

THE LINK

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Also in this issue...

Praktiese Wenke

Vir 'n verskeidenheid van wenke om die herstel van droogte probleme in die huidige seisoen te bespoedig, word u na die artikel op bladsy 5 verwys.



Testing new agrochemical products on sugarcane

Selecting agrochemical products for testing and registration in the sugar industry is a rigorous process based on several factors. For more on SASRI's role in this process see page 17.



Lime and Gypsum

Choosing the best lime/gypsum product is important in remedying your acidic fields. The article on page 11 gives more insight into what to look for when making the choice.



Recovering from the drought

This edition provides useful recommendations on dealing with cane affected by drought (page 3) as well as information on the various growth stages of the sugarcane crop and their water requirements (page 8).



Unlocking the potential of sugarcane

Message from the Director

Dr Carolyn Baker

Being able to make recommendations that will enhance sugarcane production in a sustainable manner is one of the key outcomes of SASRI's R&D programme. Each recommendation represents the culmination of a number of sequential activities, beginning with rigorous research and ending with reliable and statistically tested results and outputs. These outputs are appraised by SASRI's Recommendations Committee, before being released for use by Extension Specialists. It is through this meticulous process that SASRI engenders confidence amongst growers regarding the recommendations emanating from the institute. Hence whenever a third party wishes to market their products for use in sugarcane, SASRI's recommendations are 'king'.



Recent registration of new insecticides for use in eldana control in sugarcane has highlighted the importance of having a suite of remedies with differing modes of action in our pest management toolbox. This has enabled SASRI to release very clear recommendations to growers regarding the manner in which the newly registered products should be used. SASRI's role in the registration process and in arriving at recommendations for the use of chemical products that are listed for use in sugarcane deserves some clarification.

At the outset it is important to note that in recommending the use of any specific product, SASRI cannot commercially endorse it in any way, but rather recognises that it is effective if used in the advised manner. Since there is a myriad of chemical products that have been formulated by various chemical companies, SASRI's agrochemical research programme is designed to identify those that are likely to work. Relevant products are considered for inclusion in SASRI research field trials to evaluate their efficacy, to show their potential value in mitigating the pest or disease risk for which they are designed.

In many instances the selected new chemistries are not registered for use on sugarcane and hence their use is illegal until such time as an application to the Registrar (the government agency that manages and adjudicates all such applications) is successful. The responsibility for registration lies with the chemical company. Nevertheless where it is possible and desirable, SASRI may elect to collaborate with chemical companies to collect the requisite portfolio of evidence that would lead to successful registration of the product. However, in view of the myriad of applications from all agricultural commodities that flood the Registrar's office, registration is a lengthy process that often leads to frustration. Time taken from identification of a desirable

product until successful registration, is in the region of six or seven years at the very best, since research trials are required to be conducted in several regions in the industry and over at least a plant and ratoon crop, and the registration process itself can take up to two years. Sustaining good relationships with all role-players is an essential part of the process, and over the past few years SASRI has fostered good relations with the Registrar's Office by demonstrating its rigorous approach to testing products and by liaising with chemical companies in an ethical manner.

Undoubtedly, the success of SASRI's agrochemical programme lies in its long-term approach, which constantly identifies new chemistries and attends to researching the science of their efficacy and applicability to sugarcane.



Topical Tips

By Rowan Stranack (Extension and Biosecurity Manager) and the Extension & Biosecurity Team

Although some areas have received reasonable rains this year, the effects of the drought have and will be felt across the industry for some time to come. Reduced yields as a result of the drought will result in lower farm income and it is therefore very important that every operation this year is carefully planned and costed to ensure quick and effective recovery.

Pest and Disease

In areas where eldana is a threat, careful planning of an IRAC compliant insecticide spraying strategy should be a high priority (see page 7 for IRAC programme). Significant reductions (up to 70%) in eldana damage can be achieved by applying the correct product at the right time with the registered application method. Despite the high cost of some of the products, the length and extent of control more than warrants the cost.

Weed infestations are likely to have increased during the drought, leaving a significant seedbank behind. Get in early during winter and spring with appropriate short- or long-term pre-emergent products to ensure weeds do not get out of hand. Relying on later hand weeding to control weed growth is unwise as, by that time, the weeds would have done damage to the crop. If necessary purchase additional spraying equipment so that when conditions are right, the maximum possible area can be sprayed. Continue to spot spray creeping grasses throughout the year so that patches are contained and don't spread.

The impact of ratoon stunting disease (RSD), levels of smut and particularly eldana in cane are known to increase with drought stress. Continue to inspect regularly for smut and scout for eldana.

Nutrition

The returns on applied nutrients is excellent. Cutting back on fertiliser should be one of the last areas where savings should be sought. In order to ensure money is well-spent, take soil samples and send them to FAS to determine the exact nutrient requirements for each field. Plan a sampling programme to commence as each field is harvested.

Cane will only respond well to applied nutrients if the crop has a healthy root system. Make sure to continue to implement a liming programme based on FAS subsoil recommendations. *Contact your SASRI Extension Specialist to discuss a sampling programme for your farm.*

Growers are strongly advised to test soil samples at the SASRI Fertiliser Advisory Service (FAS) to evaluate nitrogen requirement in the soil after drought

Mulching allows for moisture retention and the recycling of nutrients applied to the crop.

Seedcane

Certified and Approved seedcane will be in short supply this year. If you do not have enough for your coming replant programme contact your SASRI Biosecurity Officer NOW, to discuss your situation and for assistance in securing suitable planting material.

Plan to long-fallow (minimum 9 months) seedcane nursery fields on your farm for planting next year. The varieties to be planted will be those planned for commercial plantings in 2018. This illustrates the need for long-term forward planning on your farm. A suitable source of Certified Seedcane will also have to be found for this nursery, either from your own farm or ordered from your local LPD&VCC seedcane scheme. *Contact your SASRI Biosecurity Officer for assistance.*

Planting

It may not be possible to replant all the fields needing re-establishment after the drought. Prioritise fields on the basis of their likely contribution to cash flow in the coming year. For example, it might be better to replant a slightly damaged field with good potential, than another where damage is more extensive but where the potential is low to moderate. *Ask your SASRI Extension Specialist for advice on yield potentials for your fields.*

Harvesting

With the start of the harvesting season the focus should be on cane quality. A planned schedule of harvesting is essential to ensure ripened fields are harvested at the correct time, fields with high levels of eldana are cleared first and different varieties are harvested at their recommended time of the season. However, all this good work can be undone by long harvest-to-crush delays. Ensure this is kept to a minimum, especially if cane is burnt as deterioration sets in immediately after the crop is burnt.

Irrigated regions

Be flexible in irrigation scheduling and apply water strategically to both optimise the yield from the present crop as well as ensuring quick recovery after the drought. Therefore, apply water according to stage of the plant canopy (younger canopies require less water than full, mature canopies). The tillering growth stage has a lower water requirement and water savings can be made during this stage (minimal impacts on final yield if water is limiting). The growth stage most sensitive to water stress is the "grand growth" or "stalk elongation" stage and scheduling irrigation during this growth period is critical (See article on page 8).

Preference for water allocation should be prioritised to fields with high yield potential such as plant cane and younger ratoon cane and soils with high yield potential. Seedcane should be given the highest priority and be irrigated without restriction where possible.

Irrigate all germinating and ratooning crops as soon as possible after harvest or planting as emerging crops are more sensitive to water stress. Thereafter water requirement is very low, especially during winter.

On deep soils, drying off can be introduced earlier than on shallow soils with smaller water holding capacity

Planning and Finances

The only effective way of keeping control of all operations on your farm is by means of a programme planning chart. If you do not use one of these contact your SASRI Extension Specialist who can provide you with a chart and help you set it up.

Finances are likely to remain under pressure for some time to come as recovery from the drought progresses. To help develop a strategy for the coming seasons contact your local CANEGROWERS Regional Manager who, together with your SASRI Extension Specialist can assist you develop a suitable recovery plan.

Land use planning

Winter is the best time to construct and repair conservation structures, particularly waterways. Grass sods cut from established sources on the farm can be staked into waterways and watered regularly to ensure rapid and extensive ground cover. Without soil there is no crop. Ensure all fields are adequately protected in accordance with a SASRI Land Use Plan.



Praktiese Wenke

✎ Deur Rowan Stranack (Uitbreiding en Biosekuriteit Bestuurder) en die Uitbreiding Biosekuriteit Span

Afgesien daarvan dat baie van ons produksie areas redelike goeie reën ontvang het oor die afgelope jaar, gaan die effek van die droogte nog vir 'n hele ruk saam met ons wees. Verlaagde opbrengste gaan noodwendig lei tot 'n verminderde inkomste en daarom is dit uiters belangrik om elke plaasbedrywighede deeglik te beplan en presies te weet wat dit gaan kos om 'n vinnige en effektiewe herstel te bewerkstellig.

Plaa en siektes

In gebiede waar eldana 'n groot probleem is, moet addisionele aandag gegee word aan 'n insek spuitprogram, onderhewig aan "IRAC" regulasies (sien bladsy 7). Deur die korrekte middels op die regte tyd en met die regte toerusting toe te dien, kan eldana skade aansienlik (tot soveel as 70%) verminder word. Langdurige en effektiewe beheer regverdig die hoë onkoste van sekere van hierdie produkte.

Onkruidprobleme neem gewoonlik toe in tye van droogte wat die saadbank vergroot in die volgende seisoen. Probeer om so vroeg as moontlik in die winter en lente met geskikte kort

en langtermyn vooropkoms doders te spuit om onkruid in bedwang te hou. Handskoffel later in die seisoen is oneffektief aangesien onkruid dan alreeds skade aan die gewas aangerig het. Indien nodig moet eksta spuittoerusting aangekoop word om in staat te wees om die maksimum area moontlik te behandel wanneer toestande gunstig is. Kolle met kruipende grasse moet deurlopend bespuit word om te keer dat besmette areas versprei.

Tydens droogtetye neem die impak van "ratoon stunting disease" (RSD), vlakke van smut en veral die voorkoms van eldana, drasties toe. Gereelde inspeksies vir RSD, smut en eldana is dus nog steeds nodig.

Voeding

Finansiële opbrengs op u toegediende kunsmis sal altyd baie goed wees. Dit is dus nie raadsaam om te probeer bespaar deur die hoeveelheid kunsmis onnodig te sny nie. Vir die beste resultate is dit nodig om gereeld grondmonsters te neem om sodoende die presiese voedingsbehoefte van elke land te bepaal. Grondmonsters kan geneem word sodra elke land klaar geoes is.

Suikerriet sal slegs reageer op toegediende voedingstowwe indien die plant 'n gesonde wortelstelsel het. Daarom is dit noodsaaklik om landboukalk toe te dien waar nodig volgens FAS grondontledingsresultate

van die ondergrond. *Kontak u SASRI Voorligtingsbeampte vir raad en advies met die beplanning hiervan.*

Rietkwekers word aangeraai om hul gronde te laat toets by SASRI - FAS om die beskikbaarheid van N, wat gewoonlik toeneem tydens tye van droogte, te bepaal.

Behou so v&er moontlik dooie blare en toppies wat as 'n deklaag gebruik kan word om verdamping te beperk en ook op die langtermyn plantvoedingstowwe te hersirkuleer.

Saadriet

Gesertifiseerde en goedgekeurde materiaal gaan hierdie jaar baie skaars wees. Indien u nie voldoende materiaal het vir die komende herplant program nie, kan u die SASRI Biosekuriteitsbeampte so gou moontlik kontak om te re&el vir geskikte plantmateriaal.

Saadrietlande wat volgende jaar geplant gaan word, moet vir 'n minimum periode van 9 maande rus. Langtermynbeplanning is uiters noodsaaklik aangesien vari&eteite wat nou ingesluit moet word eers in 2018 uitgeplant gaan word in kommersi&ele lande. 'n Geskikte bron van gesertifiseerde saadriet moet ook eers gevind word vir die kwekery wat afkomstig kan wees van u eie plaas of bekom kan word deur die plaaslike LPD&VCC. *Kontak u plaaslike Biosekuriteitsbeampte vir hulp hiermee.*

Plant van nuwe riet

Moontlik nie alle lande sal hervestig kan word na die droogte nie. Lande kan geprioritiseer word volgens hul finansi&ele bydra to kontantvloei in die komende jaar. So byvoorbeeld kan dit

beterweesom 'n land met geringeskaade, maar met ho&e potensiaal oor te plant eerder as a land met baie skade en lae potensiaal. *SASRI Voorligtingsbeamptes kan u bystaan om die produksiepotensiaal van u lande te bepaal.*

Oes

In die huidige seisoen moet daar veral gefokus word op rietkwaliteit. Goeie beplanning is nodig om te verseker dat ryggemaakte riet op die regte tyd geoes word, lande met ho&e vlakke van eldana eerste geoes word en dat verskillende vari&eteite op die regte tyd gedurende die season geoes word. Daar moet veral op oes-tot-maal verdragings (harvest to crush delays) gelet word aangesien dit al die goeie werk ongedaan kan maak. Hierdie verdraging moet so kort moontlik wees omdat kwaliteit drasties afneem sodra die riet gebrand is.

Besproeide areas

Volg sover moontlik 'n buigbare besproeiingstrategie en dien water strategies toe om nie net die bes moontlike opbrens van die huidige gewas te verkry nie, maar om ook 'n vinnige herstel te bewerkstellig na die droogte. Dien dus besproeiing toe volgens die gewas se groei stadium (jong riet met 'n klein blaredak benodig minder water as ouer riet met 'n groter blaredak). Tydens spruitvorming ("tillering growth stage") is die gewas minder gevoelig vir waterstremming en kan water hier bespaar word met minimum impak op finale opbrenns. Die mees sensitiefse groei stadium vir waterstremming is gedurende stingelverlenging ("stalk extension stage") en akkurate besproeiing is hier uiters noodsaaklik.

Lande met 'n ho&e produksiepotensiaal, soos planriet lande, jong ratoen lande en lande met baie goeie gronde, moet voorkeur geniet. Saadrietlande moet die hoogste prioriteit ontvang en besproei word sonder enige beperking waar moontlik.

Besproei all nuut geplante en pas gekapte lande so gou moontlik om onnodige waterstremming en swak stand te voorkom. Besproeiingsintervalle kan daarna gerek word aangesien die waterbehoefte van jong riet baie laag is, veral in die wintermaande.

Op diep gronde kan afdroog so effens vroe&er begin word in vergelyking met vlakker gronde met kleiner waterhouvermo&e.

Beplanning en Finansies

Die mees effektiefste manier om beheer uit te oefen oor alle plaasbedrywigheede is met behulp van 'n beplanningsrooster. Indien u van so 'n beplanner gebruik wil maak, kontak gerus u Voorligtingsbeampte wat sal help om dit vir u op te stel.

Finansies gaan waarskynlik nog vir die afsienbare toekoms onder druk verkeer in die nadraai van die droogte. Om u by te staan met die ontwikkeling van 'n strategiese herstelplan vir die komende seisoen, *kontak u plaaslike Rietkwekersvereniging streekbestuurder en SASRI Voorligtingsbeampte.*

Landsgebruikbeplanning

Wintermaande is die beste tyd om herstelwerk te doen aan kontoerwalle en veral wateraflybane. Grasso&ie kan van gevestigde areas geneem word om in wateraflybane te plant en natgemaak word om vinnige bedekking te bewerkstellig. Onthou, sonder enige grond is daar geen gewas nie! Verseker dat elke land genoegsaam beskerm is in ooreenstemming met 'n goed beplande SASRI landgebruiksplan.

IRAC compliance

Strategies for the use of insecticides registered against eldana

Examples of IRAC compliant spray programmes:
 Assumptions: 1. Start the programme in August as per label recommendations
 2. OR start the programme based on counts; if damage exceeds 3% IB or SLR in August, or E/100 is above threshold
 3. OR start the programme under conditions of below-normal rainfall when eldana risk is high

Example 1

Month:	AUGUST				SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Week:	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Product:	Fastac 200 200ml/ha				Fastac 200 200ml/ha				Coragen 200 250ml/ha				Steward 150 350ml/ha				Steward 150 350ml/ha				Steward 150 350ml/ha				Coragen 200 250ml/ha											
Rate:	200ml/ha				200ml/ha				250ml/ha				350ml/ha				350ml/ha				350ml/ha				250ml/ha											
IRAC Comments:	The application of multiple sprays of the same MOA within a 60 day window is IRAC compliant.																																			

Example 2

Month:	AUGUST				SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH				APRIL			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Week:	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Product:	Ampligo 150 350ml/ha				Ampligo 150 350ml/ha				Steward 150 EC 150ml/ha				Steward 150 EC 350ml/ha				Steward 150 EC 350ml/ha				Steward 150 350ml/ha				Ampligo 150 150ml/ha											
Rate:	350ml/ha				350ml/ha				150ml/ha				350ml/ha				350ml/ha				350ml/ha				250ml/ha											
IRAC Comments:	The application of multiple sprays of the same MOA within a 60 day window is IRAC compliant.																																			

Example 3

Month:	AUGUST				SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH				APRIL				MAY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Week:	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Product:	Fastac 200 200ml/ha				Fastac 200 200ml/ha				Coragen 200 250ml/ha				Coragen 200 250ml/ha				Steward 150 350ml/ha				Steward 150 350ml/ha				Steward 150 350ml/ha				Ampligo 150 150ml/ha											
Rate:	200ml/ha				200ml/ha				250ml/ha				250ml/ha				350ml/ha				350ml/ha				350ml/ha				150ml/ha											
IRAC Comments:	The application of multiple sprays of the same MOA within a 60 day window is IRAC compliant.																																							
General comments:	1. Beneficial insect populations will be low, therefore low risk from pyrethroid. 2. Pyrethroids are more effective during cooler conditions. 1. Steward has good knockdown, and effective on all stages of pest cycle. 2. Is a pro-insecticide must be activated by insect esterase enzymes. Likely to counter resistance based to pyrethroids. 1. Steward has good knockdown, and effective on all stages of pest cycle. 2. Is a pro-insecticide must be activated by insect esterase enzymes. Likely to counter resistance based to pyrethroids. 1. Steward has good knockdown, and effective on all stages of pest cycle. 2. Is a pro-insecticide must be activated by insect esterase enzymes. Likely to counter resistance based to pyrethroids. 1. Summer is the period in which to encourage populations of beneficials to flourish. Pyrethroids should be avoided. Steward and Coragen are less damaging to beneficials than pyrethroids. 2. Coragen is the most Lepidoptera-specific product of those available. 3. The Steward application in December will give growers peace of mind over the Christmas shut-down. However the need for it should be established by scouting. 1. The diamides in Ampligo and Coragen exert a mating disruption effect best targeted to moth peaks. 2. Ampligo could be preferred during April and May due to lower temperatures increasing the effectiveness of the pyrethroid component. MOTH FLIGHT PEAK: 1. The diamides in Ampligo and Coragen exert a mating disruption effect best targeted to moth peaks. 2. Ampligo could be preferred during April and May due to lower temperatures increasing the effectiveness of the pyrethroid component.																																							



The Dirty on Drought

By Alana Patton (SASRI Crop Scientist: Agronomy) and Marius Adendorff (Extension Specialist: Pongola)

Drought is a regular occurrence in the South African sugar industry. Severe droughts (defined as less than 70% of the long-term average rainfall in a given season) occur one or two out of every nine years. The 2015 and 2016 seasons have had low June to May rainfall and low industry average yields.

Drought in the South African sugar industry has affected both rainfed and northern irrigated areas, where water restrictions will remain in place for the 2016 season. Figure 1 shows how drought affects the sugarcane plant in the different growth stages, as well as the water requirement over the growing season.

It is important to note that when the number of green leaves on a sugarcane stalk has decreased to three (or less), the plant has immature leaves that don't contribute to the production of enough sucrose for sucrose storage. With prolonged drought conditions the sugarcane plant will use stored sucrose for metabolism resulting in a decrease in sucrose content and juice purity.

Research has shown that mild drought stress, towards the end of the growing cycle, can have a positive effect on final sucrose yield. This is possible when expansive growth (particularly stalk elongation) is reduced in response to stress, which causes a resultant increase in partitioning of photosynthate to sucrose storage. Research has also

demonstrated that sugarcane varieties differ in their ability to tolerate drought.

SASRI has clear guidelines and topical tips for managing the impact of drought. Figure 2 shows a decision tree for managing drought stressed cane. For more information refer to SASRI Information Sheet 4.5 Husbandry: Management of cane affected by drought. For those growers in the irrigated regions requiring additional information on irrigation and drought stress effects, refer to SASRI Info Sheet 5.2: Irrigation strategies during water limiting periods.

For further information and assistance on managing drought-stressed cane, please contact your local Extension Specialist.

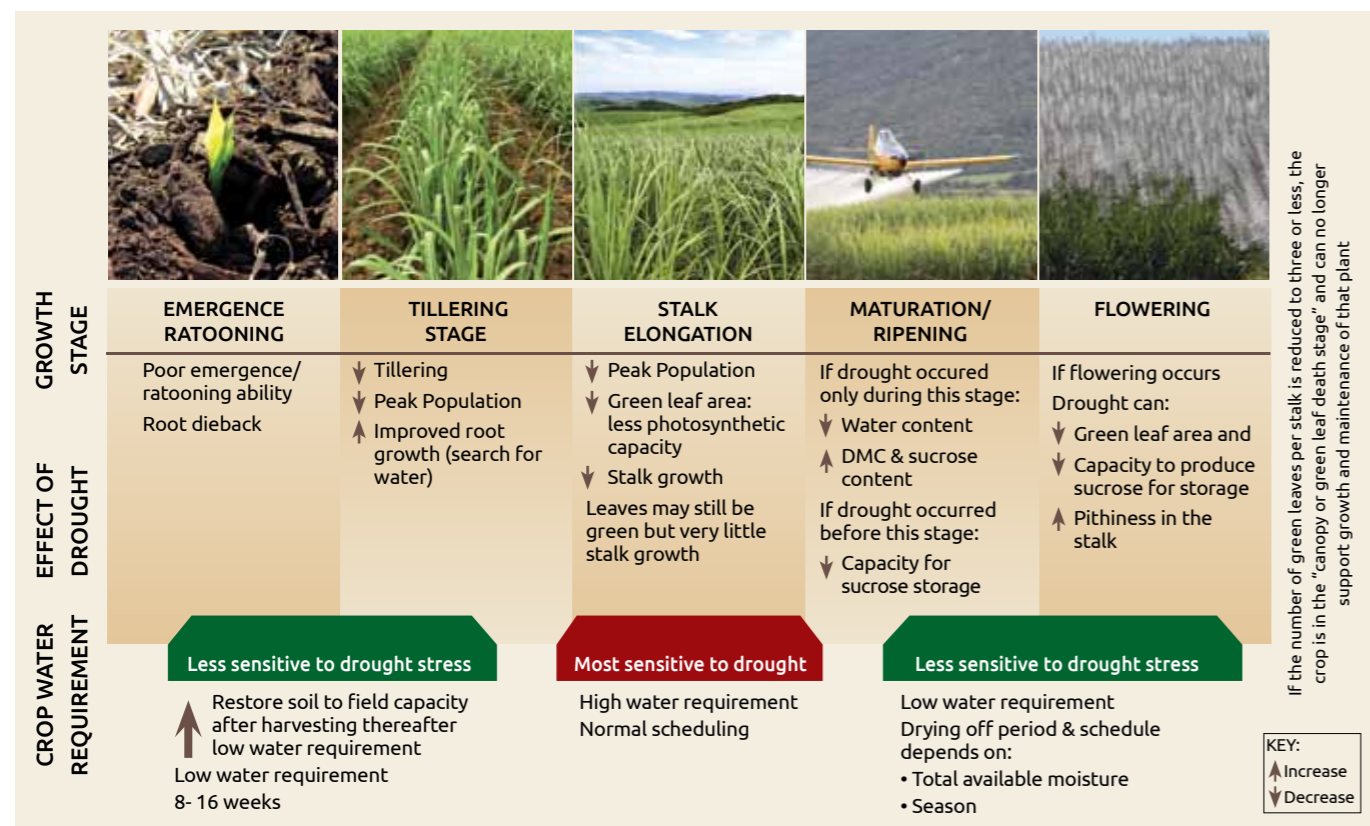


Figure 1. Sugarcane crop growth stages, the effect of drought and crop water requirements

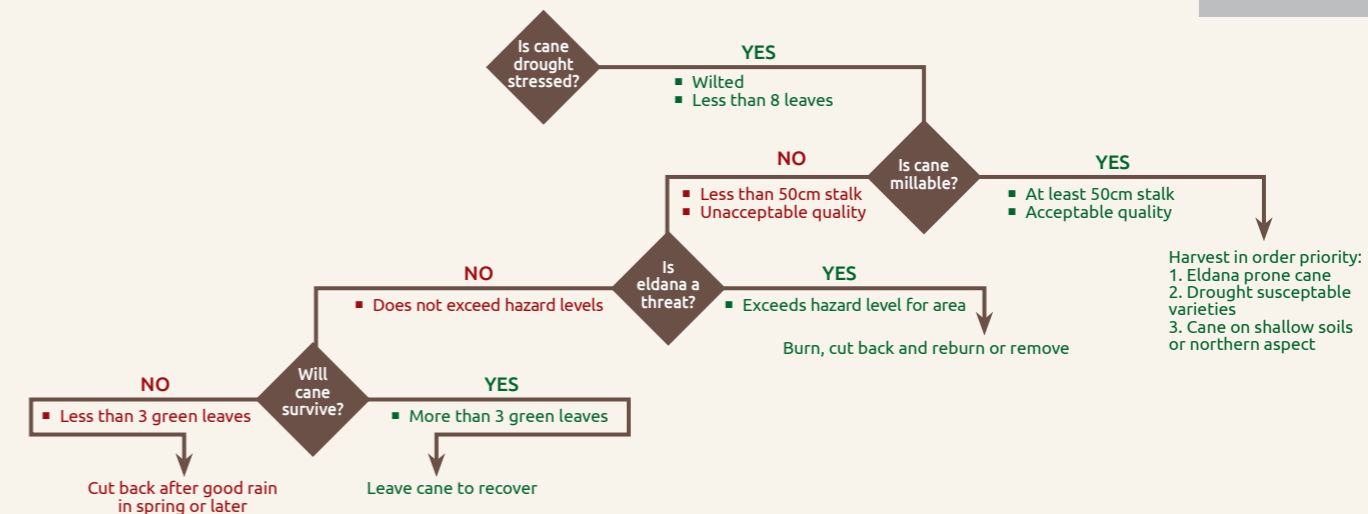


Figure 2. Decision tree for managing drought-affected cane

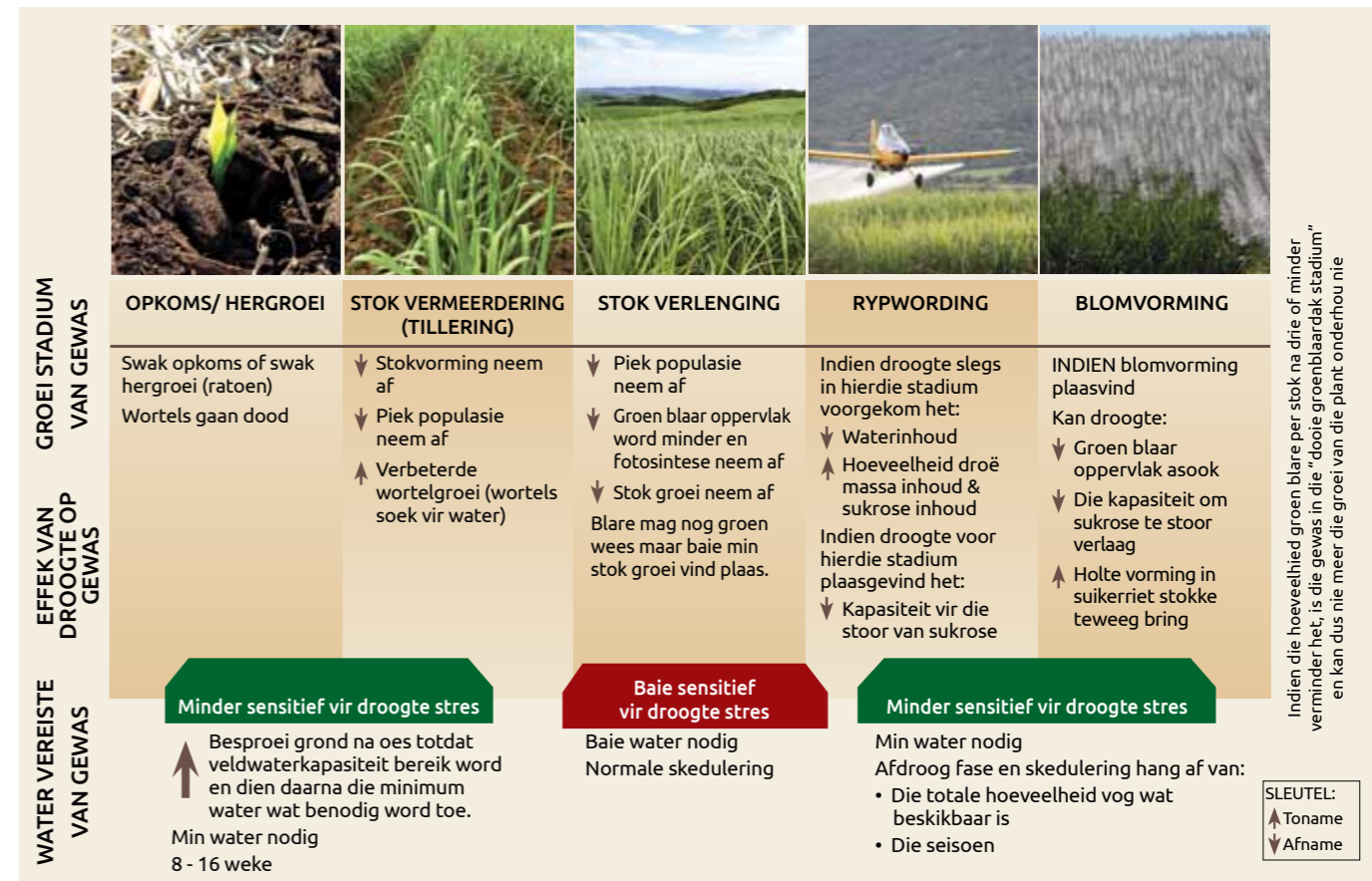
Die dik en dun van Droogtes

Deur Alana Patton (SASRI Gewas wetenskaplike: Agronomie) en Marius Adendorff (Voorligting spesialis: Pongola)

Droogte is 'n verskynsel wat gereeld in die Suid Afrikaanse suikerrietbedryf voorkom. Strawwe droogtes (wanneer minder as 70% van die langtermyn gemiddelde reënval in een seisoen val) vind plaas van een tot twee keer uit elke nege jaar. Die 2015 en 2016 seisoene het albei ondergemiddelde reënval en rietopbrengste gehad.

Droogte affekteer gewasse in droëland gebiede en in die noordelike besproeiingsgebiede, waar waterbeperkings in die 2016 groeiseisoen steeds geld. Figuur 1 verduidelik hoe 'n droogte die verskillende groeistadiums van suikerriet beïnvloed (die impak op finale riet en sukrose opbrengs), asook die waterbehoefte

van die gewas oor die groeiseisoen (vir besproeiingskedulering). Dit is belangrik om daarop te let dat wanneer die aantal groen blare op 'n rietstronk na drie (of minder) verminder, die rietstronk slegs onvolwasse blare het wat nie in staat is om genoeg sukrose te produseer vir berging in die stronk nie.



Figuur 1. Suikerriet groeistadiums, die impak van droogte en suikerriet se waterbehoefte.

Tydens 'n langdurige droogte sal die sukrose wat in die rietstronk geberg word, gebruik word vir metaboliese prosesse wat aanleiding gee tot 'n afname in die sukrose inhoud en sap suiwereheid.

Navorsing het getoon dat matige droogte stress teen die einde van die groeisyklus, 'n positiewe effek op die finale sukrose opbrengs tot gevolg het. Dit word toegeskryf aan die afname in groeitempo (veral in stronkverlenging) wat lei tot 'n verhoogde allokasie van fotosintaat na sukrose berging in die stronk. Navorsing het ook getoon dat suikerriet variëteite verskil ten opsigte van hulle vermoë om droogte te kan hanteer. SASRI het duidelike riglyne vir die bestuur droogte impakte

uiteengesit. Figuur 2 (bladsy 8) toon 'n besluitnemings gids wat kan help met die bestuur van droogte geaffekteerde suikerriet. Indien meer inligting verlang word kan u die SASRI inligtingstuk (Information sheet) 4.5 Husbandry: Management of cane affected by drought, lees. Indien rietkwekers in besproeiingsgebiede meer inligting oor besproeiing en droogte effekte wil hê, kan u die SASRI inligtingstuk (information sheet) 5.2: Irrigation strategies during water limiting periods, lees.

Vir enige verdere navrae en hulp oor hoe om droogtestremming in suikerriet te hanteer, kontak asseblief u naaste voorligtingspesialis.





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Soil Health

Neil Miles (Senior Soil Scientist)



Use of lime and gypsum:

when, and which product?

Neil Miles (Senior Soil Scientist), Guy Thibaud (KZN Department Agriculture and Rural Development) and Dimpho Elephant (Assistant Research Officer)

Healthy soils are foundational to sustainable and profitable crop production. Under certain conditions – in particular in the rainfed areas of the industry – soil health may be compromised by a build-up of acidity in the soil profile. The problems linked to excessive acidity commonly include the following:

- Deficiencies of calcium (Ca) and magnesium (Mg).
- High solubility of aluminium (Al) resulting in aluminium toxicity.
- Deficiencies of silicon (Si) and micronutrients such as zinc (Zn) and molybdenum (Mo).
- Low biological activity.

Applications of lime and/or gypsum are effective in addressing most of these problems. Table 1 provides an indication of the impact of various products on soil properties. Importantly, limes and slags generate alkalinity in the soil.

Table 1. Effects of lime, slag and gypsum on soil properties.

Product	IMPACT ON:				
	pH	Calcium	Magnesium	Silicon	Sulphur
Dolomitic lime	↑	↑	↑	ne	ne
Calcitic lime	↑	↑	ne	ne	ne
Calcium silicate slag	↑	↑	↑	↑	ne
Gypsum	ne	↑	ne	ne	↑

↑ = increase ne = negligible or very small effect

When applied at correct rates, these products thus increase pH (Figure 1) and eliminate aluminium toxicity by rendering the aluminium insoluble. In addition, the large amounts of calcium supplied by the products (Figure 2) are of crucial importance in terms of root growth and crop performance.

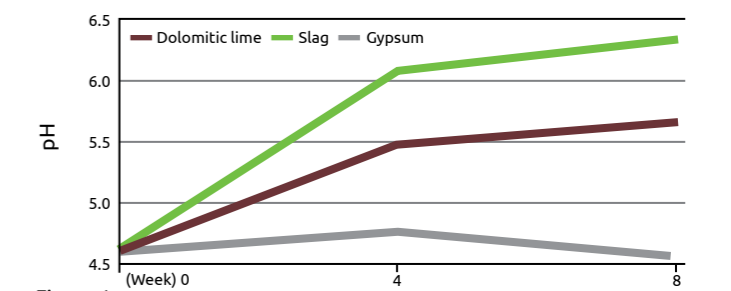


Figure 1.

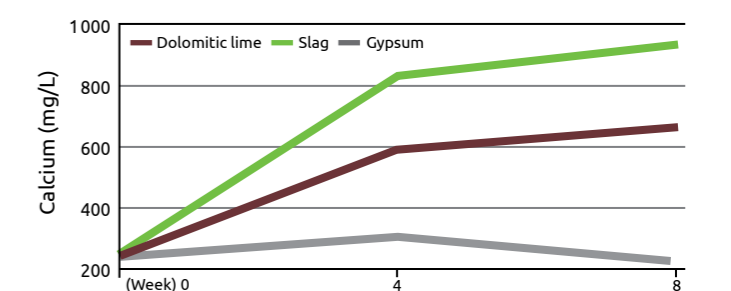


Figure 2.

Effects of dolomitic lime, steel-industry slag and gypsum, all supplied at 5 t/ha, on soil pH (Figure 1) and soil calcium levels (Figure 2), as reflected by samples taken at 4 and 8 weeks after treatment of a Cartref soil (13% clay) from the North Coast.

What to look for in selecting a product

A wide range of products, differing appreciably in specifications and pricing, is available on the market. Below are important factors to take into account in selecting a product.

Factors determining the quality of a lime are its neutralising value (gives an indication of the potential impact on soil pH), calcium, magnesium and silicon (if a slag) contents and the fineness of the individual particles comprising it. Fineness of particles has a major bearing on the speed of reaction in the soil. To be registered as an agricultural lime, the product must have a neutralising value (calcium carbonate equivalent, or CCE) of at least 70%, while all particles must be <1.7 mm in diameter, and 30% must be <0.25 mm. Importantly, the specifications for the product – as determined by an accredited laboratory service – should be readily available from the supplier. If there is any doubt regarding product quality, a sample should be submitted to FAS for analysis.

Much of the value of limes and slags is in their nutrient content. Calcium, magnesium and silicon are of great importance for high-yielding crops, and the application of these products represents by far the most cost-effective option of supplying these nutrients. Data presented in Figure 2 provide striking evidence of the massive and rapid increases in soil calcium levels following an application of 5 t/ha of the various products (dolomitic lime and the slag also supplied large amounts of magnesium).

In recent times there has been aggressive promotion in the industry of 'alternative' lime products, such as 'liquid lime' and granulated limes. Growers would do well to view the claims for these products with a good deal of scepticism:

- A frequent marketing pitch is that "very low rates (e.g. 1 to 10 litres/ha) of these new products are equivalent to 5 or more tons per hectare of conventional lime". Although

this sounds highly attractive from a logistical perspective, claims of this nature are patently flawed, and simply defy the laws of chemistry! By way of illustration, an increase in soil test calcium of 600 mg/L as shown in Figure 2 requires approximately 1200 kg/ha of pure calcium – vastly more than the 1 to 2 kg of calcium in 10 litres of liquid lime.

- "Conventional liming materials take years to react in the soil, whereas because of their fineness, liquid limes react very rapidly". These claims regarding conventional limes are untrue. As shown quite clearly in the study reported in Figure 1, reaction of lime and slag was well advanced after only one month. Thus for all practical purposes, speed of reaction of conventional limes is not an issue.

The application of granulated lime does not ensure a thorough mixing of the liming material with the soil matrix in order to promote the uniform and complete neutralisation of the acidity (see Figure 3). Applying lime as granules will inevitably result in 'pockets' of high alkalinity interspersed with un-treated acid soil.

Importantly, these 'new' products are more often than not exceedingly costly per unit of product. In comparing them with conventional liming materials, the key issue is how much calcium, magnesium and neutralising value is supplied per unit cost.

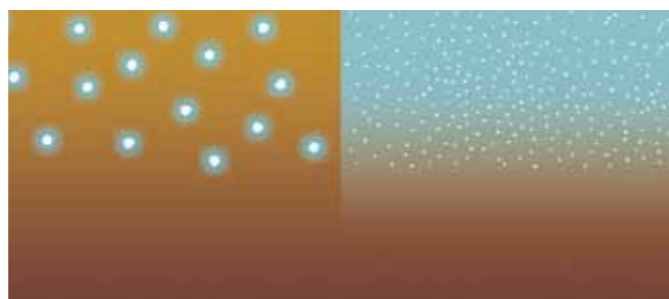


Figure 3. Illustration of the 'pocket neutralisation' effect of granular or coarse lime particles (left), as opposed to uniform neutralisation by a conventional fine lime (right).



Protecting the sugar industry since the 1920s

The South African government directorate responsible for plant quarantine has delegated the technical management of sugarcane quarantine to SASRI.

Sugarcane plant material from foreign countries is regularly imported into South Africa, either to be used as parents in the local plant breeding programme or to be evaluated for commercial planting. Sugarcane is also exported to other countries for the same reasons. This movement of sugarcane between countries carries a risk of introducing potentially serious diseases and therefore requires stringent quarantine procedures.

SASRI's original quarantine facility was established in the 1920s at the Durban Botanic Gardens, and then moved to Mount Edgecombe in 1984. The current facility is a world-class laboratory where molecular techniques are used for the accurate detection of the most important sugarcane pathogens.

SASRI's quarantine facility currently serves not only the South African sugar industry but also protects other southern African industries from risks associated with the movement of sugarcane between countries.

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Centralisation of Industry Biosecurity pays off

 Rowan Stranack (Extension and Biosecurity Manager)

April this year marked one year since the biosecurity function has been under SASRI management. Previously this function (commonly referred to as local pest, disease and variety control) was managed and funded regionally by growers. Last year this changed to being funded by both growers and millers, with the staff and operations being managed by SASRI.

A further change was the amalgamation of the Extension service and Biosecurity inspectorate at SASRI, which enabled the delivery of an even more effective and coordinated service to the industry.

There is now a generic set of LPD&VCC Rules applicable to all areas as well as significant amendments to the Sugar Act. The important changes include:-

- **There are now minimum areas required to be surveyed for each important biosecurity threat.** This ensures that the industry as a whole is adequately protected.
- **A time period has been stipulated by which each committee area must comply with the industry rules,** including the requirements for seedcane, for which there are also uniform standards.
- An amendment to the Sugar Act to **include insecticide spraying as a remedial measure for the control of eldana** in addition to the harvesting and destruction of cane. This change has enabled LPD&VCCs to enforce spraying where deemed necessary. This was a momentous addition as new insecticides (see

IRAC programme on page 7) became available this year and eldana was a serious threat in many areas.

- The new rules have also enabled provision to be made for the **inclusion of remedial measures for threats such as *Chilo sacchariphagus*, orange rust (*Puccinia kuehnii*)** which are not yet present in the industry, in preparation should an incursion occur.

On the ground

The centralisation of the Biosecurity function has also provided several operational advantages to the industry. LPD&VCC Committee meeting agendas nowadays are largely free of operational and staff issues and the focus is now more on biosecurity issues. This was significant with 2015 being a particularly

demanding year, mainly as a result of the drought. The industry was placed under severe threat due to dramatic increases in eldana levels in many areas, smut levels in the irrigated North and widespread shortages of seedcane. These issues have placed a heavy demand on resources and LPD&VCCs were often called on to take strong measures to contain these threats.

Previously, there were not enough biosecurity inspection teams and technical support staff servicing the industry. There is now a full complement of 23 teams based at centres across the industry. There are also 7 Officers or Technicians supported by 9 of the existing SASRI Extension Specialists who now also serve as P&D Officers. This makes up the biosecurity inspectorate charged with ensuring the industry is adequately protected from various biosecurity threats.

Centralisation has helped in enabling a **co-ordinated approach** to biosecurity. For example, the significant upsurge of eldana in the Zululand and North Coast regions called for intensive surveys of cane earmarked for carry over. The local inspection teams would not have been able to cover enough area to obtain a representative sample. Two additional teams were brought in from other LPD&VCC areas to assist. This enabled approximately 10 000 hectares to be surveyed, providing valuable information on the status of the pest at the time.

Another example of the benefits of centralisation has been the establishment of a **grid of traps in the Northern regions** in order to monitor for possible incursions of *Chilo sacchariphagus*. This effort can now be effectively co-ordinated and planned, and the cost of this operation is carried by the industry as it is for the benefit of all.

Looking ahead

Efforts at the moment and for the coming year are focused on continuing to create standardisation of survey and data recording and reporting methods across the industry. There are also increased efforts to ensure an adequate supply of high quality seedcane in each area, as in the long-term this is the only way to prevent the uncontrolled spread of diseases.

An active, motivated and well-trained biosecurity inspectorate will ensure the industry is adequately and effectively protected for years to come, thereby contributing significantly to the prosperity of the industry.



Judge us by our results...

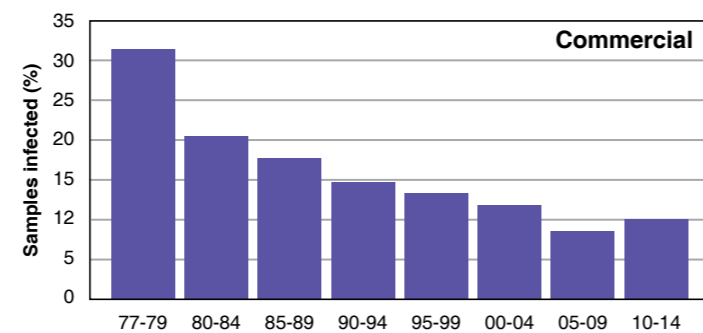
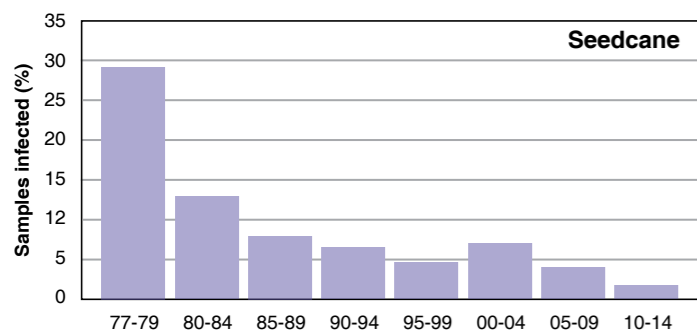
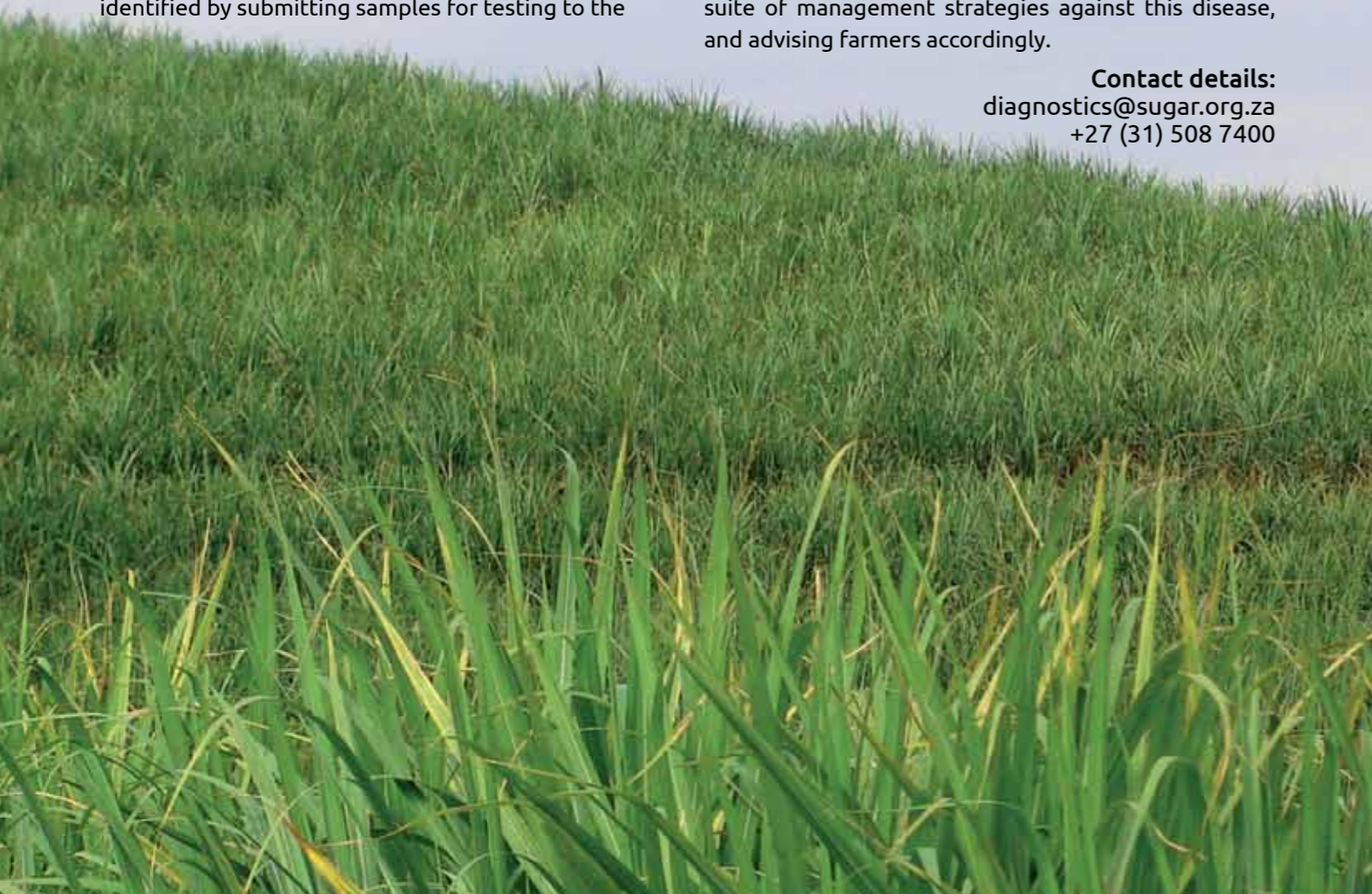
Ratoon stunt, formerly known as ratoon stunting disease (RSD), is a major sugarcane disease which causes substantial yield loss. It occurs throughout the industry although infection levels vary widely from region to region.

The disease often goes unnoticed because there are no easily recognisable symptoms. It can only be reliably identified by submitting samples for testing to the

SASRI RSD laboratory – a facility that has been helping farmers since the 1970s, and which has always kept abreast of the latest technologies in disease diagnosis.

Data collected over several years show that RSD has been well-controlled in the industry. SASRI can proudly take credit for this, not only because of the world-class diagnostic service we offer, but also for developing a suite of management strategies against this disease, and advising farmers accordingly.

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RSD infection levels in the South African sugar industry have declined markedly since the late 1970s.

SASRI's role in assessing new products

Kerry Redshaw (Operations Manager) and the Specialist Advisory Request Panel

Every year, SASRI receives numerous requests to test agrochemical products intended for use in sugarcane. Conducting fully-fledged field trials places a significant demand on researchers' time, and requires a huge commitment of other SASRI resources. It is therefore not practical for SASRI to accommodate every request.

SASRI's investigations into new chemicals focus on new and existing active ingredients and formulations of herbicides, fungicides, ripeners and nematicides. A panel of qualified scientific experts will evaluate each request and, if deemed feasible, will communicate this to the client together with a contract quote. There are a number of factors that influence SASRI's decision to take on the evaluation of a product:

■ **Researcher capacity**

All SASRI scientists are involved in a number of research projects at any one time, which determines their capacity to divert attention to unplanned evaluation trials.

■ **Type of product**

Products identified need to specifically solve industry problems and/or reduce the risks present in the industry. There must be high likelihood that growers will use the product on a large scale. If there is researcher capacity available, SASRI will give priority to products that will protect the crop from pest and disease and improve crop production.

■ **Proven efficacy**

The company wanting SASRI to evaluate their product must be able to provide some scientific evidence and field data demonstrating the efficacy of the product in sugarcane or in another related crop, locally or internationally. SASRI requires a credible explanation or hypothesis for the possible mode of action of the new product. The evidence must clearly show a significant yield and/or pest and disease control benefit before SASRI will consider evaluating the product.

All new agrochemical products must be approved and registered by the Department of Agriculture, Forestry and Fisheries through the office of the

Registrar. It is important to note that while SASRI may test and/or evaluate new active ingredients or formulations for use in the sugar industry, and conduct trials that may contribute to registration of a product in sugarcane, SASRI will not apply for registration of the product. Product registration is entirely the responsibility of the manufacturer.

Also, while SASRI may recommend the use of some products based on our findings, we cannot commercially endorse products, or be involved in promoting or marketing them in any way.

Since all products must be registered for use in sugarcane by the government (Registrar) before it can be used in the industry, growers should be aware that purchasing and applying any products that have not been registered for use on sugarcane is illegal. Similarly, it is illegal for sales representatives to promote their products to growers if these products have not been registered for use on sugarcane in South Africa. It is thus important for all growers to be aware of the registration status of a product before using it.



Accurate crop estimates from the grower

Alex Searle (Extension Specialist: Umfolozi) and Raksha Beecum (SASA Industry Affairs Executive)

Submitting accurate crop estimates is an extremely important grower function.

A grower must ensure that the estimate of the cane which he/she proposes to deliver to the mill is of reasonable accuracy. Poor estimates will have negative implications, not just for the individual grower, but for the entire industry. Poor estimates disrupt the mill crush schedule and could result in some sugarcane being carried over to the following season. Carry-over cane brings with it a whole new set of complications relating to biosecurity (pests and diseases) and cash flow issues.

In terms of the Sugar Industry Agreement, each Mill Group Board shall (in consultation with the growers and mill concerned) develop rules for cane delivery estimates by growers.

The Mill Group Board uses grower cane crop estimates to determine the mill crush for the season. This in turn determines the allocations that filter down to each individual grower. Poor estimates will lead to growers receiving incorrect allocations, and can lead to penalties as prescribed by the MGB rules. Reductions or increases in a grower's cane delivery estimates are permitted only in accordance with the rules determined by the Mill Group Board.

Accurate crop estimates from the Mill Group Board

- The MGB is responsible for forwarding the cane crop estimate, mill diversion details and the average mill RV% to SASA on a monthly basis. SASA then collates this information to establish the size of the crop and the total sugar production for the season. Using this, decisions are made about the quantities of sugar available for local consumption and for export. SASA uses all the determinations mentioned to calculate the RV price, which forms the basis of grower payments.
- The RV price and estimated cane crop is also used to determine the levies that fund various industry functions (SASA, CANEGROWERS, SASRI, Extension services). Inaccurate estimates have an impact on levy projections.

For the reasons described above, it is imperative that every effort be made to submit accurate estimates. Careless estimates will negatively affect the region, and the entire industry. Inaccurate estimates have major implications for scenario planning and for sugar exports.

The process

- MGB rules prescribe how estimate will be collected and what information they should contain. These rules are generally based on industry recommendations but requirements may vary slightly from area to area. Estimates usually include area to be harvested, field number, field size, dates when each field is to be harvested and the estimated yield.
- A progressive cane estimate is made each month from proposed mill start date through to the mill closure. As fields are harvested, their actual yields are recorded alongside their previous estimates. While individual field estimates may vary, the overall estimate must fall within an allowable variance determined by MGB.
- Of importance is that, on or before 30 September every year, each grower contracted to deliver cane to the relative mill shall be required to submit to the Mill Group Board a guaranteed estimate.
- By this time, at least half the fields in the original estimate will have been harvested and actual yield data recorded. The remaining fields should, at this stage, be accurately estimated and a final commitment made on which fields will stay in the estimate and which, if any, will be withdrawn. Removing or adding fields to the farm estimate late in the season are discouraged and deviations outside the prescribed MGB rules can result in penalties. The Sugar Industry Agreement also states that after this date the grower may only increase or reduce his or her undertaking, on good cause shown and if it is permitted by the Mill Group Board and the mill concerned. The words "good cause" includes agronomic and such other appropriate factors and circumstances.



Weather

by Phillemon Sithole (Agrometeorologist) and Abraham Singels (Principal Agronomist)

Review

Rainfall during the 2015/16 summer was generally well below average across the industry (Fig 1) with Zululand the worst affected region. Apart from July 2015, monthly rainfall in Kwazulu-Natal has been below average since April 2015 and up to February 2016. (Fig. 2). However, March 2016 had improved rainfall over large areas which enabled significant crop recovery after one of the most severe droughts ever experienced.

The poor summer rainfall and low run off in catchments mean that irrigation water supplies will most likely remain critically low for the remainder of 2016. This, together with the prolonged and widespread drought in the rainfed areas, will result in generally low industry cane production for 2016.

Outlook

The El Niño-Southern Oscillation (ENSO) system, which was in a strong warm (El Nino) phase throughout the 2015/16 summer, has now weakened to a moderate state and is expected to continue weakening and return to the neutral phase by midwinter, 2016. Normal winter rainfall are expected for most parts of the industry. The South African Weather Service (SAWS), the International Research Institute for Climate and Society and the European Centre for Medium-Range Weather Forecasts all predict normal rainfall for the 2016 winter with mild temperatures, across the industry.

Please visit the SASRI WeatherWeb <http://portal.sasa.org.za/weatherweb/> for links to the Flowering Reports, up-to-date seasonal climate forecasts and also for the latest rainfall and other weather data in your specific area.

Please note that the WeatherWeb flowering index tool indicates that little flowering will occur this year for most rainfed parts of the industry (as can be expected from the dry conditions in March) although some flowering can be expected for prone varieties in areas of the South Coast and North Coast/Hinterland (where good rains fell in Feb and March). However, some flowering seems to be likely in the irrigated regions in prone varieties that did not experience water stress, due to the relatively warm conditions in March.

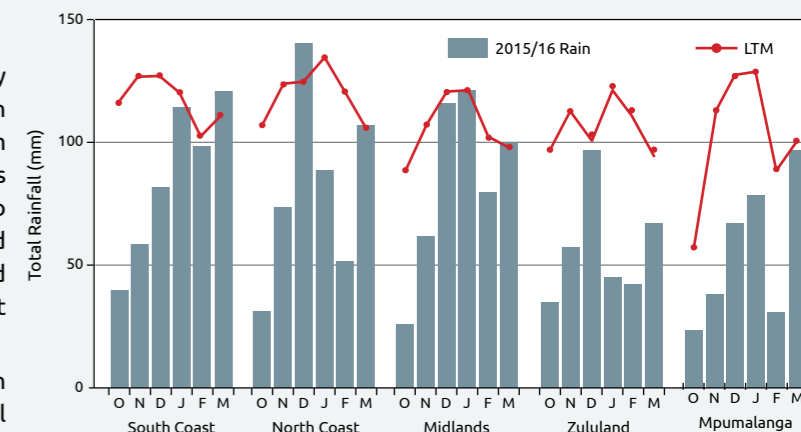


Figure 1. Regional average monthly total rainfall and the monthly long term means (LTM) for 2015/16 rainfall season (October 2015 to March 2015).

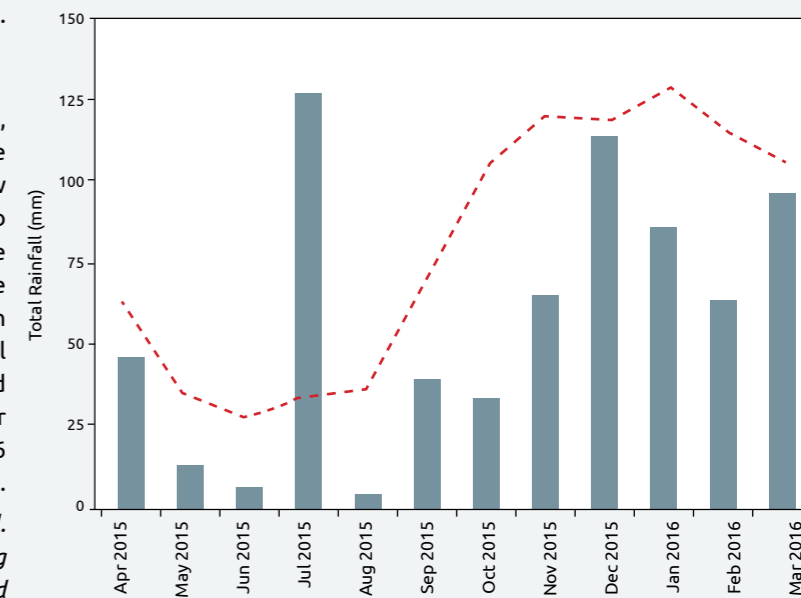


Figure 2. KwaZulu-Natal average monthly rainfall from April 2015 to March 2016 (bars) compared to the monthly long term mean (broken line).

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2016 CHARGES FOR ANALYTICAL SERVICES

Tel: 031 508 7474 / 75 Email: fertiliser.advisory@sugar.org.za

COST (Rands) (Ex VAT)
SA SADC countries Other countries

A. SOIL ANALYSES

1. ROUTINE TOPSOIL

pH (CaCl₂), phosphorus, potassium, calcium, magnesium, sodium, exchangeable acidity (Al+H), total cations, acid saturation, exchangeable sodium, zinc, copper, manganese, silicon, and volume weight. Estimates of clay and organic matter, potential nitrogen volatilization and nitrogen mineralisation.

Cost per sample
142 217 318

2. SUBSOIL

Routine analysis for each depth. Includes a profile subsoil report with gypsum recommendations where subsoil analysis indicates excessive acidity.

Cost per sample, first depth
142 217 318
Thereafter for each depth, cost per sample
95 145 213

3. SOIL SALINITY AND SODICITY

pH; volume weight; exchangeable and saturation extract potassium, calcium, magnesium and sodium; electrical conductivity (EC); saturation %; sodium adsorption ratio (SAR); cation exchange capacity (CEC); salinity and sodicity status and gypsum recommendations.

Cost per sample, first depth
147 200 209
Thereafter for each depth, cost per sample
60 82 88

4. SUPPLEMENTARY

Sulphur, clay, texture (sand, silt, clay), organic matter.

Cost per element per sample
86 123 134

B. LEAF ANALYSES

1. ROUTINE

Cane leaf (if sufficient material: 40 leaves, 30 cm lengths): Nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, silicon, zinc, manganese, copper, iron.

Cost per sample
142 217 318

Cane Leaf if insufficient material is supplied (less than 40 leaves, 30 cm lengths), or if sample is cane trash or non-cane leaf: Nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, zinc, manganese, copper, iron.

Cost per sample
142 217 318

2. SUPPLEMENTARY

Analyses can be requested for silicon, boron.

Cost per element per sample
86 123 134

C. FERTILISER ANALYSES

1. ROUTINE

Liquid Fertilisers, Urea and CMS: Total nitrogen, phosphorus, potassium.

Cost per sample
196 280 298

Granular Fertilisers, Composts and Manures: Moisture, total nitrogen, phosphorus, potassium, calcium, magnesium and carbon/nitrogen ratio.

Cost per sample
282 402 432

2. SUPPLEMENTARY

pH, sulphur, zinc, iron, manganese, copper, carbon.

Cost per element per sample
86 123 134

D. IRRIGATION WATER ANALYSES

pH, potassium, calcium, magnesium, sodium, electrical conductivity (EC), sodium adsorption ratio (SAR), adjusted sodium adsorption ratio (ASAR), effective electrical conductivity (EEC).

Cost per sample
142 217 318