | - | 309 |
| **NK** | | 0.2 | | | 2.6 | | | 5.1 | 52.1 | | | | | | | | | | 30.6 | 0.0 | 2.7 | | | | 5.5 | 1.1 | | 56 |
| **MW** | 3.1 | | | | 5.3 | | | 0.3 | 17.6 | | 0.2 | | 0.4 | | | | 2.0 | | 28.0 | | | 0.7 | | 0.8 | 11.3 | 30.4 | 100.0 | 530 |
| **RU** | 3.1 | | | | 5.3 | | | 0.3 | 17.6 | | 0.2 | | 0.4 | | | | 2.0 | | 28.0 | | | 0.7 | | 0.8 | 11.3 | 30.4 | 100.0 | 530 |
| **MA** | | 0.1 | | 0.2 | 1.1 | 0.0 | | 59.6 | 22.3 | 0.0 | 0.0 | 0.0 | | 1.0 | 0.1 | | 1.1 | | 9.3 | | 0.2 | | 1.2 | 0.4 | 0.3 | 3.1 | - | 340 |
| **MB** | | 36.9 | | | 10.5 | 3.8 | | 7.7 | 1.1 | | 15.5 | | | | 0.1 | | | | | | | | | 0.8 | 13.9 | 9.7 | | 193 |
| **XN** | | 0.4 | | | 0.5 | 0.1 | | 32.4 | | 0.8 | 5.9 | 0.2 | 0.2 | | 1.2 | | 1.8 | | 0.5 | | | | | 3.6 | 6.8 | 45.6 | 100.0 | 441 |

*** Rainfall during the crushing season**

**TABLE G**

**TRANSPORT SUMMARY - SOUTH AFRICAN FACTORIES**

**(SEASON 2017/18)**

**PERCENT OF CANE TRANSPORTED**

| FACTORIES | ML | KM | PG | UF | FX | AK | DL | MS | GH | NB | UC | ES | SZ | UK | AVERAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOUTH AFRICAN RAILWAYS | | | - | | 14.2 | | | | | | | | | | 1.0 |
| TRAMS | | | - | 69.8 | | | 0.1 | | | | | | | | 5.0 |
| TANKERS | 16.36 | | - | | | | | | | | | | | | 1.2 |
| ARTICULATED TRUCK DRIVEN VEHICLES | | | | | | | | | | | | | | | |
| - Interlink | | 5.1 | 13.2 | 16.6 | 68.3 | 23.8 | 39.2 | 75.5 | 67.3 | 27.5 | 48.4 | 34.4 | 82.9 | 74.3 | 41.2 |
| - Tri-Axle | | | 12.4 | | | 4.4 | 21.7 | 0.6 | 15.4 | 16.9 | 4.1 | 6.2 | 1.4 | | 5.9 |
| - Hilo | 5.0 | 0.17 | 1.9 | 12.3 | 0.7 | | 7.96 | 0.3 | | 1.2 | | | 0.29 | 13.44 | 3.1 |
| RIGID CHASSIS VEHICLES | | | | | | | | | | | | | | | |
| - Truck | 73.4 | 85.1 | 8.0 | | | 40.2 | 1.4 | 21.7 | 5.3 | 30.8 | 19.1 | 29.8 | 9.9 | 1.4 | 23.3 |
| - Lorry | 4.2 | | 4.4 | | | | 0.05 | 0.01 | | 1.0 | 8.0 | | 0.1 | | 1.3 |
| TRACTOR DRIVEN VEHICLES | | | | | | | | | | | | | | | |
| - Hilo | | | 3.1 | | 4.2 | 2.2 | 2.9 | 0.6 | 11.7 | 19.0 | 7.4 | 25.1 | 5.5 | 4.8 | 6.2 |
| - Rig | 0.1 | 9.6 | 0.5 | | 0.6 | 16.4 | 13.4 | 1.3 | 0.1 | 2.4 | 0.4 | | | | 3.2 |
| - Interlink | 1.0 | | 56.6 | 1.3 | 12.0 | 13.0 | 13.3 | 0.1 | 0.3 | 1.2 | 12.5 | 4.5 | | 6.1 | 8.7 |

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

**TABLE H**

| PERIOD (SEASON) | Percent Cane | | Cane / sugar Ratio | | Extraction | Pol % fibre in Bagasse | Percent Bagasse | | Imbibition Percent | | Mixed Juice | | Final Molasses | Boiling House Recovery | Overall Recovery |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pol | Fibre | Tel Quel | 96o Pol Sugar | Pol based | | Pol | Moisture | Cane | Fibre | Purity Pol based | Reducing Sugar/ Pol ratio | Suc/brix Purity Chem.suc. | Pol based | Pol based |
| **Average 1925 - 1934** | **13.19** | **15.78** | **9.86** | **9.64** | **89.83** | **8.86** | **3.88** | **50.57** | **27.6** | **175** | **85.09** | **3.65** | **45.3** | **83.67** | **75.12** |
| **Average 1935 - 1944** | **13.53** | **15.30** | **8.96** | **8.73** | **92.05** | **7.05** | **3.11** | **51.60** | **32.6** | **213** | **86.01** | **3.22** | **43.3** | **88.36** | **81.34** |
| **Average 1945 - 1954** | **13.79** | **16.06** | **8.60** | **8.36** | **93.04** | **5.95** | **2.69** | **51.32** | **33.8** | **210** | **85.95** | **3.29** | **40.7** | **89.46** | **83.23** |
| **Average 1955 - 1964** | **13.53** | **15.49** | **8.75** | **8.49** | **93.43** | **5.73** | **2.51** | **52.78** | **36.3** | **235** | **85.24** | **3.67** | **39.6** | **89.58** | **83.69** |
| **Average 1965 - 1974** | **13.16** | **15.22** | **8.95** | **8.68** | **95.00** | **4.35** | **1.91** | **53.15** | **41.7** | **274** | **84.80** | **4.15** | **39.3** | **88.49** | **84.06** |
| **Average 1975 - 1980** | **12.80** | **15.61** | **9.09** | **8.77** | **96.20** | **3.26** | **1.45** | **52.50** | **46.3** | **309** | **84.85** | **5.37** | **38.4** | **88.92** | **85.54** |
| ***From 1981 onwards data are sucrose based*** | ***Sucrose based*** | | | | ***Sucrose based*** | | | | | | ***Sucrose based*** | ***(F + G) / suc.ratio*** | ***Sucrose based*** | ***Sucrose based*** | ***Sucrose based*** |
| **Average 1981 - 1984** | **12.44** | **15.88** | **9.44** | **9.12** | **97.12** | **2.36** | **1.09** | **51.74** | **52.6** | **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 |
| **2013** | 13.84 | 15.04 | 8.48 | 8.18 | 97.23 | 2.59 | 1.22 | 50.66 | 49.0 | 331 | 86.91 | 4.40 | 38.5 | 87.23 | 84.81 |
| **2014** | 14.25 | 15.07 | 8.36 | 8.06 | 97.19 | 2.70 | 1.28 | 50.58 | 48.3 | 325 | 86.12 | 4.97 | 39.8 | 86.00 | 83.58 |
| **Average 2005 - 2014** | **13.61** | **14.98** | **8.60** | **8.29** | **97.48** | **2.33** | **1.11** | **50.21** | **51.2** | **348** | **86.10** | **4.75** | **38.0** | **87.35** | **85.14** |
| **2015** | 13.41 | 15.37 | 9.04 | 8.71 | 97.03 | 2.62 | 1.23 | 50.78 | 50.2 | 331 | 85.15 | 5.23 | 39.2 | 84.65 | 82.14 |
| **2016** | 12.87 | 15.94 | 9.48 | 9.14 | 96.75 | 2.70 | 1.27 | 50.80 | 50.7 | 324 | 84.80 | 5.13 | 39.2 | 83.67 | 80.95 |
| **2017** | 13.73 | 15.21 | 8.68 | 8.37 | 97.11 | 2.66 | 1.27 | 50.24 | 50.2 | 336 | 86.30 | 4.31 | 39.5 | 85.47 | 83.00 |
| **Average 2015 - 2017** | **13.34** | **15.51** | **9.07** | **8.74** | **96.96** | **2.66** | **1.26** | **50.61** | **50.4** | **330** | **85.42** | **4.89** | **39.3** | **84.60** | **82.03** |