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Yellow Sugarcane Aphid

New Pest Alert!

SASRI Senior Entomologist, Des Conlong (above) examines damage caused by the new sugarcane pest, yellow sugarcane aphid (YSA), which was recorded for the first time in our sugar industry during the course of last year. Since then, it has been observed in sugarcane all over South Africa and Swaziland. This pest usually affects young plants where prolonged feeding can kill the entire plant. Older crops are also attacked, subsequent to the period of most rapid growth. Damage by yellow sugarcane aphid can result in significant yield losses (Pages 12-13).

Also in this issue...

Harvest age

The optimal harvest age varies between different regions of the industry due to different growing conditions. Growers need to be aware of the age at which RV yields peak, in order to develop harvesting programmes that maximise returns (Page 6).

Blom en holte-vorming

'n Verhouding mag dalk bestaan tussen suikerriet blomvorming (flowering) (wat 'n negatiewe effek op die suikerriet oes asook die kwaliteit van die oes kan hê) en holte-vorming (pithing), 'n toestand wat droë holtes in suikerriet stokke tot gevolg het en wat 'n verlaagde sukrose ekstraksie gedurende die meulproses tot gevolg kan hê (Bladsy 8).

Famine Weed

Famine Weed (*Parthenium*) is a fast-spreading alien invasive plant which has been observed in several parts of our industry. This 'Category 1 Alien Invasive' can have a devastating effect on crops and livestock, and is also known to be hazardous to human health (Page 18).

SASRI
Unlocking the potential of sugarcane

Topical Tips

May - August 2014

Pest control

- Consider surveying potential carry-over cane in July to see if FASTAC™ is needed to control Eldana. To help spread the load, why not do your own surveys? If this is not possible, get your Local Pest Disease and Variety Committee to check your carry-over fields for Eldana.
- Ensure you start FASTAC™ applications in your carry-over fields to control Eldana in August.
- Keep your eyes open for any unusual pest or disease symptoms; remember you are the first line of defence. Notify your local Extension Specialist or P&D Officer if you find something you do not recognise.

Harvesting

- Harvest cane of relative maturity first. Maturity can be determined using a hand-held refractometer.
- Harvest young cane during the optimum sucrose period (September – October). Harvest older cane at the beginning and end of the season and remember to harvest varieties at their best relative sucrose period. See article on page 6.
- Send fresh cane to the mill; don't burn more than you can harvest within two days.
- Top unripened cane lower at the beginning and end of the season, when young and immature and when transporting long distances to the mill. As a rule of thumb, top 100 mm below breaking point. Preferably top in the air, but if you top using windrows, align tops on the ground and then top.
- Cut cane at ground level but without damaging the roots.
- Send clean cane to the mill in bundles instead of windrows.

Disease control

- Look at sampling your seedcane nursery and plough-out fields for ratoon stunting disease (RSD) in July. Do not under-estimate RSD, as it can cause severe yield loss. Between 12 and 50 % reduction in yield has been recorded in SASRI trials.
- Start roguing fields of smut-susceptible varieties in August. Place the diseased material in a bag; remove from the field and burn. Train your staff to identify smut **before** the whips emerge.
- Remember that all fields of N44 should be eradicated by March 2015 due to MSV.
- Be on the alert for Tawny rust. If you detect any leaves displaying the symptoms then spray with a registered fungicide. See poster on page 22.
- Disinfect all knives used to cut cane with a 10% Jeyes fluid solution or 75% methanol solution to limit the spread of diseases between stalks.

Weed control

- With good late summer rains, winter weeds will have plenty of opportunity to become problematic during the winter months so ensure you keep them under control. Maintaining your weed control programme during this period is important if you want to avoid yield losses.
- Keep an eye on the creeping grasses especially if there is a warm, wet winter as they can cause severe yield losses in sugarcane.
- Mow verges and breaks.

Planting

- Calculate your optimum annual replant target hectares so that you implement the correct annual replant programme for the farm based on your age at harvest, number of crops and crop cycle. A rule of thumb is at least a 10% replant annually.
- Consider starting your spring planting in August should the climatic conditions be suitable.
- Variety selection should be based on your harvest cycle – 12 or 24 months, soil type, aspect and elevation, time of year of harvest and the distance from the mill.
- Ensure your seedcane is of sufficient quality, preferably certified, disease and pest free and not too old (10-14 months coast, 14-16 months midlands).
- Remember to control soil borne diseases such as pineapple sett rot, which affects germination, by applying a fungicide to protect the setts, adequately cover and compact the soil over the setts.

Nutrition

- May is the time to start soil sampling in all your ratoon fields in preparation for your fertiliser application programme in spring.
- Order your fertiliser and develop an application plan for all fields needing fertiliser in June. Lime and gypsum can be applied to fields in June.
- Fertiliser application can begin, on the coast, in August if conditions are suitable. It would be preferable to use enhanced urea or LAN based blends.

Land use planning

- May to August is the ideal time to maintain your waterways, drains and conservation structures due to the reduced possibility of heavy and intense rainfall.
- If you intend implementing a land use plan, the winter period is the best time to begin construction of new structures and field layouts. Ensure that you have completed these layouts before the end of winter to avoid unnecessary soil erosion.
- Check on the conservation structures in all your plough out fields, including contour banks and waterways, to see if they need upgrading.
- Maintain and repair farm roads.
- Speak to your local SASRI Extension Specialist about the possibility of having a land use plan drafted using the latest computer technology, while the service is still available.

Irrigation

- Don't forget to schedule your irrigation for the cooler winter months.
- This is also a good time to plan the evaluation of the irrigation systems on the farm.
- Keeping up with the repair and maintenance of your irrigation system equipment will help to reduce costs in the long term.

Management

- Ensure you abide by the burning codes of practice by becoming familiar with the National Veld and Forest Fire Act 32 of 1998 and your local Fire Protection Association, especially regarding the clearing of firebreaks and burning cane for harvest.
- This is the time to plan and order certified and other seed cane requirements for next season.
- Check your seedbeds to be planted in spring for volunteers – off-types are still a big problem in the industry.
- Keep an eye out for early frost damage during May if you are farming in the midlands. Continually inspect for frost damage throughout the winter period as badly frosted cane will need to get to the mill quickly to avoid losses.
- Start to service and calibrate fertiliser and herbicide applicators during the winter period in preparation for spring.
- Analyse individual field performance to assist in replant decisions such as variety selection, seedcane requirement and appropriate green manure crops.
- You can only manage effectively if you have good accurate information at your disposal. If you are not using a field record system, think seriously about buying a suitable package. There are many available for use with a personal computer, however even basic manual records are good enough provided the correct data is recorded.

Contact your local SASRI Extension Specialist should you require help with any of the above.

The SASRI Extension Team

From the DIRECTOR

Dr Carolyn Baker

VARIETIES

A vital key to industry success

Development and release of new sugarcane varieties is one of the core functions of SASRI. This warrants considerable dedication from a team of plant breeders, which deservedly receives significant attention and investment from growers and millers alike. As the foundation of the industry, high yielding sugarcane varieties that provide a sound return on investment are vital. It is largely the unique conditions in the South African industry that are both agronomically diverse and climatically marginal for sugarcane production which has demanded the development of our unique N varieties. These are specifically adapted to the wide ranging agro-ecological conditions.

Investment in these N products is immense not only financially, but also in respect of time. To release a successful variety requires an intimate knowledge of the parent plants, their characteristics, pest and disease resistances, agronomic qualities, physiological traits and their response to various management regimes. Since sugarcane has an extremely complex genetic make-up, successful breeding of a commercial variety relies on rigorous analysis of copious amounts of data collected over lengthy periods. It also requires a certain 'art' that is peculiar to those breeders who have experience in this specialist field.

During the plant breeding programme hundreds of thousands of seeds, produced from designated crosses between carefully selected parents, are germinated each year and evaluated. Poor performers are discarded during several phases over a period of 10-12 successive years. This process results in at best three to four potential varieties being eligible for release in any one year. This 'numbers game' may seem quite wasteful, yet if one is to consider that to achieve the perfect variety requires the exact combination of all the desirable traits in a single plant - a function that is affected by the numbers of genes in the plant and the probability of them all being combined in exactly the correct way, the need for vast numbers of plants becomes apparent. In comparison, identifying the winning numbers in the national lottery would be simpler.

What makes the development of new varieties even more complicated is not only the number of desirable traits that we are looking for in a single plant, but also the fact that the plants are living or-

ganisms in an ever-changing landscape – both climatically and ecologically. The perfect set of adaptations is an ideal for which we assiduously strive, and since environmental conditions and biosecurity risks constantly change, the demand for continuous production of new varieties is warranted.

The key to the successful commercial release of varieties is the ability to trial and evaluate the plants during the breeding programme in all agroclimatic zones in the industry. It was with this foresight that the industry supported the acquisition and lease of several remote research stations, each of which represents a unique set of conditions enabling the selection of these 'niche' varieties. It is only 15 years since the first selections were conducted on several of these research stations (in the midlands and along the coast) and their value is only now beginning to be realised with the release of 26 varieties from the midlands programme and 30 from the coastal programme. In the irrigated areas, where the Pongola Research Station has been functional for much longer (since 1966), a host of suitable varieties have been released beginning with N14 in 1980.

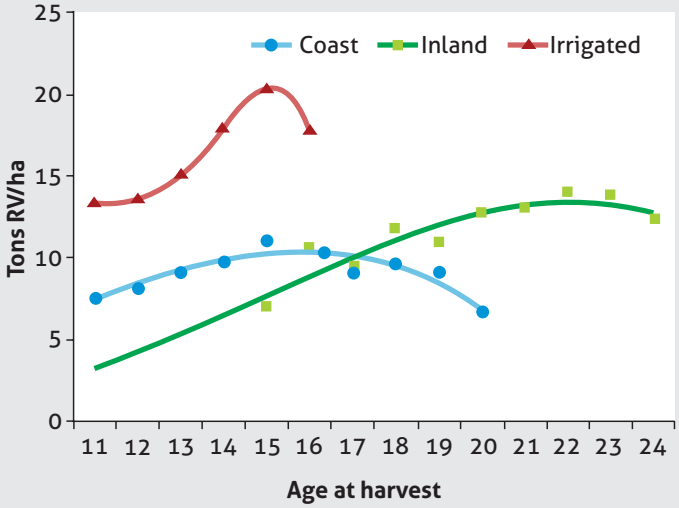
Considering the effort and extent of resources that go into the development of these products, it would be senseless for the industry not to adopt the new releases – nor plant them in the correct areas and manage them correctly. Only through correct placement of varieties and adoption of better management practices is it possible to achieve the improved production potential that the industry so dearly requires.

SASRI's Crossing Officer, Keith McFarlane, shows Director Carolyn Baker some of the 50 000 seedlings in the Plant Breeding nursery which are destined for the SASRI's Midlands North Research Stations at Bruyns Hill and Glenside.

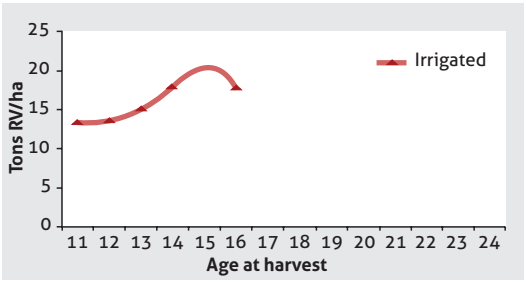
Optimising age a

Optimal harvest age varies between different regions of the industry due to different growing conditions (mainly temperature). Growers need to be aware of the age at which RV yields are maximised and develop harvesting programmes that exploit this.

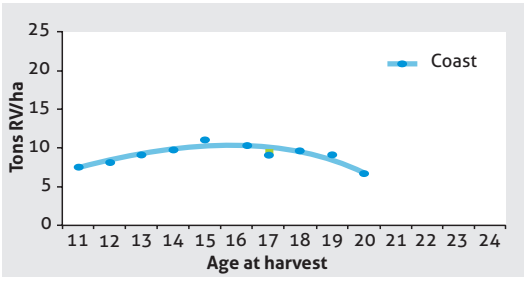
In a recent RD&E issues workshop, growers questioned the optimal harvesting age of sugarcane in light of the recent release of quicker growing varieties. This prompted an investigation into the optimal age at harvest in the different regions to establish some broad guidelines, and to investigate the influence of variety choice on harvest age. RV yield data from these variety and plant breeding trials harvested between 2000 and 2013 were analysed. These results differed between the coastal, inland and irrigated regions.



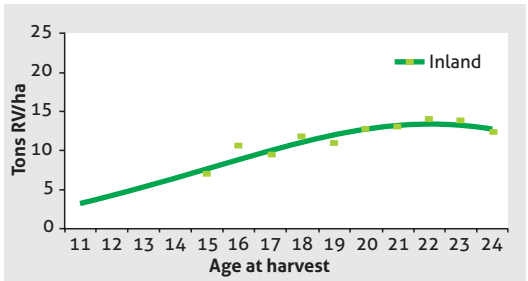
What is the optimal harvest age for each region?



In the irrigated region, RV yields generally peak at around 15 months of age. Thereafter there is a steep decrease in RV yields after 15 months which is most likely associated with increased lodging and/or flowering in older crops in this region.



In the coastal region, RV yields also tend to peak around 15 to 16 months of age, followed by a decline thereafter. Here, the decline in RV yields after 16 months is most likely due to Eldana damage associated with carry-over and older crops. This highlights the importance of ageing cane to around 15-16 months along the coast, which will only be possible through the use of Eldana resistant varieties. Growers are therefore urged to make Eldana resistance a key consideration when choosing varieties for coastal production.



In the inland regions, RV yields generally peak at around 22 months of age. This is slightly younger than the traditional 24-month harvesting age usually adhered to. This younger harvest age may be linked to the use of newer, quicker growing varieties that reach maturity faster than N12. Additionally, lodging of some crops older than 22 months of age in the midlands may also contribute to RV yield declines.

Based on this analysis and other agronomic considerations, the optimal harvest ages for the irrigated, coastal, and inland regions are 14-15, 15-16, and 22 months, respectively.

t harvest

Will this optimal harvest age vary for different varieties?

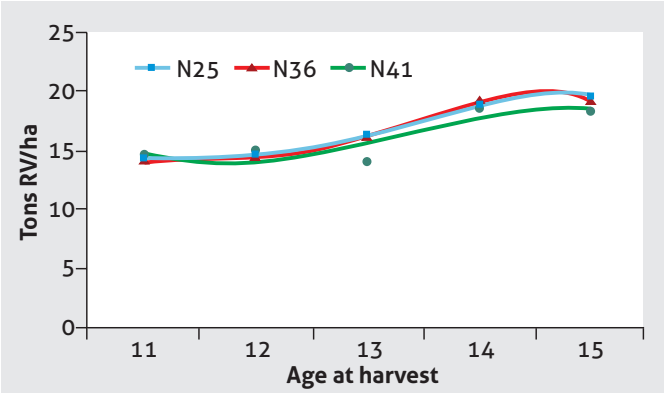
The following graphs show the average RV yields of the most popular commercial varieties in each region.

In the irrigated north, varieties N25, N36, and N41 all showed a similar trend, reaching peak RV yields at 14-16 months of age. These results show that RV yields in the irrigated areas can be maximised by increasing harvest age from 12 to 14-16 months, irrespective of variety. However, growers must consider the negative effects of flowering and/or lodging if this option is chosen. Very often, early lodging will prevent growers from ageing cane in this region. Additionally, Eldana levels may also become problematic when cane is aged. Therefore, the risks associated with ageing cane in the irrigated region must be considered.

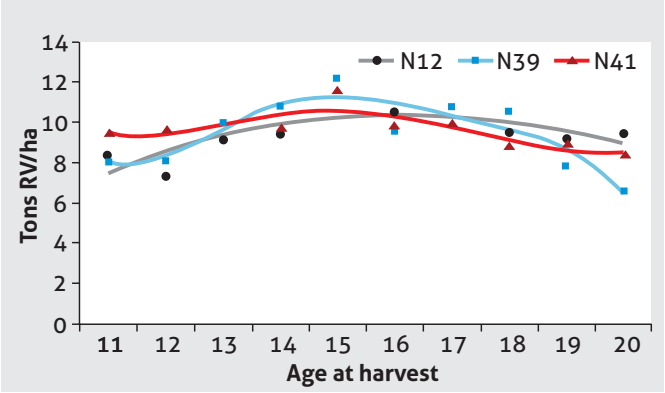
In the coastal region the popular commercial varieties N12, N39 and N41 all show peak average RV yields at 15-16 months of age. Variety N41 produced higher RV yields than N12 and N39 when harvested at 11 or 12 months of age, suggesting that it is a good option for annual harvesting. However, when harvested older than 16 months along the coast, N41 produces average to low RV yields compared to N12 and N39. Of note is that N39 shows a steady decline in RV yields as harvest age increases beyond 15 months. This decline is thought to be associated with increased pithing of N39 when aged, in line with recent grower reports of this phenomenon.

In the inland regions, variety N41 shows superior RV yields compared with most other commercial varieties when harvested younger than 16 months of age (N41 had the highest RV yield between 15 to 16 months of age). When harvested older than 16 months, however, N41 is outperformed significantly by other commercial varieties such as N31 and N48 while being slightly superior to N12. Overall, Variety N48 had the highest average RV yield compared to the other commercial varieties when harvested older than 18 months. The decline in average RV yields of all varieties from 23 to 24 months may be linked to increased lodging. It is important to note that although varieties show slight differences in their general trends, each of them show similar peaks at around 22-23 months of age.

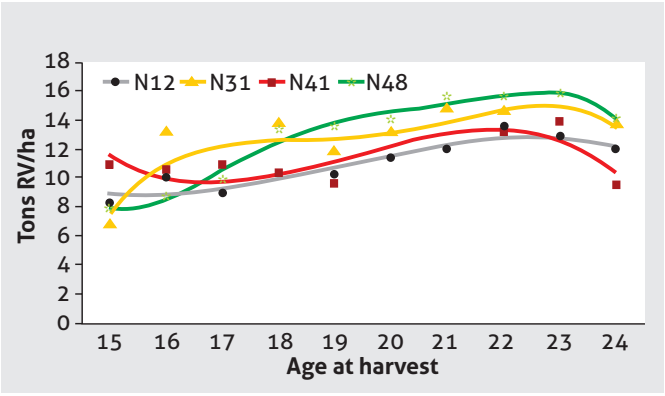
Irrigated North



Coastal



Inland



Sanesh Ramburan *(Agronomist: Varieties)*

This information is aimed at providing general guidelines concerning the optimal harvest age of different varieties in different regions. Individual variety performances and optimal harvest ages will vary depending on agronomic conditions and management practices. For more specific recommendations on optimal harvest ages of different varieties, growers are encouraged to contact their local extension specialists.

Wat het holte-vorming in die suikerriet stronk te doen met blomvorming?

Blomvorming in suikerriet kan oes opbrengs en kwaliteit beïnvloed. Baie Suid Afrikaanse suikerriet varieteite sal blom indien ideale weers toestande ondervind work, veral gedurende Maart. Verskeie artikels wat beskryf hoe blomvorming oesopbrengs beinvloed en hoe om suikerriet wat blom te hanteer is in vorige uitgawes van die Link gepubliseer. Hierdie artikel fokus op die verhouding tussen blom en die vorming van holtes in die suikerriet stronk "pithing". Weer kondisies wat blom beinvloed sluit in 'n verkorte daglengte van ongeveer 12.5 ure in die eerste drie weke in Maart in Suid Afrika, gemiddelde dag temperature van 28°C, nag temperature van bo 18°C en goeie grond vog toestande.

Holte vorming in suikerriet is 'n toestand wat plaasvind in suikerriet stronke wat droë holtes sonder enige suikerriet sap tot gevolg het. Holte-vorming is van ekonomiese belang aangesien dit tot 'n verlaagde sukrose ekstraksie gedurende die meul proses tot gevolg het. Min of geen kennis bestaan oor holte-vorming in suikerriet wat geassosieer word met blom. As gevolg hiervan is daar gedurende die 2012 navorsing, ontwikkeling en voorligting komittee vergadering besluit om hierdie toestand in meer diepte te ondersoek.

Data is bymekaar gemaak vanaf Nakambala en Dwanga "estates" in Zambia en Malawi. Hierdie twee estates was gekies as gevolg van die hoe blomvorming wat elke jaar daar voorkom. Blom, holte-vorming en opbrengs is jaarliks genoteer in baie van die lande. Die hoogte punte wat uit die studie voortgespruit het is:

- Hoë voorkoms van blomvorming in suikerriet verseker dat daar ook meer holto-vorming sal plaasvind.
- Blomvorming en holte-vorming is genetiese traits en die propensity vir blomvorming en holte-vorming sal afhang van die suikerriet varieteit.
- Blomvorming en holte-vorming het geen negatiewe effek op finale oesopbrengste gehad nie omdat die na-oes blomvormings beheer goed geskeduleer was.
- Verdere navorsing oor suikerriet bestuurs faktore wat blomvorming affekteer asook holte-vorming is nodig bv. kunsmis toediening in besproeïngskedules.

Indien u enige opnames en metings gedokumenteer het aangaande blomvorming, holte-vorming en oespobrengste en indien u wil deelneem aan hierdie project, kontak asseblief vir Alana Eksteen by haar e-pos adres nl. Alana.eksteen@sugar.org.zqa. Meer formele resultate van hierdie ondersoek sal by die jaarlikse Suid Afrikaanse Suikerriet tegnologie kongres (SASTA 2014) gerapporteer word. Dit titel van die artikel sal wees: 'n Ondersoek na die faktore wat blomvorming en holte-vorming in suikerriet en Suid Afrika beïnvloed.

Tips vir die beheer van blomvorming in suikerriet

- Lande wat blom sal hoër sukrose opbrengste lewer in Junie, Julie en Augustus as lande wat nie blom nie.
- Riet moet gekap word voor September/Oktober indien blomvorming meer as 20% is.
- Indien blomvorming minder as 20% is kan die riet oorgedra word na die volgende seisoen. Die stok oes sal laer wees as die stok oes van die riet wat nie blom nie. Let egter daar op dat indien daar 'n Eldana infestasie is, moet die riet liefs nie oorgedra word na die volgend seisoen nie. Indien 'n Eldana infestasie teenwoordig is moet die oes van hierdie besmette riet voorrang geniet.
- Wees versigtig om nie stok oes van riet wat blom te oorskat nie
- Stokke wat alreeds geblom het sal nie op rypmakers reageer nie.

Die outeur wil graag Emmanuel Simwinga en Ed Halse bedank vir hul deelname aan hierdie projek.

'n Nuwe blom index is ontwikkel om suikerriet blomvorming te voorspel. Hierdie inligting sal suikerboere help om die negatiewe impak van suikerriet blomvorming te verminder deur oes schedules te verander wanneer swaar blomvorming voorspel word.

Inligting is ook ingesluit in 'n blom verslag wat vir individuele weer stasies beskikbaar is op die SASRI WeerWeb. Die WeerWeb kan gevind word deur die volgende webwerf te besoek: www.sugar.org.za/sasri.

Alana Eksteen
(Landboukundige)

FLOWERING

What does pithiness have to do with it?

Flowering in sugarcane can affect crop yield and quality, and several varieties will flower if the ideal weather conditions occur during March in South Africa. There have been several articles in previous editions of the Link which have reported on how flowering affects yield and how to manage flowered cane. This article focuses on the relationship between flowering and pithing.

Flowering acts as a natural ripener because it prevents stalk growth and can improve cane quality in the short term. The weather conditions known to cause flowering include a shortening of day length to approximately 12.5 hours, average day temperatures of 28°C, night temperatures above 18°C, and good soil moisture, all of which must occur during the first three weeks of March in South Africa.

Pithiness (or pithing) is a condition that occurs in sugarcane stalks that causes dry cavities with no sugarcane juice. Pithiness is of an economic concern because it can result in reduced sucrose extraction during milling. There is very little information on pithiness in sugarcane, although it is thought to be associated with flowering. As a result, it was

Continued on Page 10

decided at the 2012 RD&E Committee meeting, to investigate flowering and pithiness in sugarcane.

Data was obtained from Nakambala and Dwanga Estates in Zambia and Malawi. These two Estates were selected because of the heavy flowering experienced every year. They also record pithiness, flowering and yield annually in many of their fields. The key points gleaned from this investigation are:

- Heavy flowering in sugarcane is linked to a very high chance that pithing will also occur.
- Flowering and pithiness are genetic traits and the propensity for flowering and pithing depends on sugarcane variety.
- Flowering and pithing did not have any negative effect on final cane yields because post-flowering harvest management was well scheduled.
- Further investigation of cane management factors which affect flowering and pithiness are required (e.g. fertiliser application and irrigation scheduling).

If you have been recording flowering, pithiness and yield and would like to participate in this study, please email alana.eksteen@sugar.org.za. More formal results from this investigation will be presented at SASTA (August 2014).

Tips for managing flowered cane

- Flowered fields will generate higher sucrose yields in June, July and August than non-flowered fields.
- Cane should be harvested before September / October if flowering is more than 20%
- If flowering is less than 20% then it can be carried over to the next season, but the stalk yield will be lower than the stalk yield from non-flowered cane. However, in the case of eldana infestation, do not carry-over the cane. Instead harvesting of these fields should be priority.
- Be careful not to over-estimate the stalk yield of flowered cane.
- Stalks that have already flowered will not respond to chemical ripeners.

The author wishes to acknowledge Emmanuel Simwinga and Ed Halse from Illovo Sugar Ltd for their participation in this project.

A new flowering index has been developed for predicting sugarcane flowering. This information assists growers and minimises the negative impacts of flowering by allowing them to adjust harvesting schedules if heavy flowering is predicted.

Information from this index is included in a flowering report, which is available for individual weather stations, from the SASRI WeatherWeb. The WeatherWeb can be accessed by visiting www.sugar.org.za/sasri and selecting WeatherWeb from the menu.

Alana Eksteen *(Crop Scientist: Agronomy)*

KEEPING TRACK

The importance of keeping FAS records

You've heard it said, 'What can be measured, can be managed". Growers recognise the importance of taking soil and leaf samples, in order to get a real understanding of what is happening in the field and underfoot. Once the correct amount of fertiliser and lime have been applied, what should one do with the soil test report? What we do next with these reports is almost as important as collecting the sample in the first place!

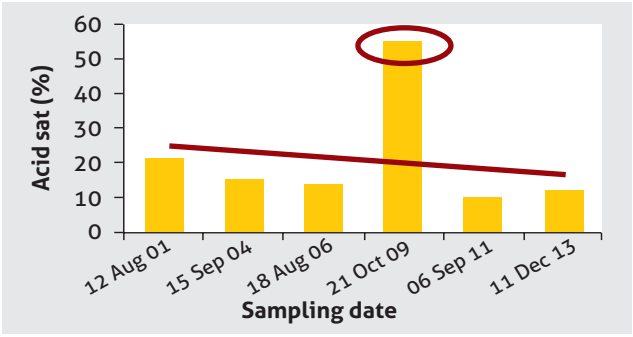
Many growers have a flip-file on the office shelf, holding the original lab test reports. 'Master filers' may even have these reports grouped according to field number. This is an excellent first step, but record-keeping should go a step further. Taking the time to enter the results into a spreadsheet, grouped per field, will allow long-term trends to be identified, and will also help to weed out results which are possibly unreliable. The more adventurous spreadsheet jockeys will be able to draw graphs from the data and identify possible relationships between nutrients.

FAS results are sent both as pdf documents and csv files; the latter are in spreadsheet format and can be saved directly as Excel, or copied and pasted into an Excel (or other) spreadsheet. Again, rather than just saving the csv files into a seldom-seen computer folder, take a few minutes to copy and paste the results from each field into a master spreadsheet. Not only will long-term trends and unusual results become evident, but the historic records from each field can be used to make more informed decisions regarding subsequent fertiliser and lime applications.

Keeping well-ordered, field-by-field spreadsheet records of your soil and leaf sample results will deliver more value from expenditure on soil and leaf tests, and help you to make the most cost-effective decisions for nutrition management on your farm.

Ruth Rhodes *(Soil Scientist)* &
Neil Miles *(Senior Soil Scientist)*

Field No.	Date sampled	Depth (cm)	P (mg/L)	K (mg/L)	Acid sat (%)
23-C	12 Aug 01	0-20	12	121	21
23-C	15 Sep 04	0-20	14	138	15
23-C	18 Aug 06	0-20	15	144	14
23-C	21 Oct 09	0-20	18	52	55
23-C	6 Sep 11	0-20	23	154	10
23-C	11 Dec 13	0-20	6	137	12
⬭	= unusual result, against the general trend for the field				



An example of soil records grouped, per field, in a spreadsheet. When long-term trends are viewed, it is easy to pick up 'unusual' data – probably the result of sampling or lab error. Graphs help to identify trends even more effectively: in this example, it is clear that the liming programme is steadily reducing acid saturations. The one unusual result is clearly an error which can be safely ignored in formulating recommendations.

New Pest Alert!

Yello Sugarc Aphi

Sipha flava, commonly referred to as Yellow Sugarcane Aphid (YSA), is a new pest of sugarcane in various parts of our industry. It was first recorded in July last year in the Pongola area, and later on the Umfolozi Flats. Since these initial sightings, the aphid has been found in all coastal regions down to southern KwaZulu-Natal, and in the midlands south and north, and the Eshowe area. This pest has also been found on a number of wild grasses, including sorghum in South Africa.

Identification

The aphid is bright yellow in colour and approximately 1.4 mm long. They may appear as both winged (generally females) or wingless, and usually feed on the under surface of lower leaves, along the mid-rib where they occur in dense colonies. The surface of the leaves turn yellow or red, similar to symptoms of drought stress or herbicide damage.

Damage

In its aboriginal home in North America, yellow sugarcane aphid can develop extremely quickly into large and damaging populations in relatively short periods of time, and has the potential to become very abundant in hot dry weather. The stages of sugarcane most susceptible to damage seem to be young plants less than one metre in height, and older plants following the period of most rapid growth. Prolonged feeding can kill young plants.

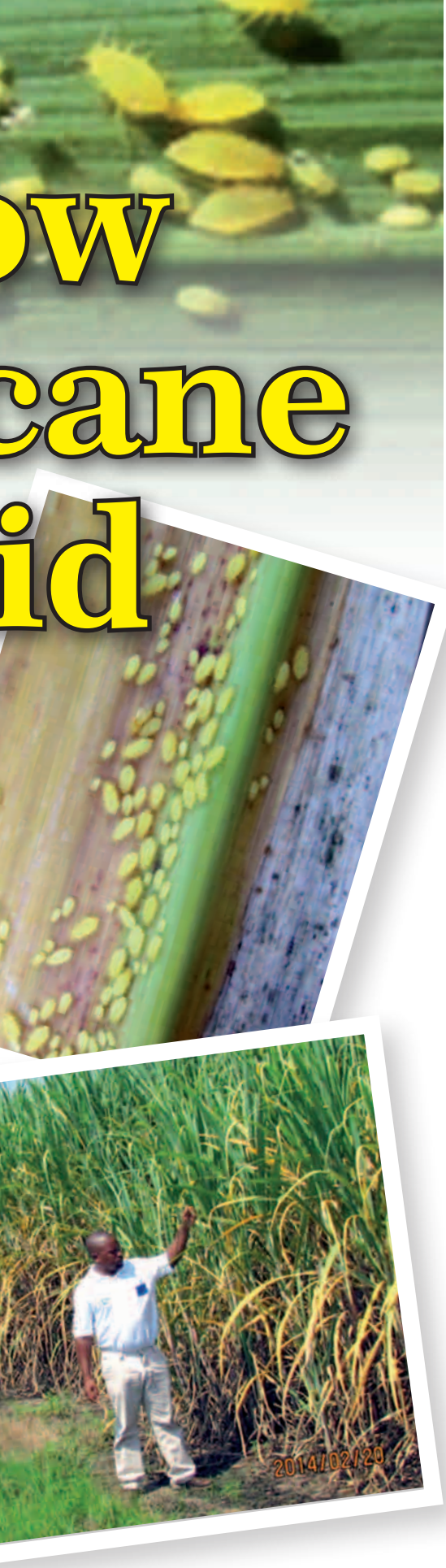
While the yield reduction has not yet been quantified in South Africa, yield loss figures reported in North American and Hawaiian sugar industries range from 6 – 19%.

Yellow sugarcane aphid is also known to transmit sugarcane mosaic potyvirus and has, in some cases been implicated with the growth of sooty mould fungi.

Control

SASRI is developing an area-wide, integrated pest management strategy for this new pest. In other sugar industries, control measures include the use of tolerant varieties, promoting natural predators, careful use of systemic insecticides and monitoring of the pest to establish seasonal cycles and to establish whether these are below economic threshold levels.

You are urged to inspect your fields regularly for its presence, and to report this to your Extension Specialist.



Nuwe insekplaag waarskuwing

Geel suikerriet bladluis

Sipha flava, alom bekend as die geel suikerriet bladluis (GSB), is 'n nuwe plaag wat voorkom in verskeie dele van die suiker industrie. Die bladluis was vir die eerste keer waargeneem op die plantteelt terasse van SASRI in Mount Edgecombe. Een jaar later is die bladluis ook in Pongola en op die Umfolozi vlakte opgemerk. Sedert hierdie eerste verskynings is die bladluis ook op die suidelike kusgebiede van KwaZulu-Natal, in die suidelike en noordelike middellande asook in Eshowe opgemerk. Hierdie plaag is ook in 'n aantal wilde grasse (wat sorghum insluit), in Suid Afrika opgemerk.

Identifikasie

Bogenoemde bladluis is helder geel en is ongeveer 1.4 mm lank. Bladuise kom voor met vlerke (gewoonlik vroulik) asook sonder vlerke (gewoonlik manlik) en voed aan die onderkant van die blaar, veral langs die midrib waar hulle in digte kolonies voorkom. Die oppervlak van die aangetaste blare verander na 'n rooi kleur wat baie dieselfde simptome toon as dié van droogte en onkruiddoder skade.

Oesverliese en skade

Geel suikerriet bladluise is afkomstig van Noord Amerika en net soos in hul land van oorsprong kan hulle vinnig in groot skade-veroorsakende populasies verander in 'n redelike kort tydperk. Die bladluise het ook die vermoë om vinnig aan te teel in warm droë weer. Tydens die jong stadium van suikerriet (wanneer plante minder as een meter hoog is) asook wanneer ouer plante die stadium na vinnige groei bereik, is suikerriet die meeste vatbaar vir skade wat deur die geel bladluis veroorsaak word. Onophoudelike voeding van die luise op jong plante kan die plante se dood veroorsaak.

Oesverliese as gevolg van die geel bladluis op suikerriet in Suid Afrika is nog nie bepaal nie, maar oesverliese van tussen 6 – 19% is aangemeld in die suikerriet industrieë van Noord Amerika en Hawaii.

Geel suikerriet bladluise beskik oor die vermoë om suikerriet mosaïek potivirus te versprei. Vermoedens bestaan dat hierdie bladluise dalk ook in staat is om swart roet skimmel (fungus) te versprei.

Beheer maatreëls

SASRI is in die proses om 'n omgewings-wye, geïntegreerde pes beheer stelsel in te stel vir hierdie nuwe plaag. In ander gewasse sluit beheer maatreëls die gebruik van weerstandbiedende variëteite, natuurlike predatore, die gebruik van sistemiese insekdoders en monitoring van die plaag om seisoenale siklusse in om te bepaal of die skade wat aangerig word van enige ekonomiese belang is.

Inspekteer asseblief gereeld u lande vir die teenwoordigheid van hierdie plaag en rapporteer dit so gou as moontlik aan 'n voorligtingsbeample in u omgewing.

Des Conlong *(Senior Entomologist)*
& Mike Way *(Entomologist)*

SOIL HEALTH

Neil Miles
(Senior Soil Scientist)

FARMING 'With Nature'

Keeping Soils Covered

Neil Miles & Rian van Antwerpen
(Senior Soil Scientists)

When a virgin soil is converted to sugarcane or some other cropping enterprise, a gradual deterioration of the soil's physical, chemical and biological properties is set in motion. In order to ensure the sustainability of the system, farming practices must be tailored as far as possible to arrest this soil degradation.

Allowing soil to remain bare and uncovered for lengthy periods during cropping cycles is one of the most harmful aspects of crop farming. In nature, only desert soils remain bare; productive soils are continuously covered by a combination of decaying litter and growing plants.

The negative consequences of allowing soils to remain uncovered are numerous, and in sugarcane production include the following:

- The immediate soil surface dries rapidly after irrigation or rainfall, and is subject to wide fluctuations in temperature. These conditions are highly unfavourable to the survival of earthworms and other beneficial soil macro and micro-organisms. In SASRI's long-term BT1 experiment, it is most instructive to compare soil life under crop residues with that on the bare plots. Lifting the residues reveals thriving communities of spiders, earthworms, centipedes, springtails

Poor, ineffective spreading of tops (left), and effective spreading (right).

and other organisms, with there being little or no evidence of similar soil life on the bare soil. These organisms are foundational to soil health, with their activities contributing to numerous important soil processes, including organic matter turnover, nutrient cycling, aeration, reduced surface temperature fluctuations and water retention.

- Bare soil rapidly loses its organic matter, and this, together with the impact of raindrops, results in the clay becoming 'dispersed'. The dispersed clay particles block soil pores, resulting in the formation of surface crusts which reduce water infiltration and promote runoff and erosion. Data presented in the table provide striking evidence of this effect, and underline the value of soil cover in improving effective rainfall. It must be borne in mind that runoff from a field not only involves a loss of valuable water, but also nutrients and organic matter in the sediment load. Thus field runoff implies multiple penalties: loss of water for crop growth and thereby increased vulnerability to drought, loss of fertiliser and other nutrients, and soil degradation through the loss of organic matter and soil particles (erosion).
- The uptake of topdressed fertilisers by the crop is greatly diminished where there is no cover on the soil. Fertiliser P and K applied to the soil surface are relatively immobile and remain in the top few centimetres of soil. When this soil layer is dry, these nutrients are rendered unavailable to the crop.

To summarise: keeping the soil surface covered greatly improves water infiltration, reduces evaporative losses, promotes life in the soil and improves the uptake of fertiliser nutrients. Although retaining residues (green-cane harvesting) is the best management practice in this respect, where burning is unavoidable, the following are important considerations:

- every effort should be made to schedule cool burns, in order to maximise the return of tops;
- money spent on ensuring that tops are evenly spread over the soil surface after harvesting is money well-spent (research trials show that a good cover of cane tops has about 70% of the effect of a full residue blanket in terms of water saving);
- tops should *never* be burned after harvest.

Surface soil conditions in SASRI's long-term BT1 trial. Top: burned plot with not return of tops; below: under crop residue treatment.

Effect of soil cover (scattered tops and crop residue blanket) on soil loss from a Longlands soil. Two 60 minute 'storms' were applied on consecutive days at an intensity of 63 mm/hr (Dewey & Meyer, 1989).

Treatment	Storm 1		Storm 2	
	Runoff (% of rainfall)	Soil loss (t/ha)	Runoff (% of rainfall)	Soil loss (t/ha)
Control (bare surface)	42	2.4	90	5.3
Scattered tops	24	0.8	61	1.6
Crop residue blanket	5	0.3	21	0.3

Mind your language

Stop talking Trash!

Anyone involved in the sugar industry will know that 'trash' refers to the sugarcane tops and dried leaf material that is left in the field after harvest. They will also understand that 'trashing' refers to the practice of harvesting sugarcane without burning

However, in common everyday use, 'trash' has a negative connotation: it refers to rubbish, something of no value.

In contrast, sugarcane trash has huge value: it acts as a soil cover to retain moisture and contributes to soil health by increasing organic matter. Sugarcane trash also has huge value as a fuel source at the mills, and for co-generation of electricity.

With this in mind, we have decided to 'trash' the term trash! In future, and in line with other agricultural industries, we will refer to this biomass as 'crop residue' – a more fitting name for this valuable resource.

The use of agrochemicals forms a critical component in recommended strategies for pest, disease and weed control in sugarcane agriculture. However, users of agrochemicals must be familiar with the risks posed to the environment and the workforce, as well as all the legal obligations involved.

AGROCHEMICAL STEWARDSHIP

Graeme Leslie
(Principal Entomologist)

Read the label

All agrochemicals registered for use in sugarcane agriculture have been approved for specific purposes and need to be applied according to the specifications given in the product label. This relates to effective application rates, volumes, frequency of application, and any applicable restrictions. The conditions given on the label have been developed to provide the best chance of success. Any deviations from them can result in poor efficacy, personal or environmental risk or, long-term consequences such as target resistance.

Safety

Safety is a critically important aspect when using agrochemicals, both for those applying the product and the environment. It is important that applicators use the correct protective equipment, and factors such as runoff and drift are minimised by following appropriate guidelines given in the label. These guidelines also cover conditions under which a product should be used, further minimising risk. Moreover, good product stewardship requires specific conditions for product storage and disposal of empty containers as well as surplus product.

Use registered chemicals only

There are a large number of agrochemicals registered for application on sugarcane and it is only these that can be legally used. Any non-registered alternatives or substitute products cannot be used as their use may result in poor efficacy or worse. Remember that it is the product that is registered, not the active ingredient(s).

When looking to use an agrochemical product, read the label thoroughly. If there are any doubts regarding its use, be sure to get advice. In doing so you will ensure that you get the best results from the agrochemical treatment, while still maintaining the safety of both users and the environment.

For more information on the legislation governing the safe and responsible use of agrochemicals, please consult the following SASRI publications: SUSFARMS, SASRI Herbicide Guide, SASRI Information Sheet 10.6: Understanding the label on herbicide containers, SASRI Information Sheet11.1 Pesticide storage, SASRI Information Sheet11.2: Disposal of excess pesticides and empty pesticide containers. Note: All of these are available on your SASRI Info Pack CD. Also consult the recent SASA publication 'Getting to Grips with Legal Requirements in Sugarcane Agriculture' for further information.

Turn Over A New Leaf

Take regular leaf samples

Ruth Rhodes *(Soil Scientist)* &
Neil Miles *(Senior Soil Scientist)*

Recently, a North Coast grower contacted his Extension Specialist regarding 'yellowed' and patchy growth in a field. We suspected that acidity was a problem in the field, and collected soil and leaf samples, being careful to sample from both the good and the poor areas. The soil results showed that acidity was not a problem, and most soil nutrient levels were above threshold, with zinc being marginal. The leaf sample, however, reflected a definite zinc deficiency in the poorly-growing areas. Without collecting samples, thousands of rands could have been spent on lime, or perhaps on applying more N, P and K – when, in a zinc-deficient crop, none of this would have helped. This leaf sample costing R 119.00 potentially saved thousands in misdirected expenditure.

This story illustrates the importance of leaf sampling, not only as a routine management tool to ensure that nutrients have been supplied in sufficient amounts, but also as a means of trouble-shooting when the crop is doing poorly.

To make sense of the results, leaf samples should be taken when the crop is growing vigorously, without water stress, and at least four weeks since the last fertiliser application. The crop must also be sampled at the correct age, and in the correct month of the year, as outlined in the table below.

Sample the third leaf from the top, counting from the first leaf which is at least half unrolled. Around 40 leaves should be randomly collected throughout the field.

Crop age and month during which leaf samples should be collected

Area	Age	Month
Northern Irrigated	3-5 months	Oct-April
Coastal Lowlands	4-7 months	Nov-March
Midlands	4-9 months	Dec-March

If growth is patchy, however, collect separate samples from the good and poor growth areas, and submit them to FAS as two separate samples.

Cut off the bottom and the top of the leaf, so that a central strip of approximately 30 cm is left; then strip out and discard the midrib.

Samples do not need to be dried before submission to FAS; just ensure that they are not kept in a sealed plastic bag, or they might go mouldy. Also, do not submit your samples in an old fertiliser bag – contamination could ruin your results.

Leaf sampling is easy to do. Conducted routinely, it can help to obtain maximum possible yields through optimal nutrition. If done as a means of trouble-shooting, leaf sampling can save large sums of money by helping to identify nutrient deficiencies.

For more information on leaf sampling, see SASRI Information Sheets 7.9 ("Leaf Sampling") and 7.17 ("Guidelines for the interpretation of leaf analyses for sugarcane"), which are available on your InfoPack CD. English and Zulu videos on leaf sampling are also available on this CD.

FAMINE (Parthe

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Peta Campbell
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More and more frequent accounts of the invasive Famine Weed, *Parthenium*, have been reported throughout our industry over the past few months.

Famine Weed releases phytotoxic compounds from its roots and pollen as well as from decaying plant residues allowing it to suppress other plants. It has the ability to rapidly spread through fields due to numerously produced resistant seeds which can remain active in the soil for up to six years. It is able to establish itself to the flowering stage in just three to four weeks despite weather conditions. It invades disturbed areas such as overgrazed or drought affected pastures, roadsides, dumpsites or freshly disturbed soil, which then act as sources of further infestation.

There have been several reports in South Africa of Famine Weed ranging from the Kruger National Park to Northern KwaZulu-Natal including Ulundi, Pongola Game Reserve, Darnall, Tugela and Sezela. It is also present in Mozambique and Swaziland.

The compounds produced from the weeds are also poisonous and unpalatable to herbivores. It is known to affect animal health by causing lesions around the mouth and limbs as well as damage milk and meat quality rendering them unfit for consumption. It is also a major hazard to humans as it is known to cause dermatitis, extreme allergies and asthma - making manual removal difficult.

Best Management Practices outside fields

SASRI is busy investigating control measures for this weed. Experiences from other countries show that no single method alone has proven effective in its management. Integrated control includes preventative, physical, chemical and biological control.

Effective control depends on correct identification!

- Famine weed first forms a basal rosette, up to a foot in diameter.
- Plants then "bolt" and form stems with short hairs and lengthwise grooves and can grow up to 2m tall.
- The light green leaves on the stem are alternate with some short hairs on both sides.
- Flowers are small and whitish with tiny ray florets at each of the five distinct corners.

Preventative control

- Avoid the physical spreading of seeds from cultivators, mowers, shoes or tyres.
- Promote rapid cane canopy to prevent spread into fields.
- Use smother crops such as cowpeas or velvet beans to reduce the weed infestation.
- Green manuring with sunflower or maize is effective in inhibiting growth of Famine Weed.
- Rehabilitate degraded, eroded or overgrazed areas with non-invasive stoloniferous grasses to prevent invasion by famine weed.
- Rice straw mulch was effective in controlling famine weed. Sugarcane trash may have the same effect.

Physical

Use the following methods carefully to avoid spreading seed:

- Hand weeding/hoeing is labour intensive, but can be beneficial, especially if done before the weeds produce seed, and in combination with chemical control.
- Cutting plants off at ground level makes the problem worse as the plants rapidly regenerate with an increased number of shoots, producing flowers within 30 days.
- Fire can temporarily increase weed densities, but repeated burnings can reduce populations, especially if desirable pasture plants are encouraged after fire. However, smoke has been shown to stimulate seed germination.
- Deep ploughing of the weed prevents seedling emergence; however, shallow burying increases duration of seed survival.

Post-emergence chemical control

Controlling early stages of growth (rosette stage) is easier than older plants (bolted plants) and flowering plants. **NB: Follow label directions. Check that the herbicide label (e.g. on glyphosate and metsulfuron-methyl) specifically mentions this weed species (i.e. *Parthenium hysterophorus*).** Control is not long-lasting. Successful management depends on a strong commitment to follow-up spraying until alternative vegetation has covered and stabilised areas under treatment.

SASRI urges all growers to inspect their fields and surrounding areas thoroughly for Famine Weed on a regular basis and have their findings immediately reported to their Extension Specialist.

E WEED

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invasive!

hoodgras

indringer!

(Senior Agronomist: Weed Control) &
(Extension Specialist - North Coast)

Die afgelope paar maande is al meer en meer insidente en rapporterings van waarnemings van die indringer gras, Famine Weed, Parthenium, in ons industrie aangeteken.

Famine Weed stel fitotoksiese produkte vry vanuit die wortels, stuifmeel en verrotende plant reste wat die groei van ander plante onderdruk. Dit het die vermoë om vinning te versprei as gevolg van weerstandbiedende saad en die vermoë van die saad om aktief in die grond te oorleef vir 'n tydperk van tot ses jaar. Die plant hervestig binne drie tot vier weke vanaf die blom periode, ongeag weerstoestande. Dit investeer areas soos; oorbeweide areas, droogte geaffekteerde weidings, skouers van paaie en vars bewerkte grond wat dan weer die bron van verdure investasies bevorder.

Verskeie aanmeldings van die voorkoms van Famine Weed strek vanaf die Kruger Wildtuin Nasionale Park tot Noordelike KwaZulu-Natal insluitend Ulundi, Pongola Wild Reservaat, Darnall, Tugela en Sezela. Dit kom ook voor in Mozambique en Swaziland.

Die plantreste van die onkruid is ook giftig en onverteerbaar vir herbivore. Dit is alom bekend dat diere gesondheid aangetas word wanneer die onkruid gevreet word en diere ontwikkel groeisels om hul bekke en in hul ledemate. Melk en vleis afkomstig van hierdie diere is gevolglik ook oneetbaar. Dit is ook n groot gesondheidsrisiko vir mense en veroorsaak dermatitis, erge allergiese reaksies en asma. As gevolg hiervan is dit haas onmoontlik om dit veilig met die hand te verwyder.

Beste Bestuurspraktyke

SASRI ondersoek tans beheer maatreëls vir hierdie onkruid. Ondervinding vanuit ander lande dui op die volgende effektiewe beheer maatreels. Geen alleen staande maatreël blyk effektief te wees in die beheer ven die onkruid nie, 'n geïntegreerde beheer sluit in voorkomende-, fisiese-, chemiese- en biologiese beheer te wees.

Effektiewe beheer hang af van korrekte identifikasie!

- Famine weed vorm eers 'n lae bossie ongeveer 30cm in deursnee.
- Die plant groei dan geweldig vining met harige stamme met groewe in die lengte van die stam, Plante groei tot 2m.
- Die ligtegroen blare altineer weerskante van die stam en is harig aan beide kante.
- Blommetjies is klein en wit met klein blom uitgroeiseltjies by vyf beduidende hoekies.

Voorkomende beheer

Verhoed die fisiese verspreiding van saad deur implimente, bossiekappers, grassnyers, skoene en voertuigbande.

- Bevorder riet oorskaduing om verspreiding in lande te voorkom.
- Gebruik versmorende gewasse soos "cowpeas" en "velvet beans" om onkruid investering te voorkom.
- Groen bemesting met sonneblom en mielies is 'n effektiewe manier om die vestiging van Famine Weed te bekamp.
- Rehabiliteer verweerde, geërodeerde en oorbeweide areas met vinnig groeiende nie-indringer grassoorte om investering te voorkom.
- Ryshooi grondbedekking is effektief in die beheer van Famine Weed, suikerrietblaarbedekking mag dalk dieselfde uitwerking hê.

Fisies

Gebruik die volgende metodes versigtig om die verspreiding van saad te voorkom:

- Verwydering met die hand/skoffel is arbeids intensief maar kan suksesvol wees indien dit gedoen word voordat die plante saad skiet en in samewerking met 'n chemiese beheer program.
- Om die plant af te kap op grondhoogte vererger die probleem en veroorsaak vererge regenerasie met 'n verhoogde lootpopulasie wat binne 30 dae blom.
- Vuur verhoog tydelike populasie maar aanhoudende brand kan die populasie verlaag veral as die lande na brand met geskikte weidings aangeplant word. Dit is egter bekend dat rook saad ontkieming bevorder.
- Diep grondbewerking verhoed die ontkieming van saad maar vlak bewerkings verleng die oorlewingstydperk van die saad.

Na-opkoms chemiese beheer

Die beheer van jong groei (blaarvorming) is baie meer suksesvol as ouer plante (volgroeid) en plante in die blom stadium. **NB: Volg die etiket aanwysings: Maak seker dat die onkruiddoder etiket (bv. glifosaat en metsulfuron-metiel) hierdie spesifieke onkruid spesie noem (dws *Parthenium hysterophorus*).** Beheer is van korte duur en suksesvolle bestuur hang af van doelgerigte volhoudende opvolg bespuitings todat alternatiewe plantegroei gevestig is en die beheerde area gestabiliseer het.

SASRI moedig alle boere aan om hul lande en omgewing sorgvuldig te fynkam vir die voorkoms van Famine Weed op 'n gereelde basis. Waarnemings van die onkruid moet aan die Voorligtingsbeamptes deurgegee word.

CYNODON CON

Cynodon is a persistent problem in our industry and SASRI receives requests regularly for advice on how to control this weed. Control can be achieved by chemical or non-chemical means – or by a combination of these two approaches. This article provides a summary of these control options.

CHEMICAL CONTROL

Always spray actively growing grass; the more green leaf material there is, the more herbicide will be absorbed. It is best to spray in warmer temperatures with high humidity, and after good rainfall. Good coverage of applied herbicides is vital to herbicide uptake, so ensure that cynodon has an even ground coverage before spraying. This may be accomplished by manually weeding larger weeds to create this uniform stand so that the herbicide spray is not intercepted by taller plants before it reaches the low-growing cynodon.

Chemical minimum tillage

Use ONE of the following approaches:

Glyphosate

Glyphosate is normally the herbicide used to kill both the cane crop and cynodon weed. Spray when the cane is fully tillered, about 45 cm tall, and when cynodon is green and actively growing. Keep in mind that long fallow periods allow for repeated spot sprays - so delay replanting cane. Apply repeat spot sprays to any surviving grass as it emerges. Do not plough the grass out as this will bury the runners and result in regrowth.

Arsenal GEN 2®

The use of Arsenal GEN 2® requires strict management as this product as it is residual and can kill growing cane.

Pay particular attention to the instructions on the label, especially with regards to timing of lime application, length of fallow period (4 months) and amount of rainfall required (600 mm) before the new sugarcane crop is planted.

Any spot sprays during the fallow period for missed cynodon patches must make use of glyphosate and not Arsenal GEN2®.

Short cane

Use ONE of the following approaches:

- Apply repeated glyphosate spot sprays with shields to any surviving grass as it emerges. Continue until a cane canopy forms to shade out the cynodon.
- Spot spray any small patches of cynodon before they expand. Consider employing a permanent spot spray team dedicated to cynodon control.
- Apply Gramoxone + diuron to small cane. Direct the spray between the cane rows for knockdown control during a 3 to 5 week period. Repeat this treatment every 3 to 5 weeks to suppress the cynodon enough to allow the cane to grow. Shields may be used to protect cane.

Field verges/edges and cane breaks

Spray glyphosate near tall cane. If Arsenal is used near tall cane, spray on to the grass sward and avoid bare patches. Spray Gramoxone + diuron near short cane.

Under canopy spraying

Apply glyphosate as an under-canopy spray when the cane is tall, with dead leaves on the lower portions of stalks. Repeat with spot sprays of glyphosate when required. Shields may be used to protect the cane.

TROL

Peta Campbell
(Senior Agronomist: Weed Control)

NON-CHEMICAL MEASURES

Field Hygiene

Mechanical operations such as discing for land preparation or loading cane can result in unintended spread of cynodon. Mechanical stool eradication using a mouldboard plough and disc harrow will spread and bury live runners. Instead use minimum tillage for cane stool eradication. Farm machinery should be cleaned frequently to prevent the spread of seed and runners.

Canopy cover

A fully developed cane canopy helps to shade out the weeds. Therefore all measures should be taken to promote rapid canopy growth. These include sufficient seed at planting, an efficient nutrition programme, integrated pest management, and a choice of suitable varieties.

A longer cutting cycle will extend the period of shade that combats cynodon growth. Engage in sound field management practices that allow for extended cutting cycles.

Verge control

Hoe cynodon outwards in the last 5 m of the cane row to stop spreading into the field. DO NOT throw hand weeded runners into fields. Prevent erosion by using stones.

Plant an extra line of cane or a melinis hedge along the field edge to prevent encroachment of cynodon runners into the field. Although melinis seeds are viable, vegetative propagation of 2-4 node stems in sand is a more practical approach to on-farm propagation of this grass.

Cover crops

Cover crops should be used for soil protection and weed suppression during fallow periods. In winter, sowing of oats can be used if chemical minimum tillage was practised using glyphosate. It is vital to continue 'search and destroy' spots praying tactics using glyphosate to treat any green cynodon patches that may emerge while the oats are growing. Sunn hemp can be sown in summer.

COMBINED APPROACHES

Two or three passes with a vibrating tined rotivator on flat fields of **100%** dense, lank cynodon cover normally results in no further spread or deep burying of this weed. Rather, it can uproot the sprayed cynodon and exposes roots to cold dry winter temperatures. If the grass gets caught up in the tines, it can be burnt on field edges. Apply glyphosate to thinned rejuvenated regrowth which now has broken up stolons from rotivation.

Heaps of old, hoed weeds can be burned before spraying. This will rejuvenate the cynodon and other creeping grasses, thereby rendering them receptive to herbicides.

Contain in-field localised patches – hoe edges away from the cane and use flags to mark small in-field patches. This allows rapid and accurate spraying each growing season.

What to look for when...

IDENTIFYING RUST

Brown rust

A common disease in southern Africa

Lesions (marks) on leaf:

- cinnamon brown to dark brown
- up to 20 mm long
- more severe towards leaf tip

Spores:

- brown when fresh
- usually only on the lower leaf surface

Favoured by cool nights, warm days

Tends to occur on young crops (< 6 months)

Tawny rust

A new disease in southern Africa

Lesions (marks) on leaf:

- orange to reddish-brown
- similar in size to brown rust
- more severe towards leaf tip

Spores:

- orange when fresh, profuse
- also occur on upper leaf surface

Appears to be favoured by cool, moist weather

Has been observed on cane of all ages

Orange rust

Has not been observed in southern Africa

Lesions (marks) on leaf:

- orange to reddish brown
- up to 4 mm long
- more severe towards leaf base

Spores:

- orange when fresh
- usually only on the lower leaf surface

Favoured by humid, warm conditions

Tends to occur on mature crops (>6 months)

Biosecurity Hotline – New Number

060 544 5393

SASRI has a new dedicated sugarcane biosecurity hotline number where matters of concern relating to pests, diseases, weeds and other threats can be reported. Growers should preferably first contact their Local Pest Disease & Variety Control Committee or SASRI Extension Specialist if they have concerns regarding biosecurity issues or require information. The hotline number is intended for wider distribution, thereby also enabling members of the public to report matters of concern.

Nitrogen & Eldana

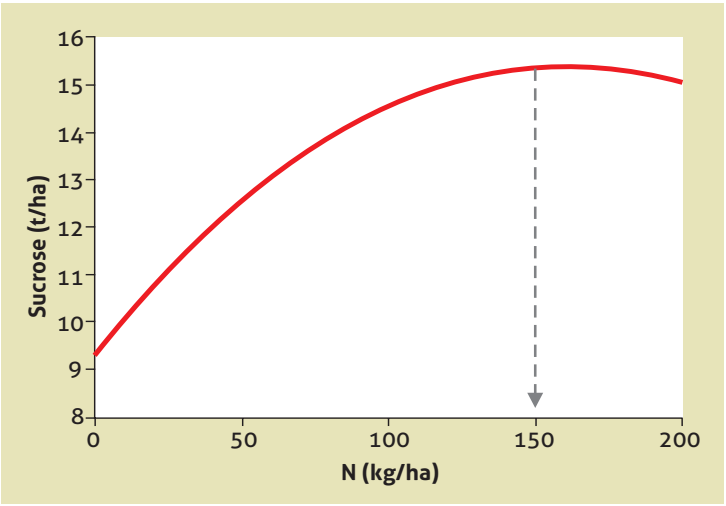
Efficient management of N supply to the crop is pivotal to the profitable production of sugarcane, with returns on expenditure for N generally being highly favourable. This is well-illustrated by the N-response curve for sugarcane growing on a sandy soil on the North Coast in 2012-13 (see figure). Here, response was continuous to an N level of 150 kg/ha, with the increase in sucrose from zero to the 150 kg/ha rate being 6.47 t/ha. Based on current costs, this reflects a return of approximately R12.00 for every rand invested in N fertiliser.

Prior to 2011, N recommendations provided by FAS were based solely on the soil 'N Category', which is an estimate of the amount of N that is likely to be released from the organic matter for crop uptake. Importantly, for a particular N category, the same amount of N was recommended irrespective of crop yield potential. An improvement to this approach was introduced with the roll-out of the new FAS package in late 2011, with N recommendations now being based on both N category *and anticipated crop yield*. The introduction of crop yield as a factor in the determination of N requirements is widely regarded as a significant improvement to the reliability of FAS's N recommendations.

How do these developments relate to the Eldana threat? In the first place it should be noted that a recently published review by our scientists shows that *N rates commensurate with crop N requirements* have essentially no impact on the incidence of Eldana. Only when the rates of N applied exceed the requirements for maximum yields is there the possibility of N-induced accelerated Eldana activity. In the past, to accommodate the danger of N applications by growers exceeding crop growth requirements, FAS reports included the warning, "Where high levels of Eldana are anticipated, it is advisable to reduce N recommendations by 20 to 30 kg/ha". In the light of the findings of the review referred to above, and in particular, the improvements introduced with yield-target based N recommendations, the need for FAS N recommendations to be reduced to diminish the threat of Eldana no longer exists. In normal growing seasons, any reductions in the recommended N are, in fact, very likely to significantly reduce the profitability of operations.

To conclude, for the reasons outlined above, FAS soil test reports no longer contain a warning to reduce N rates to combat the threat of Eldana. This message has been replaced with one cautioning against applying N rates in excess of the reported recommendations.

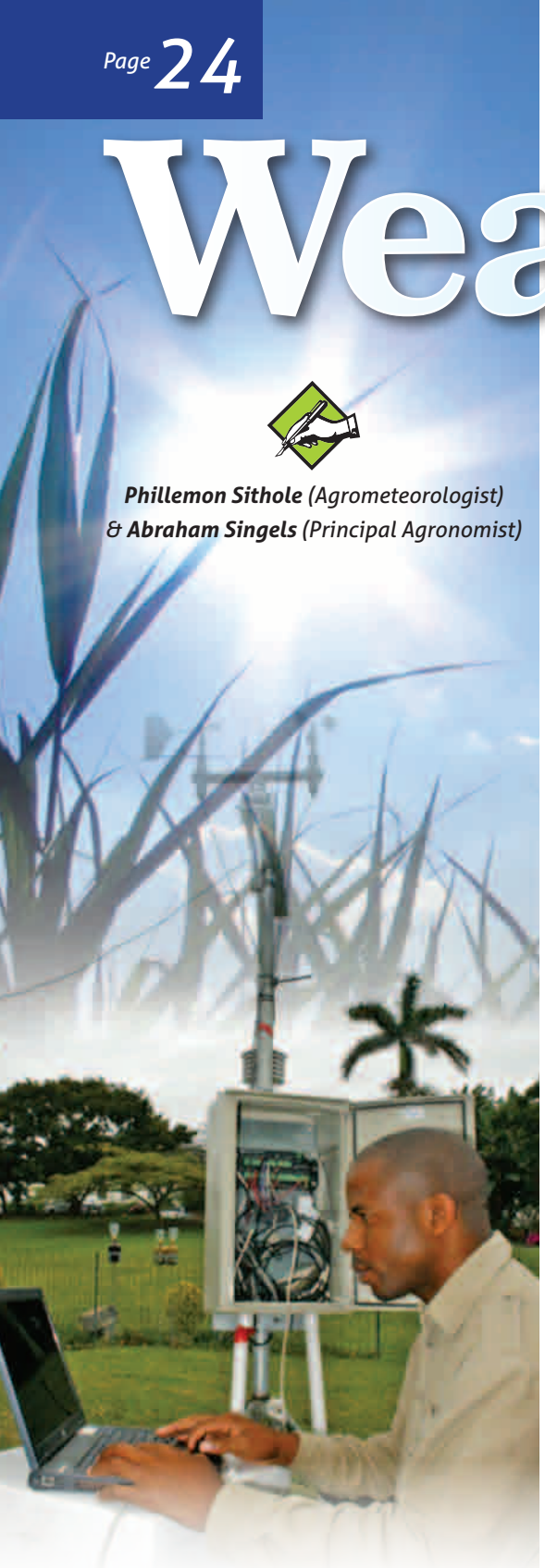
Ruth Rhodes *(Soil Scientist)* **&**
Neil Miles *(Senior Soil Scientist)*



Sucrose yield response to fertiliser N in the Stanger area.

Weather

Phillemon Sithole *(Agrometeorologist)*
& **Abraham Singels** *(Principal Agronomist)*



Please visit the SASRI weather web at www.sugar.org.za/sasri for links to up-to-date seasonal climate forecasts and also for the latest rainfall and other weather data.

Review

After a relatively good start to the 2014/13 summer rainfall season, most rainfed regions of the industry experienced a prolonged period of below average rainfall in January and February of 2014, followed by above-normal rainfall in March (Fig. 1). An exception was the South Coast where rainfall in January was good, but low in February and to some extent in March. Rainfall in Mpumalanga was generally good, but heavy rainfall in March caused considerable damage to infrastructure.

The dry conditions in January and February would have slowed rainfed cane growth, especially in the North Coast and Zululand regions. The good rains in March would have relieved crop water stress in most regions.

Outlook

The ENSO phenomenon is currently in the neutral phase but is projected to move into a weak El Niño phase in the second half of 2014. The El Niño phase is generally associated with below average summer rainfall in the sugarcane growing regions of South Africa. The industry should therefore expect negative impacts on the 2014/15 crop.

The South African Weather Service predicts enhanced chances of below normal winter rainfall for the industry while the European Center for Medium-Range Weather Forecasts and the International Research Institute for Climate Society both predict near normal rainfall for this period. Minimum temperatures for the winter months are expected to be below normal.

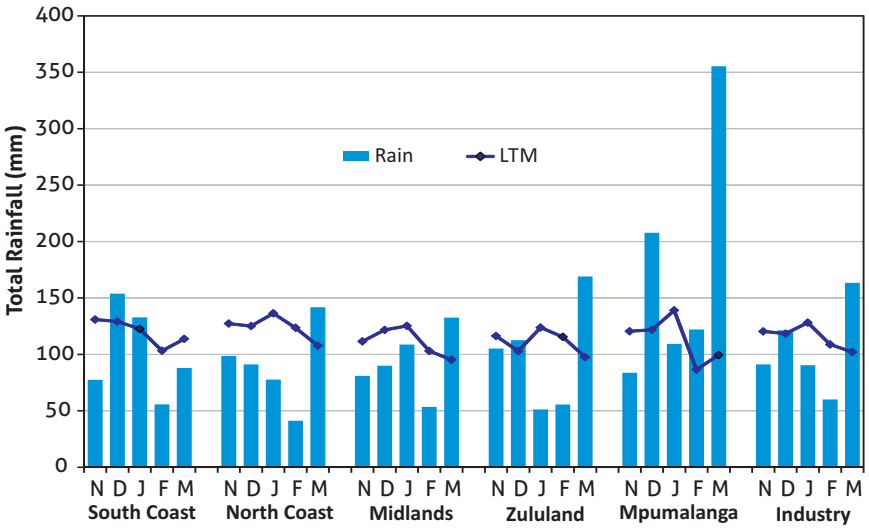


Figure 1: Regional and industry average monthly total rainfall and the monthly long term means (LTM) for November 2013 to March 2014.

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