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SOUTH AFRICAN SUGARCANE RESEARCH INSTITUTE
Unlocking the potential of sugarcane

Foliar application of nutrients

Studies suggest that there may be positive crop responses to foliar feeding (applying liquid fertiliser directly to the leaves) particularly where deficiencies are present. Read full article on ***page 6.***

DIRECTOR'S MESSAGE

Dr Terry Stanger *(SASRI Director)*

In April 2022, days of heavy rain across KwaZulu-Natal led to devastating floods, particularly in areas around Durban. The rainfall began on 9 April, with rainfall of between 66 and 131 mm, reaching peak intensity by 12 April, with rainfall of 304 to 311 mm.

Unpredictable storms struck again, a mere six weeks later in May, with the same areas receiving between 160 mm and 240 mm rainfall, again associated with significant hardship and destruction. Fortunately, neither the Mount Edgecombe site nor the SASRI research stations incurred any significant damage, however, in many rural areas critical infrastructure was severely damaged.

Following on from the RD&E Committees meeting in March at Komatipoort, the SASRI Research and TD&KE committees have approved fifteen pre-proposals (11 x Research and 4 x TD&KE) to proceed to full proposals. Once the final evaluation processes are completed, these new projects will be incorporated into the 2023/2024 Programme of Work.

An important workshop was convened at the end of March, to gain consensus amongst industry participants on the identity of varieties to be used for genetic modification. This will be used for increased insect and herbicide tolerance with a view to the commercial release of one genetically modified variety to the rainfed regions and another to the irrigated regions. The workshop was facilitated by Dr Hennie Groenewald (CEO: Biosafety SA) and attended by delegates from South African Sugar Millers' Association (SASMA), South African Farmers Development Association (SAFDA) and South African Canegrowers Association (SACGA). Technical information was provided by SASRI specialists to facilitate the decision-making process. The potential candidate varieties presented for consideration by the association representatives were newly released varieties or pre-release genotypes that had not been selected for release due to eldana susceptibility. After much deliberation, the two varieties chosen for genetic transformation are N71 for the irrigated regions and 10K0222 for the coastal regions. These were subsequently approved by the Sugarcane Research and Sustainable Agriculture (SRASA) Committee at its meeting on 10 May 2022.

With the 2023 Seedcane deadline looming, and due to several committee areas being unlikely to be compliant by March 2023, the SRASA Committee is currently reviewing the 2023 Seedcane deadline to make a recommendation to South African Sugar Association (SASA) Council. To progress this, each LPD&VCC (whether currently compliant or not), has been requested to provide a detailed plan of the specific challenges, objectives, milestones and guidance required to achieve and maintain compliance for review by the SRASA Committee.

Implementation of digitally based tools are progressing, and a webGIS application has been developed for the six SASRI research stations. The app may be used on mobile or desktop devices and will provide SASRI researchers with access to accurate geospatial information for the design, management and analysis of field experiments. A digital platform, based on the ArcGIS Survey123 technology, is also being rolled out to the SASRI plant breeding and biosecurity inspectorate functions. This will enable the in-field capture of data in a digital format ("smart forms"); seamlessly integrate these data into coherent databases, and facilitate the geospatial display and interpretation of data as required. In response to a request from growers, an application based on ArcGIS Survey123 technology has been developed and is being tested to allow growers to report and monitor Yellow Sugarcane Aphid (YSA) outbreaks in their regions. This geo-referenced data will provide valuable additional information on the outbreak, spread and intensity of YSA infestations in near real-time.

Topical Tips

Rowan Stranack *(Extension and Biorisk Manager)*

Yellow sugarcane aphid (YSA)

This damaging pest began to manifest itself over winter this year in high numbers. Outbreaks in the Lowveld, Midlands and parts of the coastal belt are warning signs that the pest could reach damaging proportions if not checked. Regular scouting is critical to warn of potential problems and to be able to apply insecticides timeously. Consult your SASRI Extension Specialist or Biosecurity Officer for advice.

Eldana and carry-over cane

In the southern coastal and Midlands rainfed regions there will, once again, be a significant area of additional carry-over cane. This could potentially place farms and areas at risk from excessive damage caused by eldana as populations build-up in older cane. In the Midlands, there are already indications that populations are increasing. Planning which fields to carry over and their spray programmes should be well advanced by now, but in the event of decisions still needing to be made, avoid carrying over susceptible varieties, fields prone to stress and, those which have flowered excessively.

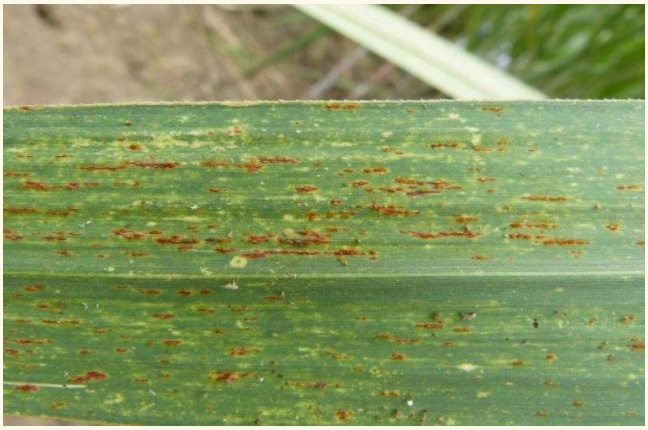
Your farm scouting team should be regularly going through fields to check eldana levels and damage. Low eldana numbers do not necessarily mean the pest is under control. Check the number of damaged stalks and the extent of red stalk. Your Extension Specialist will know the hazard levels for damage and whether fields can be carried over or not. If damage is high but live eldana numbers are low, it will mean the pest is still present but probably in the moth or egg phase and therefore not easily detectable. Check the size of the larvae recovered as well. Small larvae indicate a recent emergence that could increase. Larger larvae will indicate that they will soon pupate, and a new generation will emerge – at which time it will be good to apply one of the diamide insecticides. The late moth peak from September through to November should be targeted for insecticide application. Make sure to book your spraying contractor in time.

Flowering

Flowering has perhaps not been as bad this year as in the past two seasons but, where fields have flowered profusely, if possible, harvest these fields before the end of October at the latest, to prevent losses in RV yield. Do not carry over fields which have more than 20% flowered stalks.

Seedcane

Your Local Pest Disease and Variety Control Committee (LPD&VCC) must approve all seedcane that is sold. Make sure when buying seedcane that there is an appropriate certificate available from the seller. It is also important to inspect any seedcane to be purchased to satisfy yourself that it is the correct variety, the right age and that it is not stressed in any way, which might result in poor germination. Your Extension Specialist or Biosecurity Officer can assist if there is any doubt. Seedcane crossing LPD&VCC boundaries must receive clearance from both the sending and receiving LPD&VCCs. In the irrigated northern areas, smut roguing of commercial fields should be well under way by now. Getting in early and detecting smut when it is still in the incipient stage is critical to prevent the accumulation and spread of smut spores. Roguing can either be manual or chemical (*The Link* September 2018 page 14-15) and should be ongoing throughout the summer. Request help from your Biosecurity Officer for training of your staff in identifying smut.



Rusts

Orange rust appeared earlier this year and tawny rust has already been spotted this winter. Brown rust could also occur if conditions in spring favour its development. All these rusts could appear on susceptible varieties, so keep scouting throughout the year. However, all of the rusts can be effectively controlled with registered fungicides.

Irrigation

Currently, water supplies are still good in the irrigated areas and maximum advantage should be taken of the coming summer peak-growing season to obtain optimum yields. For this to be possible, irrigation systems should be fully functional. A quick checklist follows to ensure this is the case:

- Check the system and all pipes for leakages.
- Check the length of all draglines.
- Check pressure and flow rates at the pump, before and after filters and at field level (and compare with the design specifications).
- Check, clean and/or service filters, filter sand depth and condition (replace sand), air valves, pressure control valves, hydraulic valves, backwash valves and electronic connections.
- Check sprinklers for wear and replace nozzles if wear exceeds 5%, replace worn springs, washers, and nozzles.
- Flush mainlines, laterals and driplines.
- Chemically treat/clean dripper lines after harvest.
- Check the filter flushing cycle and reset if necessary.
- Check pivot motors, tower panel, main control cabinet and all switches.
- Plan and evaluate the irrigation scheduling programme.
- Clean all infield drainage pipes.

Late-season ripening

In the irrigated areas, late-season ripener application should be planned. Make sure there are eight or more healthy green leaves in cane to be ripened and take refractometer readings and use these together with the PurEst app to assess suitability of the cane for ripening and with which product.

Crop nutrition

Fertiliser prices have gone through the roof and as a result optimising every rand spent on crop nutrition should be a priority. Your fertiliser programme should be based on a comprehensive soil sampling programme. See article on Page 10, "Considerations to improve fertiliser use".

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. Glyphosate seldom, if ever, gives a 100% kill so a regular follow-up hand removal of regrowth is essential.
- Plan to incorporate an appropriate **green manure crop** if fallowing over the summer period. There are also useful mixed green manure crops available on the market these days. 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 that the orders for product can be placed timeously, allowing incorporation of lime and gypsum to be done next winter.
- Where the recent floods have caused damage to fields, it is best to wait until next winter to carry out any **major repairs** involving soil movement. Heavy summer rains could undo any repair work.
- **Planting in the peak summer months is risky**. Germination is frequently affected when soil temperatures are at their peak in December, January, and February, especially if there is one of the frequent dry spells. The spring and autumn months (provided soil moisture is adequate) are ideal for crop establishment. If you have to plant during these months make sure the setts are adequately covered and planted deep enough in moist soil to enable good germination.

Foliar feeding of nutrients

Dr Louis Titshall *(Senior Soil Scientist)* and Dr Thandile Mdlambuzi *(Soil Scientist)*

Foliar feeding (FF) refers to the application of nutrients to the leaf area of a growing crop (rather than to the soil). This potentially enhances nutrient use efficiency or the ability to overcome soil limiting factors that may be reducing uptake by the roots. Foliar feeding has not been commonly practised in sugarcane crops, and with limited research, the value of this approach remains unclear.

Some studies on macronutrient supplementary FF (i.e. used in conjunction with soil-applied basal treatments) have reported increases of between eight and 10 tons cane per hectare. It was not clear from these studies whether the gains were due to minor deficiencies that the FF remedied or some other stimulatory effect of the treatments.

Micronutrient deficiency studies

Studies on micronutrient FF are more common than for macronutrient applications. As micronutrient requirements are relatively low in sugarcane, it is easier to apply adequate amounts as foliar sprays. In South Africa, FF has been evaluated in alleviating deficiencies observed under field conditions. It was reported that soil treatment or FF of copper (Cu) or zinc (Zn) remedied these deficiencies in symptomatic crops. Foliar treatments gave more immediate results (responses within days); soil treatment took longer to give a response, but the benefit persisted for longer (several crop cycles).

Iron (Fe) deficiency (Figure 1) has also been found to be remedied by FF, and this approach tends to be better than soil treatments as it can be difficult to overcome soil-related constraints for Fe. Similarly, manganese (Mn) foliar spraying has also been found to be more effective than soil treatment where soil conditions limit Mn uptake (typically in calcareous soils).

Figure 1. Example of ratoon chlorosis in cane (within the red circle) caused by high pH in a sandy soil.

Is it worth applying foliar treatments?

While crop responses to FF are varied, many studies suggest that there may be positive crop responses, particularly where deficiencies are present. Furthermore, the rapid advances in drone-based spraying technologies may offer opportunities to use foliar treatments to overcome some nutrient constraints. However, there seems very limited value in trying to satisfy complete macronutrient requirements with foliar spraying.

Key constraints in this regard include:

- High plant requirements for macronutrients (especially nitrogen (N), and potassium (K)).
- Limitations on the concentration (typically between 2 and 5% solutions) so that leaf scorch/burn is avoided.
- Limitations on how much the crop can absorb at each treatment thus repeated applications will be necessary.
- The amount of water that can be sprayed to the crop at one time for leaf coverage but to avoid excessive wash off to the ground.
- Ground access for spraying standing crops may be limited.

Where non-severe macronutrient deficiencies are found, there may to be merit in applying "booster" foliar treatments to overcome these in that growing season. The typically lower phosphorus (P) requirement (compared to N and K) in sugarcane may provide scope to improve crop P status where root uptake is not adequate. In the case of micronutrient deficiency, FF seems to have greater merit, as crop responses are more consistent, while application rates tend to be much lower and thus more manageable.

However, foliar treatment will only remedy the current crop's deficiency, thus effort to identify and resolve the cause of the deficiency will provide a better long-term solution. Nonetheless, where a grower wishes to test the value of a foliar treatment, establishing a monitor plot to check crop response would be advised. In an area of several rows about 20 to 30 metres long, foliar treatment can be applied, and the response compared to the adjacent untreated area (or comparative soil treatment). As it is expected that foliar treatments will give a rapid response, the difference should become evident within days to a week or two (during periods of active crop growth) and will guide the decision to treat the entire field.

For a complete mini-review on the subject of foliar feeding, see *RD&E Feedback Communiqué (Northern Irrigated Region 2022)* – Issue 40 (available from SASRI eLibrary under "Corporate/Marketing").

A comprehensive guide to foliar fertilisation is also freely available for download from https://www.fertilizer.org/images/Library_Downloads/2013_foliar_fertilization_HR.pdf.

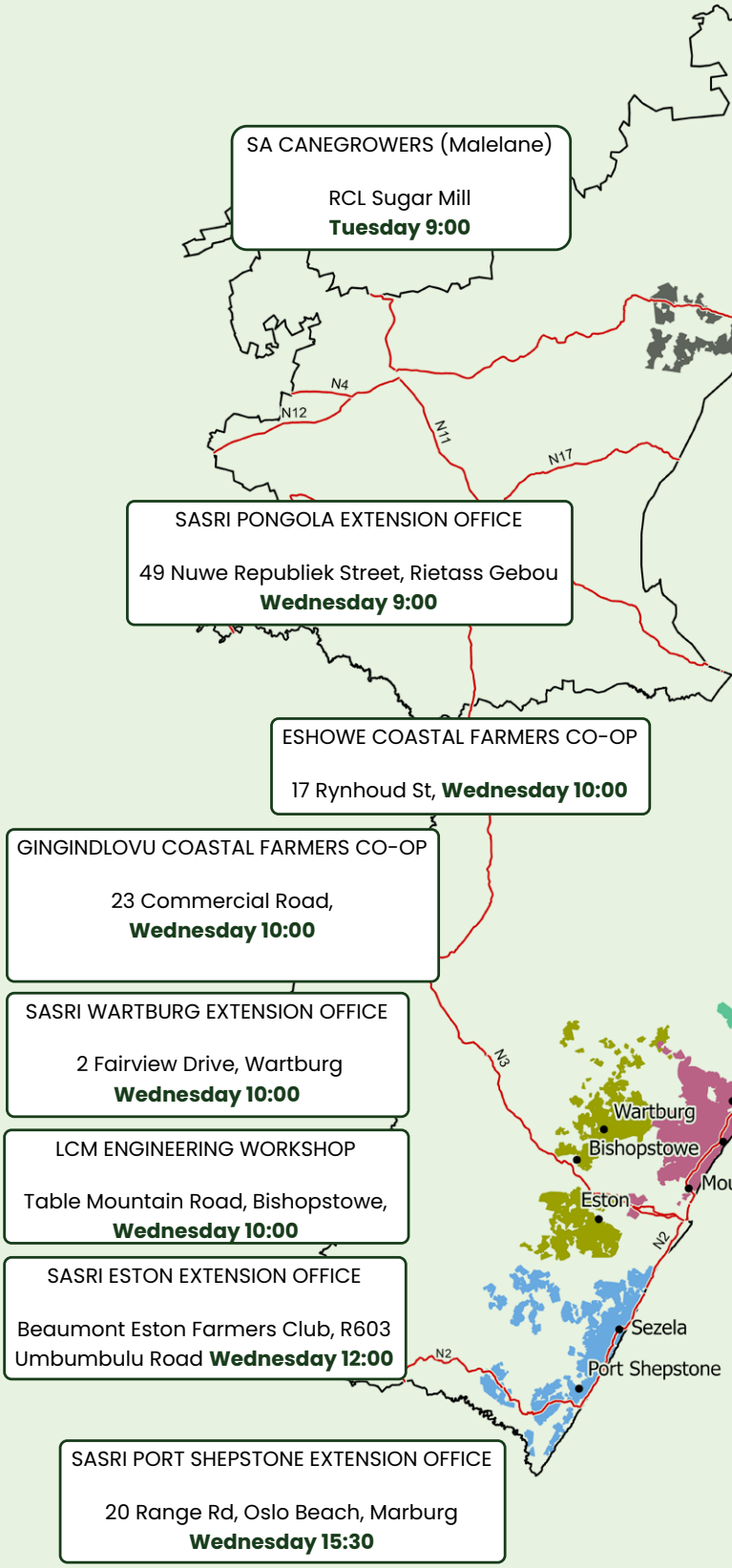
FAS provides se

Growers in regions that are far from SASRI (like in Pongola and the Lowveld) often ask why SASRI does not open a regional laboratory to ease submitting agricultural samples for routine fertility assessments.

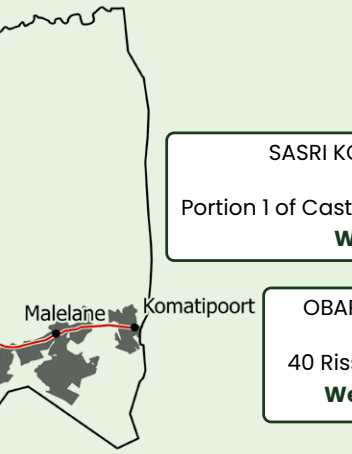
Unfortunately, the cost of establishing a laboratory is exceptionally high and can easily run into millions of rands, while operational expenses are also very high. To run such a laboratory will require a very large number of samples and, based on the current market size, it would not be economically feasible to establish an additional laboratory.

However, FAS has long recognised the need of growers to obtain impartial and reliable agricultural sample analysis and advisories from the SASRI laboratory based in Mt Edgecombe near Durban. Thus, to support growers that want to send samples to FAS, dedicated drop-off locations with a **FREE** courier service has been in each region. Samples, along with the relevant submission form, can be left at the drop-off zone and a scheduled courier service will collect and transport these samples to FAS.

Details of the drop-off locations and courier pick-up times are available on the FAS website (https://www.fasagrilab.co.za/drop-off-points/) and on the map shown here. The website also has information on the analyses FAS undertakes, guidance on proper sampling and the submission forms can be downloaded. You can also contact your regional Extension Specialist for guidance on obtaining soil sample boxes and submission forms.



rvices near and far!



SASRI KOMATI RESEARCH FARM

Portion 1 of Castilhopolis Farm, Mananga Road
Wednesday 12:00

OBARO KOMATIPOORT

40 Rissik St. Komatipoort,
Wednesday 12:00

SASRI MTUBATUBA EXTENSION OFFICE

House C1, Sycamore Avenue, River View, Mtubatuba **Wednesday 14:00**

MONZI VILLAGE

Monzi South Gate **Wednesday 14:00**

EMPANGENI COASTAL FARMERS CO-OP

6 Fifth Street, Kuleka, **Mon, Weds & Fri**

SASRI EMPANGENI EXTENSION OFFICE

Mimosa Court, 13 Turnbull Str.
Mon, Tues & Wed 10:00

STANGER COASTAL FARMERS CO-OP

6 Smithers Rd **Wednesday 12:00**

SASRI UMHLALI EXTENSION OFFICE

The Workstation, 1 Old Main Road, Umhlali,
Monday 13:00 & Wednesday 10:30

SASRI MOUNT EDGECOMBE
170 Flanders Drive

Monday to Friday 07:00 to 16:30

SASRI SEZELA EXTENSION OFFICE

2 Smuts Avenue, (Opposite Illovo Sugar Mill Admin Block),
Monday and Wednesday 14:30

SASRI Kunsmis Aanbevelings Diens (FAS)
– verskaffer van dienste wyd en vêr!

Kwekers in vêr afgeleë areas soos Pongola en die Laeveld vra gereeld waarom SASRI nie 'n area gebonde laboratorium oopmaak vir die indien van landbou monsters vir roetine grondvrugbaargeidstoetse nie?

Ongelukkig is die koste verbonde aan so 'n laboratorium buitensporig hoog en kan maklik miljoene rande beloop. Boonop is die bedryfskostes van so 'n laboratorium ook baie hoog. Om so 'n fasiliteit te regverdig sal 'n baie hoë aantal grondmonsters verg en onder huidige toestande en mark grootte is dit nie ekonomies haalbaar nie.

FAS het lank reeds die nood vir so 'n onpartydige diens raakgesien waar kwekers betroubare ontledings en advies kan bekom. Dit word verskaf van hul SASRI laboratorium by Mt Edgecombe naby Durban. Om die kwekers wat FAS wil ondersteun en gebruik vir roetine ontledings, is 'n GRATIS koerier diens ingestel vanaf elke streek.

Monsters, gepaardgaande met die korrekte ontledingaansoekvorm kan by geidentifiseerde afsetpunte gelaat word waar 'n koerierdiens dit sal optel en na FAS vervoer.Besonderhede van die afsetpunte asook die opteltye van monsters is beskikbaar op die FAS webtuiste (https://www.fasagrilab.co.za/drop-off-points/) en word op die kaart aangedui.

Die webtuiste bevat waardevolle inligting oor die ontledings deur FAS aangebied asook leiding ten opsigte van die korrekte prosedure in die neem van grondmonsters. Die ontledingaansoekvorms kan ook van die webtuiste afgelaai word. Die plaaslike Voorligter Spesialis kan gekontak word om grondmonsterboksies en aansoekvorms te bekom.

Considerations to improve fertiliser use

Dr Louis Titshall *(Senior Soil Scientist)* and Rowan Stranack *(Extension and Biorisk Manager)*

Fertiliser prices have reached record highs. Under these conditions, it is important to adopt practices that improve the effectiveness of your fertiliser investment.

Sampling and testing

Soil and leaf testing will help you gauge which nutrients are in excess, adequate or in short supply, as well as highlighting potentially crop-limiting conditions.

Soil and leaf testing are essential in determining the nutrient requirements for your crop and for evaluating the success of your nutrition programme. Ensure proper sampling protocols are followed to ensure sample representation.

Soil health

Remove or manage crop limiting conditions such as acidity, compaction, waterlogging and salinity and sodicity as these reduce the efficiency of fertiliser use.

Constraints such as acidity (left) or waterlogging (right) will greatly reduce the ability of the crop to utilise applied nutrients.

Realistic target yields

Providing realistic target yield estimates will improve the fertiliser recommendation you receive from Fertiliser Advisory Service (FAS).

Ensure you provide a realistic target yield for nutrient recommendations, as a smaller crop will generally require less nutrients than a high yielding crop.

Using the 4R's to better use nutrients

The 4R's refer to the **R**ight source (type), rate, placement and timing of application of fertilisers.

Right Source	Right Rate	Right Placement	Right Timing
Select fertilisers that reduce the risk of losses in a given situation, and that will supply the crop with the required nutrients.	Under-and over-application of nutrients can lead to yield loss, unnecessary costs and environmental pollution.	This can affect how easily the crop can access and use the applied nutrients, as well as the risk of losses.	Coinciding nutrient application with periods of crop-need improves uptake by the crop while reducing losses.

By considering all these factors to optimise nutrient use by the crop, it may be possible to refine your fertiliser rates and find savings through efficient use.

When could you consider adjusting or reducing fertiliser rates?

- If you routinely apply excessively high rates "just-in-case" or if soil tests indicate adequate phosphorus (P) and Potassium (K), you are very unlikely to get a crop response to the extra application.
- If you routinely apply a blend containing nutrients not required in that crop cycle – switch to an alternative source that better matches requirements.
- If the previous seasons leaf testing indicates excessive uptake of a nutrient, consider cutting back on the following seasons application rate.
- If the previous seasons crop underperformed, you may have residual nutrients left in the soil and reductions are often possible (mainly P and K).
- After accounting for all nutrient inputs (e.g. filtercake, manures) and by adjusting your conventional fertiliser application rates accordingly.
- In acidic soils that are limed, you can reduce Nitrogen (N) application in the year or two after liming due to improved N mineralisation.
- In high organic matter soils (>2% OM), consider reducing N rates on replant cycles.
- Cut N rates in plant crops which were preceded by legume crops.
- Try maintaining a balance in nutrient supply (even if applied at lower rates) rather than dropping one nutrient in favour of another.

- In the short term (one or two seasons), consider reducing or cutting P application in ratoon crops where soil tests indicate sufficient P levels or large amounts of P were applied in the preceding seasons.
- Your target yield given during sample submission was higher than is likely for the coming season.

Monitor plots can be used to evaluate if reduced N application rates will negatively impact crop performance. Visit the SASRI Crop Nutrition webpage for information and guidance on best practices in sugarcane nutrition (https://sasri.org.za/crop-nutrition/).

Monitor plots can be a useful tool to evaluate adjustments to your nutrition programme, in particular N. In the above picture, by applying a high rate to test plots on the left, it became apparent within a short period of time that the crop would respond to extra N. If no or small differences appear, it indicates that additional N is not likely to improve yields. Where these tests are done before the cane reaches the "out-of-hand" stage, it increases the opportunity to more easily apply an additional amount of fertiliser if required.

Out and about with SASRI

Kalisha Naicker *(Publications Officer)*

Given the dramatic increases in fertiliser prices, SASRI Senior Soil Scientist, Dr Louis Titshall addressed growers at several grower days and study groups in Pongola, Felixton, Eston, Eshowe, Amatikulu and Table Mountain over the past couple of months. He said that the high prices (and often lack of availability) have had many growers asking what could be cut without compromising yields and profit. Principles and strategies for optimal use of fertilisers were discussed, while consideration was given to conditions where growers could lower fertiliser rates in the short-term.

At an Umfolozi grower day, SASRI's Sugarcane Physiologist Dr Riekert Van Heerden presented ripening results from the variety trial hosted at UVS, as well as results from ongoing ripener trials in Pongola. He also discussed various ripener treatments, and how the different varieties respond to each of the treatments.

Thobile Nxumalo, SASRI's Variety Evaluation Scientist, presented the performances of the various varieties in the Umfolozi trials, as well as some of the Pongola variety trials.

These presentations aimed to assist growers in making informed decisions when it comes to choosing which variety to plant that will best suit their conditions, and to ensure that growers get maximum returns from their varieties by using the most effective chemical ripening strategy.

For more information on grower days, contact your local Extension Specialist.

Updates on the SASRI website

Kalisha Naicker *(Publications Officer)*

SASRI is pleased to announce that we have now updated our Information Sheets on our website.

These Information Sheets capture all SASRI recommendations arising from decades of agronomic research. Information sheets serve as quick reference sources, as well as guidelines and advice on the management of the sugarcane crop.

We've streamlined menus, simplified navigation, enhanced and optimised content for mobile devices allowing our users to access recommendations quickly and easily.

The sheets are listed in series numbers ranging from Series 1 to Series 10: Series 1- Planting, Series 2- Harvesting, Series 3- Varieties, Series 4- Cane Quality Management, Series 5- Irrigation, Series 6- Soil Health & Conservation, Series 7- Soils & nutrition, Series 8- Pests, Series 9- Diseases and Series 10- Weeds.

To download or view these information sheets, please visit the eLibrary on the SASRI website (https://sasri.org.za/e-Library/).

The effects of salts on so

Dr Rianto Van Antwerpen *(Senior Soil Scientist)* and Dr Thandile Mdlambuzi *(Soil Scientist)*

The accumulation of salts in soils used for agriculture is one of the most common soil-related problems worldwide. It is, however, regarded as less important compared to soil erosion and acidification by producers. The reason for this is, in part, its slow development; it occurs almost unnoticed until it is too late, by which time significant losses would already have occurred over many years. This condition nearly exclusively occurs in the irrigated regions of the sugarcane industry but is reversible if the correct approach is followed.

What are salts and how do I test for it?

Saline soils

Figure 1: Locating the distribution of salts in soils to a depth of 1.5 m using electromagnetic induction (EMI) scanning.

Salts in soils are divided into two categories. The first is where soils contain a high load of calcium (Ca) and magnesium (Mg), and the soil is said to be "*saline*". The effect on the plant is stunted growth, as it must work harder to extract water from the soil. Another common sign is wilted cane in relatively wet soils. Adding more water might improve the situation but can easily lead to over-irrigation causing anaerobic conditions in the soil with a negative impact on yield. If the anaerobic condition persists for weeks, it will lead to stool mortality. The correct action in this case will be to submit a soil sample for analysis to Fertiliser Advisory Service (FAS) to confirm the problem and to identify the type of salt present in the soil. This is required to determine the correct procedure to lower the load of the type of salt in the soil. If the problem is salinity, it can be corrected by applying water of acceptable quality to leach the salt. However, most important is to determine the drainage capacity of the soil. if an impervious layer is present at depth, then artificial drains must be installed to facilitate drainage and thus removal of the salts.

Sodic soils

Figure 2: Stool mortality due to toxic concentrations of sodium. Note the highly dispersed soil with a crust, reducing water infiltration significantly leading to increased run-off and erosion.

The second category relates to soils where the dominant salt type is sodium (Na). In the sugar industry, this type of salt is nearly always table salt or sodium chloride, and this is described as a sodic condition. This is the worse of the two salt types and will cost more to remove – provided the soil is adequately drained. Signs that will help identification are a sealed soil surface with a crust appearance and spots with poor cane growth. However, in reality, the structure of the soil has collapsed, and the

ils and sugarcane yield

depth affected depends on the source of the salt (parent material or soil surface) and the duration (time) of its presence. In severe cases the sodium content might have reached toxic levels, killing the crop. Soil samples from three depths must be submitted to confirm the type of salt. Should a sodic condition be confirmed, then leaching on its own will take an enormously long time to remove the salt. In this case the sealed surface must be opened and kept open. Ploughing or ripping will not be sufficient as the soil will simply collapse and seal again with the application of water. For this reason, it is advised to apply gypsum (quantity as recommended by FAS) on the surface followed by large quantities of organic matter (50 to 100 tons/ha). The role of the organic matter is to keep the soil from collapsing (thus keeping alleys open for water to flow) and the gypsum is to release Ca to replace the Na to be leached by the water. The application of gypsum and organic matter make the reclamation of a sodic soil an expensive exercise, but will speed up reclamation from many years to within a year or two.

What are the yield losses due to salts?

The general rule is that 2 tons/ha of cane is lost for every 1% that the exchangeable sodium percent (ESP) is higher than the threshold of 7%. This is the minimum rate of yield loss and the maximum rate measured for sugarcane was 10 tons/ha for every 1% ESP above the threshold value. Should your soil have an ESP value of 15% than yield loss will be between 16 and 80 tons/ha for the affected spots. Losses can therefore be substantial and even more so if it occurs yearly. It is therefore important to know the yield variability of fields and to correct it should it be due to salts.

What does it cost to install artificial drains?

The cost of installing drains depends on the soil's clay content, the area to be drained and the method used by the contractor. The cost to drain clay soils could be double that of sandy soils as the drain spacing will be closer and the total length of pipe to be installed double. General guidelines for those considering the installation of artificial drains are currently around R69/m using 100 mm diameter slotted pipe and 20 m pipe spacing for clay soils (500m/ha) and 40 m spacing for sandy soils (250m/ha).

The decision to install drains is guided by the type of soil and its properties and for certain soils it is unavoidable. The need to reclaim soils is determined by the management style of the producer and it is avoidable. Here, an old saying is true: "Prevention is better than to cure". For more information contact your local Extension Specialist and visit the information available on the SASRI website.

Collection of soil samples to assess its saline/sodic condition.

Take samples from three depths and submit for saline/sodic assessment. The reason for the three depths is to establish the origin of the salts. The further the three depths reach into the soil, the clearer the source of the salts become. The standard recommendation is to collect samples at depths 0-30, 30-60 and 60-90 cm. It is also advised to submit a water sample at the same time (see below).

The collection of a water sample.

At the source or point of irrigation water delivery, rinse a clean container at least ?? times with water from the source. At a hydrant or tap fill the container and seal tightly. At an open water source (i.e. dam or canal) keep the container closed with your thumb and reach as far as possible away from the side to a depth of about 15 cm and fill the container. Mark the container clearly with your contact details and your annual rainfall and submit as soon as possible to FAS.

WEATHER

Phillemon Sithole *(Agrometeorologist)*

Review

Parts of coastal KwaZulu-Natal were hit by severe flooding in April 2022 that caused severe damage to infrastructure with more than 400 lives reported lost. Some sites in the North Coast and South Coast regions recorded over 350 mm within a 48h-period. More flooding was experienced again in May when the same areas received up to 250 mm, causing further damage, but thankfully no further loss to human life was reported.

The flooding caused extensive damage to cane fields and farm infrastructure particularly roads and bridges which will take a while to repair, with total losses estimated at R223 million. Direct damage to cane fields was estimated at 2,500 ha, mostly restricted to the coastal parts of the North Coast and South Coast regions. A few mills in the affected areas were not able to crush for at least a few days, but the Gledhow mill only resumed crushing a month later. Crop growth remained good due to the widespread rainfall (Figure 1), but cane quality dropped drastically, especially in lodged carry-over fields.

Minimum temperature this winter has thus far been largely mild, with very little frost damage reported in the frost-prone areas. Irrigation water supply remains excellent in all irrigated areas and no water restrictions are anticipated for the remainder of the season.

Outlook

The El Niño-Southern Oscillation (ENSO) is currently in a La Niña phase and is projected to be in a weak La Niña from the 2022 spring season through to early 2022/23 summer. The neutral phase is expected from mid-summer. The La Niña phase is generally associated with normal to above normal summer rainfall in eastern South Africa and therefore normal to above normal early summer rainfall can be expected.

The *South African Weather Service*, *International Research Institute for Climate and Society* and the *European Centre for Medium-Range Weather Forecast* all predict normal to above rainfall for the industry during the upcoming spring, into early summer, season.

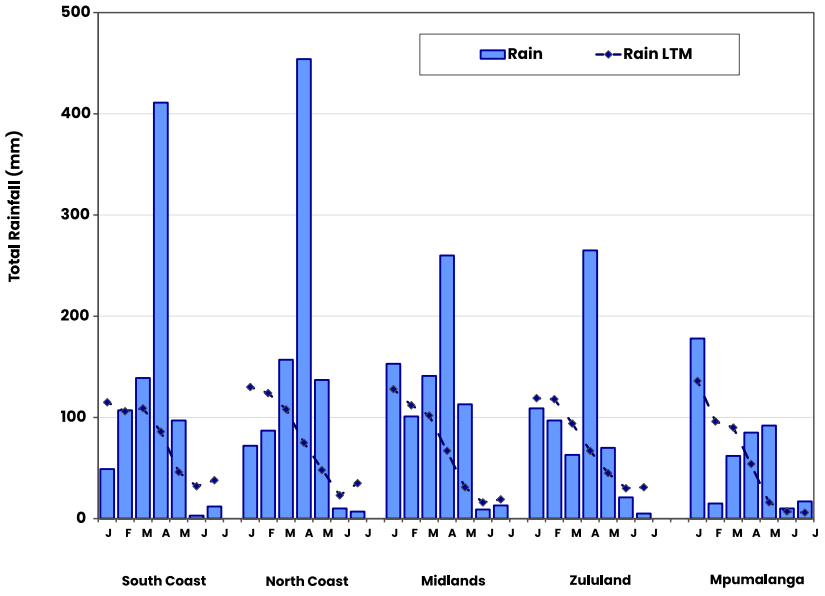


Figure 1: Regional average monthly total rainfall (Rain) for January to July, 2022, compared to the monthly long-term means (Rain LTM).

Please visit the SASRI weatherWeb https://sasri.sasa.org.za/weatherweb for the latest industry weather reports and links to up-to-date seasonal climate forecasts.

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