Abstract

The objectives of this paper are to characterise South African sugarcane production for the 2017/18 milling season from an agricultural perspective. This is done to provide insight into successes and failures of recent production strategies, and identify priorities for improved efficiency in producing high quality sugarcane in South Africa.

The lengthy and severe drought of 2014/15/16 was finally broken in 2017 with good rainfall bringing relief in rainfed production areas. Yields in these areas improved markedly from 2016. Cane quality also improved although it remained below the long term mean because of disruptive rainfall in May and in some parts in October. Irrigation water supplies remained constrained for a large part of the growing season but started improving from January 2017. This brought about improved yields, while excellent cane quality was achieved in these areas.

Smut levels increased in the northern parts of the industry, but levels of other diseases were relatively low. Eldana levels also declined after good summer rainfall in coastal areas. A new pest, the longhorn beetle, posed a serious threat, but seems to have for the present been contained. Vigilance, especially in hotspot areas, remains a high priority.

Substantial sugar imports combined with increased local production necessitated exports of locally produced sugar at low world prices, leading to low producers price and profitability, and threatening long term sustainability. Effective tariff protection is urgently required to turn this around.

Overall, the 2017 production season will be remembered for a remarkable turnaround in sugarcane production from one of the most severe droughts ever experienced. Agronomic recovery, however, did not translate into financial recovery, due to a low product price. Continued efforts are needed to improve efficiencies along the value chain, for the industry to remain competitive.

Keywords: cane quality, cane yield, diseases, profitability, pests, production
Introduction

Sugarcane production in South Africa (SA) has been in decline over the last 17 years, primarily caused by a steady decline in area under cane from more than 400 000 ha in 2000 to about 360 000 ha in 2017 (Figure 1). Severe droughts around 2003, 2010 and 2015 also caused sharp drops in industry average cane yield and production (Figure 1).

In the 2017/18 season, the industry produced 17.38 million tons (Mt) of cane, harvested from an estimated 244 925 hectares. Corresponding amounts of cane for the 2015/16 and 2016/17 seasons were 14.86 and 15.07 Mt harvested from 250 641 and 252 579 ha, respectively. These data translate to an estimated industry average cane yield of 71.0 t/ha, compared to 59.3 and 59.7 t/ha for the 2015/16 and 2016/17 seasons, respectively. Sugar production rose to 1.99 Mt in 2017/18, compared to values of 1.63 and 1.55 Mt for the 2015/16 and 2016/17 seasons, respectively. The cane to sugar ratio was 8.72 in 2017/18, compared to values of 9.12 for 2015/16 and 9.65 for 2016/17.

This paper analyses production for the 2016/17 season, and relates the key performance indicators of cane yield and cane quality to the main production factors of climate, pests and diseases, agronomic and economic conditions. The information, and lessons learnt from this exercise, should be used in the future to strive for more efficient production of high quality sugarcane in South Africa.

Methodology

A similar methodology was followed to that used in previous reviews (Singels et al., 2014). Production data were mostly analysed at the level of mill supply areas (MSAs), while in some cases pest and disease data were grouped or subdivided into areas as defined by Local Pest, Disease and Variety Control Committees (LPD&VCCs) of the South African Sugar Association (SASA). Some results are also discussed in the context of broad agro-climatic regions (Figure 2).

The sugarcane produced in the 2017/18 milling season grew mostly from between April 2015 (long cycle cane) and December 2016 (annual cane), to between April 2017 and December 2017, when it was harvested. For simplicity, both the growing and milling seasons are referred to as the 2017 season.

Production data

Production (cane deliveries and cane quality) data were obtained from the SASA Cane Testing Service (CTS) database, while the estimated area harvested was gleaned from survey data from the SASA Industry Affairs or from data provided by the Mill Group Boards (MGBs).
Figure 1. Cane production, area under cane (a) and industry average cane yield (b) in the South African sugar industry since 2000.
Figure 2. Map showing the 14 South African sugar mills and their location within broad agro-climatic production regions (source: South African Sugarcane Research Institute, Geographic Information System office).

Rainfall

Rainfall records from various weather stations, averaged per MSA, were obtained from the South African Sugarcane Research Institute (SASRI) weather database. Twelve-month totals or average values leading up to each month of the 2017 milling season (e.g. 1 April 2016 to 31 March 2017, 1 May 2016 to 31 April 2017, and so forth) were compared to the
corresponding long term mean (LTM) values. The deviations from the LTM (anomalies) were in turn compared to the corresponding anomalies for the 2015 and 2016 seasons.

Soil health

Soil acidity is a key soil health parameter affecting crop yield, due to its dramatic impact on water and nutrient availability to the crop. Acid saturation (defined as the ratio of the concentration of acid cations to cation exchange capacity, expressed as a percentage) of soil samples submitted to SASRI Fertiliser Advisory Service during 2013 and 2017 were compared for the rainfed MSAs where soil acidity has been identified previously as problematic (Mthimkhulu and Miles, 2016).

Pests

SASRI Biosecurity teams conduct industry-wide annual pest surveys. *Eldana saccharina* Walker (Lepidoptera: Pyralidae) (eldana) infestations are quantified as the number of larvae per 100 stalks (e/100) and damage as a percentage of stalks with eldana borings (%SD). Larval numbers were averaged for different MSAs over the 12-month period from June 2016 to May 2017. For analysis, seasonal average infestation levels for different MSAs and for the industry as a whole were compared to that of the previous two seasons, as well as to the mean over the last five and 17 seasons.

A new pest emerged in 2017 namely, the longhorn beetle *Cacosceles newmannii* Thomson (Coleoptera: Cerambycidae). Sampling efforts for larvae were as described by Way et al. (2017). Areas in older sugarcane fields with lodged sugarcane, and in younger fields showing dead hearts, had the stools dug out and searched carefully for larvae, and pupae just under the stools. Furthermore, in various trial fields, stools and topsoil were searched carefully for immature stages. Way et al. (2017) also described the adult flight period and their habitats. At these times and places the adults were hand collected, for mating, fecundity and life cycle studies.

Diseases

The same data collection and processing procedures were followed as described by Singels et al. (2014). SASRI Biosecurity teams inspected 6 639 commercial fields and 4 191 intended seedcane sources for smut and mosaic during the June 2016 to May 2017 period. Inspections covered over 44 700 ha representing approximately 12% of the area under cane. A total of 9 335 samples from commercial and intended seedcane fields were received from the SASRI Biosecurity teams and tested for ratoon stunt (RSD).

Economic information

Farm economics were analysed using survey data from SA Cane Growers’ Association (SACGA, 2017b). Only actual data for the 2015 season were available, and the data for the 2016 season were estimated using indices from the Crops and Markets Reports released by the Department of Agriculture, Forestry and Fisheries (DAFF, 2017). The projection for the 2017 season is based on the average Consumer Price Index (CPI) for the year 2017 (Statistics South Africa, 2017). Estimates for the 2016 season are based on actual changes in prices and costs, while estimates for the 2017 season were based on the average inflationary increase. The survey elicited cost and income data from a sample of large scale growers from the 14 MSAs in SA. Average cost and income statistics reported in this study were determined by weighting MSA values by the deliveries of large scale growers in each MSA.
Results and Discussion

Firstly, cane production data are summarised at MSA level, by comparing data for the 2016 season with that of previous seasons. Production conditions during the 2016 growing season are then reviewed, focusing on rainfall, irrigation, soil health and pests and diseases. The impacts of these factors on cane productivity (cane yield and quality) are then discussed, followed by a brief review of economic conditions and its impacts on grower profitability.

Production information

Production increased from 2016 for all MSAs (Figure 3), but remained below the five season mean for irrigated MSAs. Production in rainfed MSAs was close to, or exceeded, the five season mean (Figure 3).

The estimated area harvested (Figure 4) in 2017 was lower than in 2016 for all irrigated and mixed MSAs, probably due to the effect of water restrictions. Area harvested for the Felixton and Umzimkulu MSAs have declined steadily over the past four seasons. Estimates of area harvested for Umfolozi and the three North Coast MSAs seem unreliable because of significant discrepancies between data obtained from SASA surveys and the MGB (not shown). This will negatively affect the reliability of yield estimates and any deductions made for these MSAs.

The industry total area harvested in 2017 is estimated at about 245 000 ha, a small decrease from the 253 000 ha estimated for 2016.

Figure 3. Cane production for different mill supply areas for the 2017 season compared to the 2015 and 2016 seasons and the five-season mean (LTM, shown as yellow horizontal bars).
Figure 4. Estimated area harvested in the 2017 season for different mill supply areas, compared to the 2015 and 2016 seasons.

*Production conditions*

In this section, some of the main factors that determine production conditions and drive cane growth and productivity, namely rainfall, irrigation, plant health (pests and diseases), soil health and economics, are described for different MSAs for the 2017 growing season.

*Rainfall and irrigation*

Growing season total rainfall was above normal for all rainfed MSAs except for Malelane and Pongola (Figure 5). Rainfall in coastal MSAs in particular were well above normal.

Monthly rainfall averaged for Kwazulu-Natal stations was mostly below normal from April 2015 to June 2016, with the notable exceptions of July 2015 and May 2016 (Figure 6). Rainfall in 2016/17 was closer to normal, but with dry spells in December 2016 and in March and April 2017 and very high rainfall in February and May of 2016. The 2017 winter was relatively dry, followed by good rainfall in the last three months of 2017.

The unusually high rainfall in the winter of 2016 marked the breaking of the long drought in rainfed areas, and restored soil water supply in these areas. Estimated soil water content in these areas remained above the long term mean, through to December 2017 (Figure 7).
Figure 5. Total 12-month rainfall expressed as a percentage deviation from the long term mean, averaged over each month of the harvest season for different mill supply areas and the industry as a whole for the 2015 season compared to the 2013 and 2014 seasons.

Figure 6. Monthly rainfall averaged for KwaZulu-Natal from April 2015 to December 2017 (bars) compared to the long term mean monthly values (line).
Figure 7. Monthly average plant available soil water content (ASWC), expressed as a percentage of the full capacity, for a hypothetical sugarcane crop growing in the Amatikulu mill supply area during the period April 2014 to February 2017 (bars), compared to the long term monthly mean values (line). Values below 50% can be considered dry.

Figure 8. Irrigation allocations (as a percentage of the normal allocation) for the period January 2014 to December 2017 for different water sources supplying irrigation water to the Malelane, Komati (Crocodile and Komati), Pongola, Umfolozi and Felixton (Pongolapoort, Umfolozi, Umhlatuze) mill supply areas.
Although growing season total rainfall in the northern irrigated areas was close to normal, dam levels were unusually low, necessitating severe irrigation restrictions from April to November 2016 (Figure 8). Restrictions were briefly relaxed in January 2017, and good water supply was maintained until May for the Crocodile river. Water supplies during the winter of 2017 were also restricted for most sources, although these were not as severe as in 2016. Water supplies were normalised towards the end of 2017 for Mpumalanga and Pongola. Restrictions remained in place in the Umhlatuze catchment.

**Soil health**

Acid saturation data for rainfed areas clearly show that although median values of acid saturation values are below the 20% target, many samples had values that far exceeded this level (Figure 9). Noteworthy is a declining trend in 90th percentile values from 2013 to 2017 for all areas except the Midlands. This could be an indication of improved management in these severely acidic topsoils. Subsoil acid saturation values were more variable, although 2017 median values were mostly below 20%, and the 90th percentile values mostly showed a declining trend. Of concern are high median values in the Umzimkulu MSA and an increase in 90th percentile values for Sezela MSA (data not shown).

![Figure 9. Box plots of acid saturation as determined by SASRI FAS for topsoil samples collected in different mill supply areas in 2013 and 2017. The box indicates values at the 10th, 50th and 90th percentile of the cumulative frequency distribution, and the whiskers the minimum and maximum values.](image-url)
Pests

Eldana

Eldana infestation levels increased slightly in irrigated areas from the 2016 season, with Umfolozi showing a sharp rise to above the long term mean, possibly due to the lingering effects of the drought in these areas. In contrast, infestation levels decreased in most rainfed areas (Entumeni and Noodsberg were exceptions), compared to that of the 2016 season. This is attributed to the improved water status as a result of favourable summer rainfall, but also the vigilance of SASRI biosecurity teams and some growers, and the increasing implementation of integrated pest control measures. It was good to see the Sezela MSA (which had the highest eldana population in 2016 of 6.7 e/100 stalks) showing a 42% reduction to 3.9 e/100 stalks. The long term decline in infestation levels for North Coast MSAs, as reflected by the difference in the mean values over the past five and 17 seasons, is also impressive (Figure 10). As encouraging as these results are, there were still some excessive infestations in fields recorded across the industry, and scouting and implementation of control measures should receive priority in the hotspot area of each mill region.

The industry average eldana infestation level also declined and was below the five season mean.

![Eldana infestation for different areas and for the industry as a whole for the 2017 season, compared to the 2016 and 2015 seasons and to the mean value over the past five (yellow horizontal bars) and 17 seasons (blue horizontal bars).](image)

Longhorn beetle

The longhorn beetle was identified as a new pest of sugarcane in the Entumeni area in 2017 (Way et al. 2017). Following intensive surveys, five farms were identified as infested, and placed under quarantine to try and contain the pest. Destruction orders were issued for the
infested fields, and also fields bordering these, termed buffer fields. As a result, all infested and buffer fields were ploughed out and treated with insecticide by the end of the milling season in 2017, before being replanted to pasture grasses or left fallow. Large portions of sugarcane on two farms were destroyed (52 and 66% respectively), while the other three farms had fewer fields infested, and thus could maintain the major portion of their sugarcane operations. The total area of sugarcane that was ploughed out in the area in 2017 was 924 ha.

Adult beetle flights from December 2017 until March 2018 were again observed, but far fewer were collected compared to the 2016/17 adult flight period. It also proved more difficult to find larvae in the fields that were previously heavily infested. However, it still remains to be ascertained whether the decline in beetle flights and larvae populations are due to control measure taken, or to more favourable rainfall received.

Research was initiated to gain knowledge about the pest, and to develop a sustainable integrated control program against this insect should it become more established in the South African sugarcane industry. First results are presented by Javal et al. (2018).

Diseases

Smut

There was a marked increase in smut in the 2016 season with overall incidence in the industry exceeding the five season mean (Figure 11). This was largely due to higher levels of smut in the Komati, Pongola and Umfolozi MSAs. The very high levels in Pongola coincided with relatively hot and dry conditions over the past two seasons in this area, which would have favoured the development of smut. Smut levels in Gledhow returned to below the five season mean after the spike in 2015 that was caused by extremely high levels on one farm.

More than 50% of fields of varieties N14, N19, N25, N32, N41 and N43 inspected in the Northern Irrigated region and Umfolozi MSA were infected with smut, along with 87% of the NCo376 fields inspected in Umfolozi (data not shown). Highest smut levels (≥1% stools infected) were recorded in NCo376, N25, N32, N41 and N43. A policy to release only smut resistant varieties (and not varieties with intermediate resistance) has been implemented to improve the smut situation in the Northern Irrigated region. This impacts on the availability of suitable varieties for the region. Intensive roguing is essential in smut-prone MSAs as well as in MSAs where smut-susceptible varieties are being grown. Roguing reduces the risk of spread to neighbouring fields and farms but requires regular inspections by on-farm staff with support from the Biosecurity teams for early detection of infections. Field eradication orders continue to be issued by the LPD&VCCs when smut levels cannot be maintained below the accepted threshold set for a particular MSA.

Mosaic

The overall mosaic incidence in the industry was lower than the five season mean (Figure 12). The increase in mosaic incidence recorded in the Gledhow MSA was mainly due to severe infections in five fields of the mosaic susceptible variety NCo376. The disease was, however, not widespread in the MSA, with only 8% of the fields inspected being infected (data not shown). Mosaic incidence dropped back to expected levels in the Umzimkulu area after a spike in 2016 which was due to severe infection on one farm. Levels have declined in the Malelane MSAs over the past three years, with incidence now well below the five season mean. While mosaic was most common in N19 in this area, the disease was also observed in N32, N36 and N57. NCo376 was the most commonly and severely infected variety in the southern, coastal parts of the industry, while the disease was most common in N12 in the Midlands region. Varietal resistance is key to managing mosaic in the industry.
Figure 11. Smut incidence recorded from June 2016 to May 2017 (2017) in the different areas and for the industry as a whole, compared to that for the periods June 2015 to May 2016 (2016) and June 2014 to May 2015 (2015) and to the five-season mean (LTM), shown as yellow horizontal bars. Please note that surveys in the Amatikulu MSA were biased towards fields with susceptible varieties.

Figure 12. Mosaic incidence for different pest and diseases areas and for the industry as a whole, for the 2017 season compared to that of the 2016 and 2015 seasons and to the five-season mean (LTM), shown as yellow horizontal bars.
Rust

Brown rust was observed on varieties N16 (mild), N37 (mild-moderate) and N39 (mild-severe) and N42 (severe) in the Zululand, Midlands and Umzimkulu MSAs. Tawny rust was also observed in these MSAs on N12 (moderate-severe), N16 (moderate-severe), N27 (severe) and N39 (mild). Some fields of N57 were severely infected with tawny rust in the Umfolozi MSA, but few reports were received for the Pongola MSA where the dry conditions were not conducive for rust development. Orange rust spores were detected on spore traps in the Komati MSA in April, May and October 2016 and January and February 2018 but symptoms have yet to be observed on sugarcane in South Africa. Fungicides are available to manage all three sugarcane rusts.

Ratoon stunt (RSD)

RSD levels for the industry were lower than the five-year mean in samples collected from both commercial fields (5.1%) (Figure 13) and intended seedcane sources (1.3% - data not shown). Incidence in commercial samples from Umfolozi was lower than previous years at 14.2% but still exceeded the industry mean. Levels were also high in samples received from commercial fields in the Darnall (15.4%), Gledhow (11.2%) and Eston MSAs (13.9%).

No RSD was detected in seedcane samples from the Malelane, Komati, Felixton, Amatikulu, Eston and Sezela MSAs, while 8.1% of the samples submitted from intended seedcane sources in the Umfolozi MSA were infected (data not shown).

Plans are currently underway to impose stricter controls on the selling and planting of seedcane in all MSAs. By 2023, no fields may be planted with seedcane that has not been approved by the LPD&VCC. This will contribute to a reduction in the incidence of important systemic diseases such as RSD, smut and mosaic over time.

Figure 13. Ratoon stunt (RSD) incidence for different areas and for the industry as a whole, for the 2017 season compared to that of the 2016 and 2015 seasons and to the five-season mean (LTM), shown as yellow horizontal bars.
Cane yield and quality

Estimated MSA average cane yields increased from 2016 in irrigated and mixed (Umfolozi and Felixton) MSAs (Figure 14), due to improved irrigation water supplies in 2017 (Figure 8). It should be noted, however, that irrigation water supplies remain inadequate to fully meet crop demand in many areas, and that availability of water for irrigation will come under increasing pressure with climate change and increasing demand for other priority uses. It is therefore imperative for the industry to continue developing and implementing technology to improve irrigation water use efficiency.

Yields in most rainfed MSAs increased by between 10 and 25% from 2016, due to improved rainfall and better soil water status during the growing period (Figures 6 and 7). Industry average yield increased markedly from 59.7 to 71.0 t/ha, which exceeded the five season mean.

Cane quality, as quantified by estimated recoverable crystal (ERC) content of cane (fresh mass basis), improved in all MSAs from the very low levels of 2016 (Figure 15). The industry average ERC content increased to 11.45% from the very low level of 10.6% achieved in 2016.

Cane quality in irrigated areas was excellent and well above the five season mean. This is ascribed to low rainfall and restricted water supplies early in the year. Cane quality in rainfed MSAs remained below the five season mean. Conditions were mostly not ideal for chemical ripener application. In addition to that, very high rainfall in May, just after the opening of mills, interfered with harvesting operations and led to low quality in the first part of the milling season in coastal areas. Relatively cool and dry conditions thereafter promoted natural ripening that improved cane quality in the second part of the milling season. Heavy rains in October
negatively affected cane quality for South Coast MSAs. Midlands MSAs had the best quality of the rainfed MSAs, partly because of lower rainfall in May and October compared to other MSAs.

Figure 15. Estimated recoverable crystal content of cane (ERC%) on a fresh mass basis for different mill supply areas and for the whole industry for the 2017 season, compared to the 2015 and 2016 seasons and the five-season mean (LTM), shown as yellow horizontal bars.

Industry and farm economics

Consumption of locally produced sugar declined sharply (-22%) from 2016 due to the availability of cheap imported sugar (Table 1). The large amounts of sugar imported in 2016 and 2017 were due to the low and ineffectual tariff protection. Local sugar production rose by 28% in 2017 compared to 2016, and necessitated the export of about 40% of total production at a reduced (-20%) world price. These factors lead to a 14% decrease of the price paid to growers for their cane in 2017.

Table 2 summarises recent trends in profitability for typical large-scale sugarcane enterprises. Although growing conditions improved significantly throughout the industry in 2017, growers were unable to capitalise on the higher yields and better cane quality due to the decreasing RV (recoverable value, see Groom, 1999 for definition) price. Therefore, the grower’s gross income decreased by 14% from the 2016 season, while operating costs remained largely unchanged from 2016. This caused a sharp drop in net farm income of 51% and 57% for rainfed and irrigated cane farms respectively (Table 2).

The 2018/19 season will continue to test grower sustainability as the threat of cheap imports without appropriate tariff protection continues to put downward pressure on the RV price. The National Minimum Wage which will be implemented in May 2018 will push wage costs up by 11%. Fortunately, the strengthening of the Rand in 2018 has provided some relief in terms of
stable fuel, fertiliser and chemical prices, but growers will have to continue to farm as efficiently and cost effectively as possible.

Table 1. Key economic indicators for the South African sugar industry (South African Cane Growers' Association, 2016, 2017).

<table>
<thead>
<tr>
<th>Season</th>
<th>2016</th>
<th>2017*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross sugar production (t)</td>
<td>1 553 229</td>
<td>1 994 607</td>
</tr>
<tr>
<td>Local market demand (t)</td>
<td>1 534 741</td>
<td>1 190 276</td>
</tr>
<tr>
<td>Sugar imports (t)</td>
<td>283 582</td>
<td>362 423</td>
</tr>
<tr>
<td>Sugar exports (t)</td>
<td>4 998</td>
<td>795 434</td>
</tr>
<tr>
<td>No.11 World price (USc/lb)</td>
<td>19.54</td>
<td>15.58</td>
</tr>
<tr>
<td>R/US$ exchange rate</td>
<td>13.11</td>
<td>13.00</td>
</tr>
<tr>
<td>World price (R/t)</td>
<td>5 612</td>
<td>4 465</td>
</tr>
<tr>
<td>RV# price (R/t)</td>
<td>4 931.91</td>
<td>4 249.68</td>
</tr>
</tbody>
</table>

*Not finalized, estimated. #Recoverable value

Table 2. Gross income, operating costs and net farm income (defined as the difference between gross income and total operational cost, and excluding managerial costs, interest, rent and leases, depreciation, and tax) per ton of cane harvested (derived from South African Cane Growers' Association, 2017).

<table>
<thead>
<tr>
<th>Season</th>
<th>Rainfed</th>
<th>Irrigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross income (R/t)</td>
<td>474.30</td>
<td>570.62</td>
</tr>
<tr>
<td>Total operating costs (R/t)</td>
<td>450.94</td>
<td>432.19</td>
</tr>
<tr>
<td>Net farm income (R/t)</td>
<td>23.36</td>
<td>138.43</td>
</tr>
</tbody>
</table>

*Estimated

Conclusion

The lengthy and severe drought of 2014/15/16 was finally broken in 2017 with good rainfall bringing relief in rainfed production areas. Yields in these areas improved markedly from 2016. Cane quality also improved although it remained below the long term mean because of disruptive rainfall in May and in some parts in October.

Irrigation water supplies remained constrained for a large part of the growing season but started improving from January 2017. This brought about improved yields, while excellent cane quality was achieved in these areas. The industry needs to continue the development and application of technology to further improve the efficiency of irrigation water use under a likely long term scenario of limited and declining water supply.

There were encouraging signs of improved soil health with a reduction in the number of cases of severe soil acidity in rainfed areas recorded over the past four years. There is, however, ample room for further improvement.

Average smut levels increased in the northern parts of the industry, requiring intensive roguing and in some cases, crop eradication. This was due mainly to marked increases in the Pongola and Umfolozi MSAs. Overall mosaic and RSD levels were low. Orange rust spores were again
detected on traps located in Komati in 2018. Increased vigilance is required to ensure that any orange rust infections are detected early. Eldana levels declined after good summer rainfall and effective control, while the longhorn beetle threat seems to have been contained successfully, for now. However, vigilance in terms of regular scouting and implementation of control measures for all pests, especially in hotspot areas, should remain a high priority, as these and other areas of sugarcane prone to stress of any kind will be sources of infestation for surrounding sugarcane fields.

Substantial sugar imports combined with increased local production necessitated exports of locally produced sugar at low world prices, leading to low producer's price and profitability, and threatening long term sustainability. The industry is engaged with the Department of Trade and Industry to put into place an effective tariff that would protect the local market from cheap imports, that is required for long term economic sustainability.

Overall, the 2017 production season will be remembered for a remarkable recovery in crop sugarcane production from one of the most severe droughts ever experienced. Agronomic recovery, however, did not translate into financial recovery, due to a low product price. Continued efforts are needed to improve efficiencies along the value chain, for the industry to remain competitive.

Acknowledgements

The authors gratefully acknowledge (1) cane production data supplied by SASA Industry Affairs and Cane Testing Service, and (2) pest and disease data supplied by SASRI Biosecurity and Extension staff. The late Mike Way’s dedication and valuable contribution over many years to sugarcane pest research and pest data management are also gratefully acknowledged.

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