Published by the South African Sugarcane Research Institute







Phosphorus (P) Certain reactions with P in the soil can reduce its availability to the crop. Understand more about the key drivers of these reactions and how to optimise fertiliser application (page 14).

Longhorn beetle

There has been a drastic reduction in longhorn beetles emerging in the Entumeni area. Have we finally defeated this elusive pest? (page 7).

RV payment system

Ensuring delivery of mature, clean and fresh cane to the mill will maximise returns and minimise losses under the RV cane payment formula (page 18).



Maintaining cane quality Conditions are now optimal for cane quality (RV%) to peak due to natural ripening by low winter temperatures and dry conditions. Future growing conditions from late-winter until the end of the season at each mill may cause an extended RV% peak well into the late-season (under poor growing conditions) or the peak could be short-lived (under good growing conditions). In the latter case, certain chemical ripeners can be used to maintain high cane quality in the late-season (page 20).

DIRECTOR'S MESSAGE

The combined impact of several external factors on the financial status of our sugar industry has not left SASRI unscathed. Considerable budget pressure led to extensive debate amongst key decision-makers on the affordability of the existing programmes offered by SASRI. This was accompanied by an in-depth analysis of the various components of the Programme of Work (PoW) and their respective value for growers. These deliberations resulted in a revised funding model for SASRI that required adjustments to some of our functions to more accurately reflect the specific value required by the various stakeholder groups (small-scale growers and large-scale growers in particular). At the same time, the importance of sustaining the core research, development and innovation (RDI) programme that serves industry needs and priorities for all growers, was recognised. Despite this very unsettling time for SASRI, we have continued to maintain our RDI initiatives while grappling with some of the new realities. At the same time, considerable focus has been placed on exploring and developing the optimal paradigm for enhancing grower participation in our programmes and in designing approaches to focus specifically on enhancing adoption of the wealth of technologies that have been developed over the decades.

Carolyn Baker

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Sustaining productivity during COVID-19

While the current COVID-19 crisis has added further complexity to the manner in which we run our programmes, it has also provided an invaluable opportunity for our specialists to focus on developing and enhancing some of our technologies and knowledge products. The lockdown period has been characterised by the release of numerous updates including:

- a Pest and Disease Guide,
- Mechanisation Reports,
- Eldana Manual,
- an Information Sheet series dealing with Nutrition,
- an advisory on flowering,
- a special edition of The Link,

- the Ingede,
- several short video clips that have been distributed electronically and aimed towards supporting small-scale growers,
- four new FAS Report guides for soil, leaf, irrigation water and salinity and sodicity.

All of these resources are accessible on the SASRI e-Library: www.sasri.org.za



Encouragingly, all SASRI employees have responded well to the imposed COVID-19 regulations in the workplace, and we have been fortunate in that we were able to sustain essential operations during the initial lockdown and then able to resume our full programme thereafter. Novel ways of ensuring social distancing in both the field and in laboratories have been devised and implemented, and adherence to strict sanitation protocols maintained.



Water conservation

As we move into the 'dry season' the importance of water conservation serves as an important reminder of our responsibility regarding wetland and watercourse management, as outlined in the 2018 Memorandum of Agreement with the Department of Water and Sanitation. This memorandum requires that the industry demonstrates commitment to managing watercourses responsibly. Consequently, a study commissioned by the Water Research Commission into the protection of watercourses in the sugar industry has recently been the subject of discussions by industry role players, where the findings were examined and the implementation of buffer zones along watercourses was debated. There will be further engagement in this regard to fully grasp the economic implications associated with the nature of buffer zones. The sugar industry is fortunate in that the importance of environmental sustainability is dealt with at length in SUSFARMS[®], and the suite of better management practices directed towards water conservation are clearly outlined for all growers to consider and implement wherever possible. Page 🖊

TOPICALTIPS

🖉 Rowan Stranack (Extension and Biosecurity Manager)

Pests and diseases

■Yellow sugarcane aphid (YSA): Levels of this elusive and potentially damaging pest declined over winter this year but are now showing clear signs of being on the increase. Outbreaks in the Lowveld and along the coastal belt are warning signs that the pest could reach damaging proportions soon if not checked. Regular scouting is important to warn off potential problems. Carefully consider treatment of outbreaks and consult your SASRI Extension Specialist or Biosecurity Officer for advice.



Eldana and carryover cane: In some areas this year, there will be additional carryover, over and above the normal planned area of carryover cane. This can place farms and areas at risk from excessive eldana damage since populations build up as the cane ages. Planning of which fields to carry over should now be well-advanced but in the event of decisions still needing to be made, avoid carrying over susceptible varieties and fields prone to stress. Your farm scouting team should be regularly going through fields to check eldana levels and damage.

Last season, some growers were caught out by not completing their spray programmes during the late moth peak and paid the price for this in badly damaged cane and poor cane quality at the start of the season. Take care to monitor fields as they are harvested. Very high levels of eldana present in the stubble could warrant post-harvest eldana control measures such as a stool drench treatment with a registered insecticide. However, this drench treatment will not necessarily provide long-lasting eldana control. Follow-up scouting will determine the need for further treatments as the crop develops.



RSD: Over the years, growers have made great strides in reducing RSD incidence across the industry. Currently, an estimated 7% of commercial fields are infected which is a huge improvement on the past when more than 10% of fields were infected. These gains should be maintained by good field hygiene (dipping and cleaning cane knives), effective volunteer control and the planting of RSD-free certified or approved seedcane. This potentially damaging disease is very manageable and can easily be controlled on your farm with these simple measures.



Crop production

- CTS Service: There is a wealth of useful information relating to the condition and management of the crop contained in your Cane Testing Service (CTS) report. Sucrose and RV% are good indicators of cane quality but further analysis of moisture, fibre, non-sucrose and purity can give a good indication of the relative maturity of the cane as well as point to other management related problems such as long delays, or excessive extraneous matter. Consult your SASRI Extension Specialist. See article on page 18.
- **Ratoon management:** With the current economic pressure, it makes sense to focus on reducing costs and making sure full yield potential is obtained in all your fields. Having to replant prematurely, as a result of poor variety choice, high levels of disease, or declining stool population due to factors such as compaction or weeds, is disruptive and costly. Ensure that maximum ratoon life is obtained by having a long fallow and rectifying all possible soil-related limiting factors, by eliminating volunteers which harbour diseases, returning organic matter to the soil through green manures and finally by planting certified or approved seedcane of the appropriate variety. To implement all these better management practices ask your SASRI Extension Specialist to assist you.
- **Cane yield vs RV yield in varieties:** Understandably, growers are drawn to high cane yield in varieties. However, even though tons cane yield is a good indicator, it is not the only means of comparison when looking at the performance of different varieties on your farm. Comparisons must be based on tons RV/ha and tons RV/ha/month and in irrigated areas tons RV/ha/100 mm water as well and comparative performance must also be assessed over the same cropping and irrigation cycles. Some high-yielding varieties have inherently lower quality. Also, the extra tons comes with additional harvesting and haulage costs thereby reducing the economic advantage of these varieties. Chemical ripening can address quality issues but, even if ripened, differences can persist. However, these comparisons cannot be made without good field records and sound knowledge of the soil potential on your farm. Ask your SASRI Extension Specialist for assistance in making meaningful performance comparisons.



Crop nutrition

- **Salinity/sodicity:** In the Northern regions of the industry, salinity and sodicity build-up can limit growth significantly on certain soils and where water quality or drainage is poor. Tell-tale signs of a salinity/sodicity problem are salts crusting on the soil surface, patches of poor growth and areas where very little appears to grow. Sub-surface soil samples can confirm this. Consult your SASRI Extension Specialist or the FAS Agricultural Laboratory for sampling procedures. Sampling of irrigation water will also indicate if water quality is contributing to the problem.
- Remember the four Rights (SASRI Information Sheet 7.1) during the planning and management of a crop nutrition programme: The RIGHT TYPE of fertiliser or nutrient source, the RIGHT RATE of application, the RIGHT TIMING of application and the RIGHT PLACEMENT of the nutrient source. The first two R's are established by taking a soil sample and having it analysed by FAS. Timing and placement, can be established by consulting your SASRI Extension Specialist. Fertiliser and ameliorants form a significant part of the farm budget. *Make every Rand you spend count.*



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- Splitting fertiliser applications: On sandy soils and those prone to waterlogging, splitting applications of nitrogen fertiliser is essential. N fertiliser uptake is often a challenge, considering that under average conditions less than 60% of N applied makes it into the plant, and under marginal conditions even less. Therefore splitting applications is even more critical.
- Leaf samples: Take samples from November onwards if growing conditions are favourable. The efficiency of nutrient uptake is best measured by leaf samples, enabling either top-up applications to be made or revised applications for the following season.
- Other crops: Remember that the FAS Agricultural Laboratory also processes samples from a range of other crops and can provide recommendations through your SASRI Extension Specialist.



Crop re-establishment

- Chemical minimum tillage remains the safest and cheapest method of crop eradication. Wherever possible, this method must be used. Remember, minimum tillage is obligatory on erodible soils.
- Before applying glyphosate to replant fields, ensure there has been adequate growth and all tillers have emerged. This will avoid costly and time-consuming roguing of unwanted cane regrowth.
- Plan to incorporate an appropriate green manure crop if fallowing over the summer period. Consult your SASRI Extension Specialist or advisor to select and source an appropriate crop.
- If not already planned, start deciding about fields to be re-established next season. Especially if these fields are likely to require lime and gypsum, plan to sample these early so the orders for product can be placed timeously allowing incorporation of lime and gypsum to be done next winter.



Long horn horn k Rowan Stranack (Extension and Biosecurity Manager)

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Update on the containment of the longhorn beetle

Almost five years have passed since the incursion of an indigenous species of longhorn beetle (*Cacosceles newmannii*) on a sugarcane farm at Entumeni (near Eshowe). During the period of infestation, extensive surveys on surrounding farms revealed more than 500 hectares of sugarcane had been infested causing extensive crop damage. It soon became clear that drastic and urgent action was required to contain the pest before it spread any further.

Various physical and chemical control measures were tested in attempts to control the pest, but all were unsuccessful. With no prospect for immediate control, the affected farms had to be quarantined, and growers went to great lengths and expense to ensure cane from the area was delivered safely to the mill. The longhorn beetle was declared a hazardous pest and certain remedial actions were gazetted. Unfortunately, the only effective method of control was the eradication of the host plant and to ensure the land remained free of sugarcane for at least two years, which was the estimated length of time for the pest to complete its life cycle. Growers were therefore issued plough out orders on infested fields as well as those fields in immediate proximity which were also likely to have the pest even though none had yet been found. This drastic action was extremely disruptive and financially damaging to the growers.

In response to the devastation the longhorn beetle could inflict on the industry, the SASA Council created a containment fund to enable the immediate eradication of the infested and adjacent fields. The fund allocated financial relief to growers who incurred losses due to premature harvest and eradication of fields. Costs of eradicating the crop and planting of a cover crop were also provided, as was a fallow rental to enable the area to be kept free of sugarcane for at least two years. There was no obligation on the growers to return the land to sugarcane once the threat was considered under control. Excellent co-operation was received from the growers affected and the process proceeded swiftly thereby greatly reducing the immediate pest pressure. Most of the required action was completed during late 2017 and early 2018. Approximately 1 150 hectares has been removed from sugarcane production. Most of the land is under permanent pasture but there is also a smaller area which has been left fallow. The previously infested areas and surrounding sugarcane are periodically monitored and to date no further spread of the pest has been recorded.

SASA Council also approved additional funds for SASRI to initiate various research programmes to better understand the pest and to investigate further control methods. These projects are on-going.

The success of the containment actions could, to some extent, be gauged by the numbers of adult beetles which have emerged during the summer and autumn months each year, an indication that a full lifecycle had been completed. In 2017 and 2018, there were appreciable numbers of beetles emerging from some of the pasture and fallow areas but in 2019 the numbers had visibly reduced. Encouragingly in 2020, no emergence of beetles was reported. Hopefully this an indication that the containment measures were successful. The industry is to be commended for its proactive approach to this threat, hopefully in doing so, saving itself billions in lost revenue in the long term.

The importance of varietal diversity in crop production

Sharon McFarlane (Sugarcane Pathologist)

Growing crops as a monoculture has many benefits, including improved efficiency in planting and harvesting operations and reduced input costs. However, history shows that monocultures, particularly those with limited varietal diversity, can result in increased risk of severe pest and disease outbreaks.

In our industry, the impact of past pest and disease outbreaks have been particularly severe when there has been an over-reliance on one variety or a limited number of available varieties. For instance, after legislation was passed in 1927 requiring all varieties to be eradicated due to high levels of mosaic, the industry became heavily reliant on the mosaic-resistant Indian variety Uba. This variety served the industry well for many years but was highly susceptible to sugarcane streak, eventually succumbing to the disease and leaving the industry in crisis. In the 1940s, smut caused serious losses in the popular but highly susceptible variety Co301 in areas north of Durban and further severe outbreaks occurred in the 1960s and 70s when NCo310 was widely grown.

The suite of pests and diseases that affect sugarcane is not static – new incursions, genetic shifts and changing environmental conditions can result in unexpected outbreaks. This situation can be mitigated to some extent by the **frequent release of new varieties** and encouraging growers to **plant a newer variety every time they eradicate and replant a field.** In addition, **SASRI strongly recommends that no more that 30% of the area under cane on a farm or across a region should be planted to a single variety**. In this way, the economic impact of a sudden outbreak of a pest or disease is reduced.

The introduction of seedcane schemes can effectively control the extent to which varieties are planted within an area. Planting **healthy, good quality** certified or approved seedcane and **spreading risk by planting a range of varieties** will ensure reduced pest and disease pressure. This in turn can slow the rate at which varieties might succumb to these pressures.



- The Irish Famine in the 1800s was, to a large extent, due to the reliance on one variety of potato which was highly susceptible to potato blight. Almost 1 million people died from starvation and disease, and many were forced to relocate to other countries as a result of the famine.

- In the 1980s, dependence on one grapevine rootstock forced growers in California to replant thousands of hectares of vines at a cost of US\$500 million when a new biotype of the grape phylloxera insect emerged.
- Orange rust, a previously minor disease in the Australian sugar industry, caused severe symptoms and spread rapidly in the high yielding variety Q124 in the early 2000s. An apparent mutation in the orange rust pathogen, favourable weather conditions along with an over-reliance on Q124, which made up more than 80% of the Central District crop at the time, were reported to result in losses of A\$150-210 million.

These situations could largely have been avoided had there been some varietal diversity to spread the risk.

"So maintaining a biodiverse ecosystem, with many varieties of plants and animals, is like having a living insurance policy to help protect those crops and creatures we humans depend upon for our survival" (Jim Metzner, American Museum of Natural History).

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Digital support for small-scale Growers

Video clips

Especially during this time of social distancing, furthering extension support to small-scale growers through digital resources is becoming more important than ever. SASRI and the KZN Department of Agriculture and Rural Development have distributed short video clips to small-scale growers in their network through WhatsApp. These videos have up to now focussed on cane estimates and eldana control. The videos are short, concise and practical and can be viewed on the **SASRI** YouTube channel or the SASRI eLibrary (www.sasri.org.za).



Ingede Magazine goes digital

The May edition of SASRI's popular isiZulu magazine, Ingede, was published during the initial lockdown phase when movement was restricted and printing of publications was not possible. It was however made available via WhatsApp, both in the form of the written article and as a pre-recorded audio narration of each article, allowing the receiver to read or listen to the advice provided. It is hoped that this medium will reach many more small-scale growers especially those who may be unable to access printed materials. These articles (including audio versions) are available on the SASRI eLibrary (www.sasri.org.za).





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Rowan Stranack (Voorligting en Biosekuriteit Bestuurder)

Opvolg in die beheer van die boktorinfestasie

bokveld

Amper vyf jaar is verstreke sedert die uitbreek van die inheemse boktor spesie (*Cacosceles newmannii*) op 'n suikerriet plaas in die omgewing van Entumeni naby Eshowe. Gedurende hierdie infesterings periode is intensiewe opnames gedoen wat daarop gewys het dat meer as 500 hektaar suikerriet geïnfesteer is en dat daar alreeds groot skade aan die suikerriet gewas aangerig is. Dit het vinnig geblyk dat drastiese en ernstige aksie nodig was om die pes onder beheer te bring voor dit verder kon versprei.

Verskeie fisiese en chemise beheermaatreëls is getoets om die pes te beheer, maar dit was alles onsuksesvol. Met geen vooruitsigte vir onmiddellike beheermaatreëls nie, is daar besluit om die geaffekteerde plase onder kwarantyn te plaas. Boere het met uiterste maatreëls, geldelik en fisies, hulle uiterste bes gedoen om hul riet veilig by die suikermeule af te lewer. Die boktor is tot 'n gevaarlike pes verklaar en verskeie van die regstellende aksies is "gazetted". Ongelukkig was die enigste regstellende aksie om die pes te beheer, die uitploeg van alle geïnfekteerde suikerrietlande en die braak legging daarvan vir twee jaar. Dit neem twee jaar vir die boktor om een lewensiklus te voltooi. Boere het opdrag gekry om alle besmette lande uit te ploeg, asook naburige lande, al is die pes nie daar opgemerk nie. Hierdie drastiese optrede het tot groot finansiële skade vir boere gelei.

As gevolg van die onmiddellike gevaar wat die boktorinfestasie vir die suikerbedryf inhou, het die SASA komitee fondse beskikbaar gestel om die onmiddellike vernietiging van die geïnfesteerde en aangrensende lande te befonds. Die fonds is gebruik om finansiële verligting aan boere te verskaf waar riet te vroeg geoes moes word en ook vir boere wat lande moes uitploeg. Kostes vir die uitploeg van lande en die aanplant van tydelike dekgewasse is ook gedek. Fondse is ook beskikbaar gestel vir die huur van lande om hulle sodoende vir ten minste twee jaar braak te laat lê. Daar was geen druk op boere om die lande weer met suikerriet te beplant na die uitwissing van die pes nie. Uitstekende samewerking is ontvang van boere wat deur die pesgeraak is. Die proses het sodoende die onmiddellike vinnig verloop plaagdruk grootliks verlig. Die meeste van die beplande werk is klaar gedoen teen laat 2017 en vroeg 2018. Ongeveer 1150 hektaar is nie meer vir die groei van suikerriet beskikbaar nie. Die meeste van die lande is nie meer onder suikerriet nie en word permanent met gras bedek. 'n Kleiner oppervlakte is braak laat lê. Lande wat voorheen besmet is, sowel as die omliggende lande is periodiek gemonitor en tot vandag toe is daar geen verdere verspreiding van die boktor infestasie waargeneem nie.

Die SASA komitee het addisionele fondse vir SASRI beskikbaar gestel om nuwe navorsings projekte te begin om die pes beter te verstaan en om nuwe beheermaatreëls te toets. Hierdie projekte is steeds aan die gang.

Die sukses van die inperkingsaksies kon, tot 'n sekere mate bepaal word deur die getalle van volwasse boktorre wat in die somer en herfs seisoene te voorskyn gekom het elke jaar. Hierdie getalle is 'n aanduiding dat die volle lewenssiklus van die boktor voltooi is. In 2017 en 2018 was daar redelike getalle boktorre wat te voorskyn gekom het in die gras en braak areas, maar in 2019 het die getalle aansienlik gedaal. Bemoedigend in 2020 het daar geen boktorre tevoorskyn gekom nie. Hopelik is dit 'n aanduiding dat die inperkingsaksies suksesvol is. Die suikerbedryf is geprys vir hul proaktiewe benadering tot hierdie pes, wat in die proses biljoene aan verlore inkomste gespaar het op die langtermyn.

Soil Nutrition Information Sheet Series

Nutrient deficiencies are one of the most common causes of poor plant growth, pest and disease susceptibility and inadequate crop yields. These deficiencies are often a result of poor or incorrect fertiliser application. To assist with understanding more about the various nutrients, we have revamped our Nutrition series of Information Sheets.

Page

In this series, we tackle easy identification of each nutrient deficiency in the field, adequate levels required for growth in plant and ratoon crops, and the most effective application guidelines for each nutrient. In addition, we have included useful tables of suggested fertiliser sources for each nutrient. The Nutrition series also describes how to develop an effective nutrition plan, design strip plots and take soil and leaf samples as per FAS Agricultural Laboratory procedures.

The following topics are covered in this series:

- Developing a nutrient plan
- Nitrogen Management
- Nitrogen monitor plots
- Phosphorus management
- Potassium management
- Sulphur management
- Calcium and magnesium management
- **b** Boron management
- Iron management
- Manganese management
- Copper management
- Zinc management
- Leaf sampling
- Soil sampling

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VIEW or DOWNLOAD

Nutrition series Information Sheets from our website.

WWW.SASRI.ORG.ZA



Correct herbicide application: Analyse your soil and water!

Peta Campbell (Scientist: Weed Control)

Have you ever heard a farmer say that glyphosate or paraquat does not working for cynodon control? Or maybe hear a farmer blaming Velpar and generics for not working well or causing some cane damage? Some of the reasons for these issues may be due to incorrect application, not following herbicide label directions

Soil analyses can help assess soil conditions and guide you towards more appropriate herbicide application. Consider the following:

Soil pH

If your soil acid saturation is above 20%, liming is recommended to adjust soil pH. However, free lime and recent liming can have serious negative effects on some herbicides **e.g. amicarbazone, halosulfuron, imazapyr.** Therefore, take this into consideration when selecting a herbicide programme on such fields as your lime programme must be managed with herbicide spraying. Lime should be applied well in advance to ensure complete reaction with the soil and minimise interactions with sensitive herbicides.

Soil texture

Analyse clay %, silt %, sand % and organic matter% in soil. These factors directly affect application rates of some herbicides. For example, hexazinone is highly soluble in water and has a high potential for leaching in soil. Therefore, hexazinone and its three formulations each have different recommendations on their respective labels:

- Velpar K3 (Hexazinone + diuron) and generics can only be used in soils with more than 35% clay soil AND ONLY in the early season.
- Velpar K2.4 (Hexazinone + diuron) and generics can be used from 16% clay to more than 35% clay soils in early and mid-season but not in late season.
- Velpar Df (Hexazinone) and generics: application rates are lower in light soils AND lower in mid and late season, e.g. for a 10% clay soil, use 0.5 to 0.7 kg per hectare in the early season but only 0.3 to 0.4 kg per hectare in the late season.

There are similar variations in formulations with other herbicides. So, for the best results, make sure you use the correct product for your soils, and follow the seasonal and soil clay % recommended application rates on the respective herbicide labels.



Poor water quality: pH

Regularly analyse your water source, which will include pH. Most herbicides work well if spray water is slightly acidic (pH 4.5 to pH 6.0). **READ THE LABEL** to see if a buffer is recommended to treat spray water with a high pH. A few herbicides do not work well if pH is less than 7.0.

Poor water quality: dissolved salts

Analyse your water source for the amount of dissolved positive salts. If water has **more than 150 ppm cations** (e.g. calcium + magnesium + sodium + potassium), treat the water as stated on the label. Sensitive herbicides include some glyphosate products, halosulfuron and MCPA. These herbicides require water treatment with a salt adjuvant, e.g. high grade ammonium sulphate before adding these herbicides. Note: ammonium sulphate is not registered to be used with MCPA in South Africa.

The FAS Agricultural laboratory at SASRI can assist with soil and irrigation water analyses. Their robust soil routine package includes pH and soil texture (clay %, silt %, sand % and organic matter %) while their irrigation water analyses tests for water quality, pH and dissolved salts. Visit their website for costs and details of these tests: www.fasagrilab.co.za.



Other factors affecting herbicides include:

Active growth and glyphosate:

- Spray only young actively growing weeds. Never spray half-green, half-brown foliage.
- Burning will make grass such as cynodon and stargrass 'young' again. This allows effective chemical control with a systemic herbicide once sufficient leaf material is formed.

Field hygiene:

- Tall weeds intercept herbicide spray and shield lowgrowing weeds.
- Handweed or spot spray tall weeds before implementing your spray programme.

Effects of dirt and dust:

- Dirt blocks nozzle, lines and filters and reduces equipment performance and life.
- Dirt at the bottom of a spray tank may neutralise herbicide performance.
- Layers of dust on plant surfaces and dust kicked up during spraying, especially behind the spray operator, may reduce weed control.
- Sensitive herbicides will bind to soil and organic matter suspended in water and will not be available for absorption into weed foliage. **Examples of herbicides sensitive to dirt and organic matter are glyphosate and paraquat. Both of these are used for cynodon and stargrass control.**
- Consider using rainwater if dirt is a problem.

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Managing phosphorus for better sugarcane yields

🖉 Louis Titshall (Senior Soil Scientist) and Adrean Naude (Extension Specialist: North Coast)

Phosphorus is required for the development of strong, vigorous root systems as well as for proper tillering and for crop maturation. It has several biochemical functions in photosynthesis, respiration and energy transfer. A sugarcane crop removes about 20 to 25 kg P/ha/year, though this might be higher in high yielding varieties.

While not as prone to losses as N in the soil, P has interesting reactions in the soil that can reduce its availability to the crop. Given its high cost, it is worth understanding the main factors affecting its availability so that you can optimise the benefit you get from your fertiliser investment.

The key drivers of P availability

Maximum plant availability of P typically occurs between soil pH 5 - 6, but this range can vary depending on texture, organic matter content, and the specific amount and form of Fe, Al and Ca in the soil. Under acidic conditions (pH < 5), P binds readily and strongly with soil clay minerals and Fe/Al-oxides and becomes "fixed" (Figure 1). This is often observed in the acidic, humic Midlands soils. Liming is often advised to improve the soil pH and increase P availability in these acidic soils. Under more alkaline conditions (pH > 6.5), P combines mainly with Ca and Mg in the soil to form compounds that are not readily plant available. This tends to be more common in the irrigated regions, but may also occur where too much lime has been applied. It is difficult to reduce the pH of alkaline soils, but to improve P availability for crop uptake it is sometimes advised to apply acidifying fertilisers (like ammonium sulphate) or acidifying compounds (like elemental S) in the planting furrow. This will help release some of the P around the roots by dissolving some of the fixed P.

The movement of P through a soil is very slow, with studies suggesting that the P seldom moves no more than about 10 mm into the surrounding soil from where it was placed. This means that roots need to intercept the P in the soil for adequate uptake. In this regard having a vigorous root system with many fine root hairs is critically important to improve crop use of soil P. Healthy roots with many fine root hairs have the remarkable ability to release P held by soil minerals through complex processes that occur at the root surfaces. This includes releasing organic acids that dissolve the minerals they come into contact with so that the root can take the P up. If there are soil conditions that are constraining root growth (such as acidity, compaction, waterlogging, or excess salts), then the amount of P taken up can be greatly reduced. This becomes an even more important consideration for P uptake in older ratoon crops, where there is a greater reliance of P in the bulk soil by the crop.

Simply, the more vigorous and healthy the root system, the more likely the root will encounter P in the soil, resulting in greater uptake of P by the crop.



Figure 1: Representation of P immobilisation by Fe/Al under acidic conditions and precipitation with Ca under alkaline conditions leading to reduced plant availability of P.

Since P binds strongly with soil particles, it can be permanently lost from fields through removal of these particles due to runoff and erosion. If these P-rich particles enter rivers or dams it can lead to nutrient enrichment (called eutrophication) and cause algal blooms (leading to water quality decline). Excess P can also be lost by leaching from sandy soils (although these losses are less common).

Best practice for P management

Soil testing is the preferred approach to assessing the P status of the soil and is thus an essential step to ensure that optimal P fertiliser rates are applied. Typically the best time to address P deficiency in the soil is at planting, where sufficient P is usually advised for the plant crop and several ratoon crops thereafter. In P-deficient soils (or those with high P-fixing capacity), there is value in applying sufficient P to improve overall soil P. This P acts as a reserve supply for later ratoons where roots can explore the soil and access the nutrient. While the benefits of banding become less obvious in P-rich soils, there is still value in furrow application (or banding with covering) of small amounts of P to ensure early availability for crop growth. Where a grower has limited resources and is unable to build P capital in the soil with higher application rates, then furrow or banded applications of a soluble P sources are preferred to ensure greater localised availability for the crop.

In ration crops, topdressing of P has limited value as the P tends to get locked up at the soil surface. Unless soil P is very low and leaf testing indicates deficiency in the ration, it is usually not worthwhile to apply P. Nonetheless, if deficiency is detected, it is advised to knife P adjacent to the plant line or bury in a shallow interrow-ripline soon after harvest (sub-surface application). Application to surface retained residue (mulches from green cane harvesting operations) is also effective if the P is washed through the mulch to the soil surface. The mulch promotes moisture retention and will allow the fine roots to grow near to the soil surface where they can access the applied P.

Too much of a good thing

Where a grower has access to manures and chicken litter, some consideration and caution needs to be applied where high rates of these are applied regularly. These products can contain considerable amounts of P and with repeated use can lead to a build-up of excess P in the soil. Excess P poses a pollution risk, can lead to Zn and other nutrient deficiencies and, in severe cases, reduces sugarcane yield. Ensure you test your ameliorants and adjust your P application rates to avoid unnecessary costs and any negative side effects.

For further information and guidance on best practices for P management in sugarcane, contact your regional Extension Specialist or download the new P management Information Sheet 7.4 from the SASRI website (www.sasri.org.za).

Bestuur van fosfaat vir beter suikerriet opbrengste

🖉 Louis Titshall (Senior Grondwetenskaplikes) en Adrean Naude (Voorligtingspesialis: Noordkus)

Fosfaat word benodig vir die ontwikkeling van sterk, digte wortelstelsels asook vir behoorlike hergroei en gewas volwassenheid. Dit het verskeie biochemiese funksies in fotosintese, respirasie en energie oordrag. 'n Suikerrietgewas verwyder ongeveer 20 tot 25 kg P/ha/jaar, alhoewel dit hoër mag wees vir hoër opbrengs variëteite.

Alhoewel nie so blootgestel aan verliese soos N in die grond nie, het P interessante reaksies in die grond wat kan lei tot beperkte beskikbaarheid tot die gewas. Gegewe die hoë koste, is dit die moeite werd om te verstaan wat die hoof faktore is wat gewasbeskikbaarheid beïnvloed om jou in staat te stel om maksimaal voordeel te trek uit jou kunsmis belegging.

Die sleutel aandrywers van P beskikbaarheid

Maksimum plantbeskikbare P kom tipies voor tussen grond pH 5 – 6, hierdie reeks variëer ongelukkig afhangende van die grondtekstuur, organiese materiaal inhoud en die spesifieke waarde en vorm van Fe, Al en Ca in die grond. Onder suur toestande (pH <5), bind P geredelik en sterk met grondkleiminerale en Fe/Al-oksiedes en raak "vasgevang/verbind" (Figuur 1). Dit word dikwels in die suur humus ryke Middellandse gronde waargeneem. Bekalking word dikwels aanbeveel om grond pH en P beskikbaarheid in hierdie suur gronde te bevorder. Onder meer alkaliese toestande (pH >6.5), verbind P hoofsaaklik met Ca en Mg in die grond om produkte te vorm wat normaalweg nie plantbeskikbaar is nie (Figuur 1). Dit kom meer algemeen in die besproeiingsgebiede voor, maar kan ook voorkom waar te veel kalk toegedien is. Dit is moeilik om pH in alkaliese gronde te verlaag, maar om P beskikbaarheid te bevorder vir gewas opname word dit soms aanbeveel om versurende kunsmisstowwe (soos ammoniumsulfaat) of versurende samestellings (soos elementêre S) in die plantvoor toe te dien om te help met die vrystelling van P in die wortel area.

Die beweegbaarheid van P in die grond is baie stadig, studies dui aan dat P selde meer as 10 mm beweeg in die omgewing waar dit geplaas word. Dit beteken dat die wortels met die P in die grond in aanraking moet

kom vir genoegsame opname. Met dit in gedagte is dit krities om 'n digte, fyn haarwortelsisteem te hê om P opname in die grond te bevorder. Gesonde wortels met 'n fyn wortelsisteem het 'n merkbare vermoë om gebinde P vry te stel uit grondminerale deur komplekse prosesse wat op die worteloppervlaktes voorkom. Dit sluit in die vrystelling van organiese sure wat minerale oplos waarmee die wortels in aanraking kom sodat hulle die P kan opneem. Indien daar grondtoestande bestaan wat wortelgroei belemmer (soos suurheid, kompaksie, versuiping of oormatige versouting), kan die P opname grootliks verlaag word. Dit raak nog 'n groter oorweging vir P opname in ouer ratoen siklusse waar daar groter afhanklikheid van die P in die grond grootmaat is deur die gewas. Eenvoudig gestel, hoe gesonder en digter die wortelstelsel is, hoe groter die waarskynlikheid dat die wortels P in die grond sal teekom en sal lei tot 'n groter opname deur die gewas.

Aangesien P sterk verbind met grondpartikels, is permanente verliese van P baie hoog deur die verwydering van grondpartikels deur afloop en erosie. Indien hierdie P-ryke partikels riviere en damme besoedel kan dit lei tot voedingstofverreiking (ook genoem eutrofikasie) en kan lei tot algeblom (wat lei tot verswakking van waterkwaliteit). Oormaat P kan ook verlore gaan deur loging vanuit sandgrond (hierdie verliese is minder algemeen).



Figuur1: Voorstelling van P immobilisasie deur Fe/ Al onder suur toestande en die presipitasie met Ca onder alkaliese toestande wat lei tot verlaagde plant beskikbaarheid van P.

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Die toets van grond is die korrekte benadering om P vlakke in die grond te bepaal en 'n kardinale stap in die bepaling van die korrekte toedienings vlakke van P kunsmis. Die korrekte tyd om P vlakke aan te spreek is tydens gewas vestiging met grondvoorbereiding waar genoeg P voorgeskryf word vir die plant siklus sowel as verskeie opvolg siklusse van die gewas. In grond met P tekorte (of P-vasgevangde kapasiteit) is daar waarde in genoegsame P toediening om die totale P-vlakke te verhoog. Hierdie P tree op as 'n P reserwe vir latere gewas benodighede wanneer die wortels die grond verken en dan toegang tot die bemestingstof verkry. Terwyl die voordeel van bandplasing al minder opmerklik raak in P-ryke gronde, is daar steeds waarde in plantvoor toedienning (of bandplasing met bedekking) van klein hoeveelhede P om beskikbaarheid vir vroeë gewasgroei te volhou. Waar 'n kweker beperkte toegang en nie die vermoë het om P reserwes op te bou met hoër P toedienings nie, is plantvoor of bandplasings van oplosbare P die aanbevole metode van aanwending om groter gelokaliseerde beskikbaarheid teweeg te bring.

Oppervlaktoediening van Pinratoengewasse het beperkte waarde aangesien P geneig is om in die grondoppervlak vasgevang te word. Tensy grond P-vlakke baie laag is en blaarmonsters gee'n aanduiding van tekorte in die ratoen, is dit gewoonlik nie die moeite of koste werd om P toe te dien nie. Nieteenstaande, indien tekorte voorkom word dit aanbeveel dat P reg langs die wortelarea ingesny word of in 'n vlak tussenryvoor begrawe word. Toediening op 'n oppervlakresidu (residu van groenrietkap) is ook effektief indien die P deur die oppervlakresidu gewas word tot op die grondoppervlak. Die residu deklaag bevorder vogtige toestande en moedig die groei van fyn haarwortels naby die grondoppervlak aan waar toegang tot die P verkry kan word.

Te veel van 'n goeie ding

Waar 'n kweker toegang het tot kraalmis en hoendermis moet oorweging en versigtigheid toegepas word waar hoëvolumes op 'n gereelde basis toegedien word. Hierdie produkte kan aansienlike hoeveelhede P bevat en herhaalde toedienings kan lei tot die opbou van 'n oormaat P in die grond. Vir verdere inligting en bystand ten opsigte van beste bestuurspraktyke in suikerriet, kontak jou Area Voorligter Spesialis of laai die nuwe P-inligtingsblad 7.4 af op die SASRI webblad (www.sasri.org.za).



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MAXIMISING YOUR RV

🖉 Seelan Naidoo (Industry Affairs Director)

Growers are paid in terms of the RV Cane Payment System which is based on the estimated amount of sugar and molasses that can be extracted from the cane, and not simply on the sucrose content of the cane. The RV payment system thus recognises that not all the sucrose delivered to the mill can be recovered. While the amount of sucrose that can be extracted during the milling process does depend on the amount of **sucrose** in the cane, sucrose recovery decreases as **fibre** and **non-sucrose** content in cane increases.

RV = SUCROSE - (sucrose lost in FIBRE) - (sucrose lost in NON-SUCROSE)

How RV is tested

The determination of quality factors (sucrose, fibre and non-sucrose) in cane delivered to the mill is an important aspect of the cane payment process. The Cane Testing Service (CTS) of the South African Sugar Association (SASA) is an independent and impartial body specifically formed to undertake this function. The system of cane testing employed in the SA sugar industry is of a high standard.

Three basic tests are conducted on your cane to determine Recoverable Value. In the first test, solids are removed from the juice through filtration and a refractometer is used on the filtrate to obtain a **brix** measurement. The brix measurement is a measurement of the sucrose, glucose, fructose and trace elements that are in solution.

A second analysis is used to measure the **sucrose content**. To calculate the **non-sucrose**, the sucrose measurement is simply subtracted from the brix measurement. Cane purity is the ratio of sucrose to brix, expressed as a percentage.

In a further test, the mass of a sub-sample of cane is measured before and after being placed in a constant temperature oven, with a forced heated air-draught for an hour. The difference in these masses represents the moisture content of the cane. By a further calculation, the **fibre** of the cane is determined.

Maximising cane yield and quality

Growers need to apply every measure possible to maximise sucrose production per hectare. The cane needs to be well grown with a high degree of attention and management given to the following:

- Soil health
- Variety choice
- Quality of seedcane
- Land preparation and planting
- Weed control
- Crop nutrition and fertiliser application.

At harvest, there are three key factors that need attention:

The cane needs to be mature when harvested which means harvesting the cane at the correct age and the appropriate time of the season for the variety concerned. Application of ripener and drying off practices are also important considerations. Use the SASRI PurEst® app to assist you with this. The app not only assists with making ripener decisions, but also can be used to assess the relative maturity of fields so that the most mature crops can be prioritised for harvest.

UPDATED Guide

We have just published a 2020 update of our Pest & Disease pocket guide. The guide contains a collection of pictures and identifiable traits for all common pests and diseases found in the South African sugar industry enabling easy identification should you come across them in the field. The guide is useful for on-farm scouting teams, Biosecurity teams and growers who require a quick reference in the field. The updated version includes new information on pests such as Yellow Sugarcane Aphid and nematodes

A complete isiZulu version is also available

Should you require printed copies of the guide, please contact our SASRI Library at **library@sasa.org.za.**

Alternatively visit the **SASRI eLibrary** (www.sasri.org.za) on the SASRI website to download your copy.



 Cane needs to be as fresh as possible when it reaches the mill. Cane starts to deteriorate rapidly beyond 48 hours after burning. So, try to ensure that cane is delivered within this period.

Paying attention to these three easy principles of **mature**, **clean** and **fresh** in the harvesting operation will ensure that you maximise returns and incur minimal losses under the RV cane payment formula.

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Late-Season Cane Quality Maintenance

🖉 Riekert van Heerden (Senior Scientist: Sugarcane Physiology)

We are now in that part of the season where cane quality (RV%) approaches a peak due to natural ripening of the crop by low winter temperatures and dry conditions.

Future growing conditions from late-winter until the end of the season at each mill may cause an extended RV% peak well into the late-season (under poor growing conditions) or the peak could be short-lived (under good growing conditions). In the latter case, certain chemical ripeners can be used to maintain high cane quality in the late-season. This article explains this concept and provides applicable recommendations.



The late-season cane quality maintenance concept

Chemical ripeners are typically used for ripening, i.e. to improve low cane quality caused by prolonged periods of vigorous growth. However, when cane quality is at a peak following prolonged slow growth during winter, certain ripeners can also be applied to mature cane during the months of August – October to **maintain** high quality in crops typically scheduled for harvesting during November – December. This use of ripeners maintains the high quality by delaying the onset of vigorous growth in response to late-winter/spring rainfall and warmer temperatures.



To remind growers of this potential opportunity, the latest version of the smartphone application **Pur***Est*^{*} (*ver 2.3.8, Feb 2020*) provides a late-season quality maintenance recommendation for all mature cane tested during the months of August, September and October. For sufficiently immature cane, the usual chemical ripening recommendations are provided. On the left is an example of the lateseason quality maintenance recommendation.

In this example all indicators point to a very mature crop at the time of testing. The estimated juice purity, RV% and stalk moisture of this crop is 89.9%, 13.5% and 68.9% respectively. However, if harvesting is only going to take place 6 - 8 weeks later, following good growing conditions in spring and early-summer, this crop becomes vulnerable to late-season quality loss. If the grower decides that there is a likely risk of this happening, the recommendation provided can be followed. It ultimately remains the grower's decision because **Pur**Est* has no insight into the current or likely future growing conditions or mill closing date.



Recommendations applicable to late-season cane quality maintenance

Not all late-season crops will be suitable for spraying. The following are important climatic, chemical and management recommendations when considering late-season cane quality maintenance:



- Prolonged drought stress that has reduced the leaf canopy to less than seven unfurled green leaves, frost-damaged cane, flowered cane, severe lodging and eldana infestation are risk factors that should be avoided. Crops suffering from these conditions should not be sprayed.
- Soil moisture reserves must be adequate to prevent drought stress for the duration of the treatment period. Return on investment will be best in seasons with good late-winter or early spring rainfall or where irrigation water supply is not restricted.
- Refer to SASRI Information Sheet 12.1 for detailed information on climate influence on chemical efficacy.

Chemical

- Products containing the active ingredient 2-chloroethyl phosphonic acid (e.g. Ethephon^{*}) are not suitable for late-season quality maintenance. The cane will be too mature at the time of spraying and the use of these products could lead to reverse responses (reduction in RV%) and increased occurrence of eldana.
- Only products containing the active ingredient trinexapac-ethyl (Moddus^{*}) or fluazifop-p-butyl (Fusilade Forte^{*} and other trade names) should be used for late-season quality maintenance.
- These products should be used in accordance with the product labels and recommendations in SASRI Information Sheets 12.4 and 12.5.



- Attention to detail regarding the appropriate spray-to-harvest interval is important. The first crops that could be considered for late-season cane quality maintenance are those harvested at the beginning of October. This is because of the long spray-to-harvest interval requirement when products are applied to these crops at the beginning of August.
- Spray-to-harvest intervals gradually shorten as harvesting progresses towards mill closure.
- Make use of the spray date guides in SASRI Information Sheets 12.4 and 12.5 or the spray date guide calculator in **Pur**Est* to determine appropriate spray dates.
- Carry-over of crops treated with fluazifop-pbutyl (Fusilade Forte[®] and other trade names) must be avoided at all cost. Do not apply to crops that will be harvested shortly before mill closure.
- Carry-over of crops treated with trinexapacethyl (Moddus^{*}) must also be avoided. However, as explained in SASRI Information Sheet 12.5, this product is more forgiving because the stalk growing point is not killed and growth can resume provided there is sufficient soil moisture for growth.

The economics of late-season cane quality maintenance

🖉 Riekert van Heerden (Senior Scientist: Sugarcane Physiology)

A research and commercial demonstration trial conducted during 2019 with two varieties provided some insight into the economic benefits of maintaining high cane quality in the late-season. In the one trial in Mpumalanga, trinexapac-ethyl (active ingredient in Moddus®) and in the other trial along the KZN south coast fluazifop-p-butyl (active ingredient in Fusilade Forte® and other trade names) was evaluated for this purpose. In both trials, product application occurred during September and harvesting during November.

The results indicated that:

- Cane quality in 12-month old November-harvested irrigated cane of variety N46 was effectively maintained by trinexapac-ethyl treatment.
- Cane quality in 18-month old Novemberharvested rainfed cane of variety N52 was effectively maintained by fluazifop-p-butyl treatment.
- RV% was maintained at levels of 1.0 1.2 percentage units higher than in the untreated controls.

- The additional income from the higher RV yields exceeded the ripening cost by far.
- Gross margin benefits exceeding R2300/ha were achieved.

Although these results point to very favourable economics, the response between seasons could vary considerably due to seasonal differences in late-winter and spring rainfall as well as the availability of irrigation water. The onset of warmer temperatures after winter also plays an important role. Early mill closing dates also reduces risk of quality loss after the season RV% peak has been reached. All these factors can influence the return on investment from late-season quality maintenance. In some seasons the return on investment will be greater than in others. As such, decisions regarding late-season cane quality maintenance should always be made on merit.

Late-season cane quality maintenance is being researched in a number of current SASRI research trials.



Laatseisoen Rietkwaliteit Instandhouding

Riekert van Heerden (Senior navorser: Suikerriet Fisiologie)

Ons is tans in daardie gedeelte van die seisoen waar rietkwaliteit (RV%) besig is om 'n piek te bereik a.g.v. natuurlike rypmaking in reaksie op lae wintertemperature en droë kondisies.

Toekomstige groeikondisies, vanaf laat-winter tot aan die einde van die seisoen by elk van die meulens, kan die RV%-piek tot diep in die laatseisoen in laat voortduur (onder swak groeikondisies) óf die piek kan van korte duur wees (onder goeie groeikondisies). In laasgenoemde geval kan sekere chemiese rypmakers aangewend word om hoë rietkwaliteit in die laatseisoen **in stand te hou**. In hierdie artikel word hierdie konsep verduidelik en toepaslike aanbevelings verskaf.



Die laatseisoen rietkwaliteit instandhouding konsep

Soos wat die naam aandui word chemiese rypmakers meestal vir die rypmaak van riet aangewend, m.a.w. om lae rietkwaliteit, wat deur lang periodes van goeie groeikondisies meegebring word, te verbeter. Wanneer rietkwaliteit egter 'n piek a.g.v. langdurige stadige groei gedurende winter bereik, kan sekere rypmakers ook gedurende Augustus – Oktober in volwasse riet aangewend word om die hoë kwaliteit in stand te hou. Dit is tipies die geval in riet wat gedurende November – Desember geoes word. Hierdie rypmakers handhaaf hoë kwaliteit deur welige groei, in reaksie op laat-winter/lente reënval en hoër temperature, te vertraag.



Om kwekers aan hierdie potensiële geleentheid te herinner verskaf die nuutste weergawe van die slimfoon toepassing **Pur**Est* (ver 2.3.8, Feb 2020) 'n laatseisoen kwaliteit instandhouding aanbeveling vir alle volwasse riet wat gedurende die maande Augustus, September en Oktober getoets word. Vir riet met voldoende onvolwassenheid word die gebruiklike chemiese rypmaker aanbevelings steeds verskaf. 'n Voorbeeld van hierdie laatseisoen kwaliteit instandhouding aanbeveling word hier links gewys.

In hierdie voorbeeld dui alle indikatore ten tyde van toetsing op baie volwasse riet. Die beraamde sapsuiwerheid, RV% en stronkvog van hierdie riet is onderskeidelik 89.9%, 13.5% en 68.9%. Indien die oes van hierdie riet egter eers oor 6 – 8 weke gaan plaasvind, in samehang met goeie groeikondisies in die lente en vroeg-somer, dan raak hierdie riet vatbaar vir verlies van kwaliteit in die laatseisoen. Indien die kweker die besluit neem dat die risiko hiervan hoog is, dan kan die aanbeveling links gevolg word. Die onus rus egter op die kweker om die finale besluit te neem, want **Pur**Est* het geen insae in die huidige of toekomstige groeikondisies óf die meul se sluitingsdatum nie.



Toepaslike aanbevelings rakende laatseisoen kwaliteit instandhouding

Nie alle laatseisoen riet sal geskik wees vir behandeling nie. Hieronder is belangrike klimaat-, chemiese- en bestuursaanbevelings rakende laatseisoen kwaliteit instandhouding:

Klimaat

- Langdurende droogtestres wat veroorsaak dat die blaredak minder as sewe oopgevoude groen blare bevat, ryp-beskadigde riet, blomriet, erge omval en Eldana besmetting is risikofaktore wat vermy moet word. Riet wat aan hierdie kondisies ly moet nie gespuit word nie.
- Grondvog beskikbaarheid moet voldoende wees om droogtestres vir die volle duur van die behandelingsperiode te voorkom. Winsgrense sal die beste wees in seisoene met goeie laat-winter of lente reënval, of waar besproeiingswater nie beperkend is nie.
- Verwys na SASRI Inligtingsblad 12.1 vir gedetailleerde inligting oor die effek van klimaat op chemiese effektiwiteit.

Chemies

- Produkte wat die aktiewe bestanddeel 2-chloroetiel fosfoonsuur (bv. Ethephon^{*}) bevat is nie geskik vir laatseisoen kwaliteit instandhouding nie. Ten tyde van toediening sal die riet veels te volwasse wees en kan die gebruik van hierdie produkte aanleiding gee tot omgekeerde reaksies (verlaging in RV%) asook verhoogde Eldana besmetting.
- Slegs produkte wat die aktiewe bestanddeel trinexapac-etiel (Moddus*) of fluasifop-p-butiel (Fusilade Forte* en ander handelsname) bevat moet vir laatseisoen kwaliteit instandhouding gebruik word.
- Hierdie produkte moet volgens die instruksies op die produketikette en aanbevelings in SASRI Inligtingsblaaie 12.4 en 12.5 gebruik word.

Bestuur



- Aandag aan die fyn detail in terme van die nodige toediening-tot-oes interval is belangrik. Die eerste lande wat oorweeg kan word vir laatseisoen kwaliteit instandhouding is dié wat vanaf die begin van Oktober geoes gaan word. Dit is a.g.v. die lang toediening-tot-oes intervalle wat vereis word wanneer produkte aan die begin van Augustus toegedien word.
- Toediening-tot-oes intervalle raak geleidelik korter nader aan die meul se sluitingsdatum.
- Verwys na die toedieningsdatum gidse binne SASRI Inligtingsblaaie 12.4 en 12.5 óf die toedieningsdatum gids binne Pur*Est** om die geskikte toedieningsdatums te bepaal.
- Die oorstaan van riet wat met fluasifop-pbutiel (Fusilade Forte[®] en ander handelsname) behandel is, moet ten alle tye verhoed word. Moenie hierdie produkte gebruik in lande wat baie na aan die meul se sluitingsdatum geoes gaan word nie.
- Die oorstaan van riet wat met trinexapac-etiel (Moddus^{*}) behandel is, moet ook verhoed word. Soos wat binne SASRI Inligtingsblad 12.5 verduidelik word, is hierdie produk egter meer toegeeflik omdat die riet se groeipunt nie doodgemaak word nie en verdere groei dus kan plaasvind mits voldoende grondvog wel beskikbaar is.

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Ekonomiese oorwegings verbonde aan laatseisoen kwaliteit instandhouding

Riekert van Heerden (Senior navorser. Suikerriet Fisiologie)

'n Navorsing- en kommersiële demonstrasieproef met twee variëteite gedurende 2019 het insae verleen in die ekonomiese voordeel wat behaal kan word wanneer hoë rietkwaliteit in die laatseisoen in stand gehou word. In die een proef in Mpumalanga is trinexapac-etiel (aktiewe bestanddeel in Moddus^{*}) en in die ander proef langs die KZN suidkus is fluasifop-p-butiel (aktiewe bestanddeel in Fusilade Forte^{*} en ander handelsname) vir hierdie doel geëvalueer. In beide proewe is die produkte gedurende September toegedien en het oes gedurende November plaasgevind.

Die resultate het aangetoon dat:

- Rietkwaliteit, in 12-maande oue besproeide riet van variëteit N46 wat in November geoes is, was suksesvol met trinexapac-etiel behandeling in stand gehou.
- Rietkwaliteit, in 18-maande oue droëland riet van variëteit N52 wat in November geoes is, was suksesvol met fluasifop-p-butiel behandeling in stand gehou.
- RV% is teen vlakke van 1.0 1.2 persentasie eenhede hoër as in die onbehandelde kontrole behandeling gehandhaaf.

- Die addisionele inkomste a.g.v. hoër RV opbrengs het die rypmaakkoste verbonde aan beide produkte by verre oorskry.
- Brutowins voordeel van meer as R2300/ha is behaal.

Alhoewel hierdie resultate op baie gunstige ekonomiese voordeel dui mag die reaksie tussen seisoene aansienlik varieer a.g.v. seisoenale verskille in laat-winter en lente reënval asook die beskikbaarheid van besproeiingswater. Die aanvang van warmer temperature na winter speel ook 'n belangrike rol. Indien die meul se sluitingsdatum vroeg is, dan sal die risiko van kwaliteitverlies nadat die RV% piek bereik is ook minder wees. Al hierdie faktore kan die winsgrens uit laatseisoen kwaliteit instandhouding beïnvloed. In sekere seisoene sal die winsgrens dus groter wees as in ander seisoene. Daarom moet besluite rakende laatseisoen kwaliteit instandhouding altyd op meriete geneem word.

Laatseisoen kwaliteit instandhouding word huidiglik in 'n aantal SASRI veldproewe verder bestudeer.

Understanding micronutrients and your crop

Louis Titshall (Senior Soil Scientist)

While soil micronutrients (iron, manganese, copper, zinc, boron) are important for crop nutrition, they are present at low concentrations in the soil and are required at even lower levels by the crop. Therefore, developing accurate soilbased guidelines has proven unsuccessful for most crops, including sugarcane. Soil testing is recommended to check micronutrient concentrations for potential deficiencies and to prevent problems developing. However, soil testing does not guarantee crop uptake due to the many factors that affect this. To be sure that the crop is taking up the element, leaf testing is advised. It is, however, not possible to provide micronutrient ameliorative rates based on soil or leaf test values as is done for macronutrients like phosphorus or potassium. Therefore, guidelines tend to be generic, and based on empirical responses from past trials, yet are conservative to avoid causing toxicity (given that overapplication of micronutrients can lead to plant toxicity).

In an effort to better assist growers and guide micronutrient management practices, several new micronutrient information sheets have been developed. These information sheets, which are available from the SASRI website, include:

7.8	Boron management	7.11 Copper management
	boronnanagonnone	

7.9 Iron management

- 7.10 Manganese management
- 7.15 Sugarcane leaf sampling and interpretation

7.12 Zinc management

Further resources

For further guidance, a series of "How to read your FAS analysis report" booklets for both leaf and soil tests have been created to assist growers with interpreting FAS reports. In addition, Information Sheet 7.3 Nitrogen Monitor Plots, contains useful management guidance on how N stripplot farm testing can be adapted to test for responses to micronutrient applications.

It is also worth noting that much of this information is also available in the SASRI Soils Handbook: Understanding and Managing Soils in the South African Sugar Industry.

Visit the SASRI website <u>www.sasri.org.za</u> to download these publications





Novacane® from the lab to the field

🖉 Sandy Snyman (Principal Scientist: Biotechnology)



Micropropagation (multiplication) of sugarcane via in vitro or tissue culture is a well-established practice in many parts of the world for the purposes of producing seedcane. Some of the advantages are that it is more rapid than conventional, whole stick-based propagation and diseases can be excluded from source material through lab-based processes. Furthermore, micropropagated material will be varietally pure and free of pests. However, thinner stalks and prolific tillering have been reported in the plant crop when this material is transferred to the field.

In the USA, sugarcane agronomists reported that these characteristics normalised in subsequent ratoons. Our own trials conducted on cultivars N12, N31, N41 and N48 showed that NovaCane®-derived stalks are indeed thinner and have a higher stalk population than settderived transplants. However, not all varieties show this tendency and there is no compromise on yield (biomass and ERC). A routine screening for visible differences of new cultivars entering the NovaCane® process will be undertaken to alert growers of the expected response at variety release. This practice will start this year, with the release of N74, onwards.

Phillemon Sithole (Agrometeorologist)

Review

Rainfall during the 2020 winter season (May to July) was generally well below normal, with an industry average of 47 % of the long term mean. There was some welcome relief around mid-June when good rainfall was recorded in Zululand and parts of the Midlands, but the rest of the industry, and the South Coast in particular, remained extremely dry throughout winter.

The 2020 winter season was one of the coldest in recent years, with average minimum temperature significantly below normal (figure below) for most parts of the industry. The cold winter, coupled with the dry conditions, resulted in a number of black frost events which caused considerable crop damage in the Midlands region.

Irrigation water supply during winter was generally stable, except for the Crocodile and Umfolozi river systems.

Outlook

The El Niño-Southern Oscillation (ENSO) is currently in a cool-neutral phase and is expected to develop towards a weak La Niña ahead of the 2020/21 summer season. Neutral ENSO conditions do not favour any specific rainfall category over eastern South Africa, but the La Niña phase is associated with above normal summer rainfall over the region.

The South African Weather Service, the International Research Institute for Climate and Society and the European Centre for Medium-Range Weather Forecasts all predict normal to above normal rainfall over the early summer months (October to December, 2020).

Please visit the SASRI WeatherWeb www.sasri.org.za for the latest industry weather reports and links to up-to-date seasonal climate forecasts.



Figure 1: Regional average monthly total rainfall (Rain) for April to July 2020, compared to the monthly long term mean (Rain LTM). The monthly average minimum temperature (Tmin) during the 2020 winter months (May to July) and the corresponding long term averages (Tmin LTM) are also shown.

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

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