Published by the South African Sugarcane Research Institute

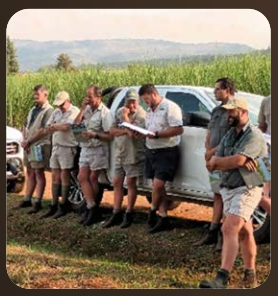
THE LINK

September
2023
Volume 32. Number 3

In this issue...

El Niño's dry summer can escalate pest and disease issues. The article on ***page 6*** features insights on mitigating major threats like eldana, YSA, and smut during these conditions.

Orange rust *(Puccinia kuehnii)* has been positively identified on sugarcane in South Africa. Growers are urged to look out for symptoms on all varieties and ages of cane in all regions ***(page 13).***



SASRI's vital contribution to advancing the sugarcane sector involves proactive knowledge-sharing with growers. The article on ***page 14*** showcases recent grower day events.

Exciting technology for ripening of small-scale grower fields!

SOUTH AFRICAN SUGARCANE RESEARCH INSTITUTE
Unlocking the potential of sugarcane

The recent entry of crop spraying drones into the SA sugarcane industry brings exciting chemical ripening opportunities to the small-scale grower sector as these drones can be used to effectively apply chemical ripeners in fragmented small-field environments. Read more about a recently completed proof-of-concept SASRI project on ***Page 8.***

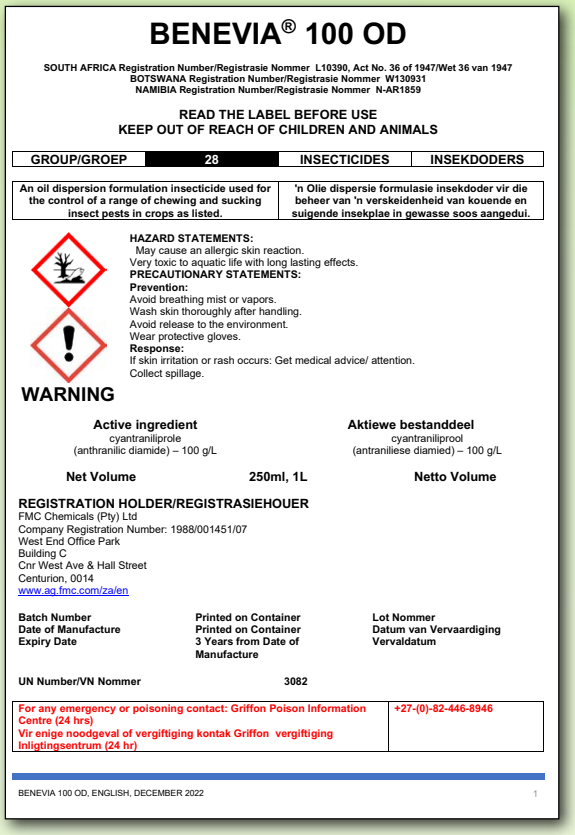
Director's MESSAGE

Dr Terry Stanger

This time last year many of our sugarcane growing areas were still recovering from the devastating April 2022 rainfalls. It seems that every year arrives with its own unique challenges; the continuing uncertainty created by the Tongaat Hulett business rescue, first announced at the end of September 2022, has continued to place some pressure on SASRI. However, we have demonstrated resilience and remained committed to serving the South African sugar industry.

Pests and diseases have remained areas of concern. Orange rust now occurs in all regions of the industry, being reported in the Midlands for the first time in February this year, and in Mpumalanga after the February floods. At this stage, conditions on the Umfolozi Flats seem to be particularly favourable, with severe infections being observed in some fields. Infections in the rest of the industry this past season have generally not been as widespread or severe as originally anticipated. However, it is still early days and the SASRI Biosecurity Inspectorate continues to monitor and report on orange rust incidence in all Pest and Disease Control Areas. Research to improve our understanding of the disease in the SA industry is ongoing.

Eldana remains a problem in some areas due to much higher-than-normal carry-over cane. In some regions, the infestation is significant, exceeding the local hazard level, which has required the issuance of harvest orders. In most cases, these high levels of eldana were found in old cane, beyond the optimum harvest age, owing to ongoing issues with mill performance. However, there were also some isolated instances where cane intended for next season (2024/2025) already exceeded the hazard level, necessitating early harvesting. The threat of eldana remains severe, especially with the likelihood of old cane remaining a factor in managing cane on coastal and midlands farms. Greater focus is needed to ensure potential problem fields are treated before eldana reaches hazardous levels. Positive news is that there is a new insecticide available for use as a treatment to control eldana. Benevia® (active ingredient: cyantraniliprole), one of the diamide chemistries, has been registered for control of certain insect pests including eldana and YSA. It is effective on young larvae and eggs and has some translaminar movement in the plant, making it also effective against YSA.



BENEVIA® 100 OD

SOUTH AFRICA Registration Number/Registrasie Nommer L10390, Act No. 36 of 1947/Wet 36 van 1947
BOTSWANA Registration Number/Registrasie Nommer W130931
NAMIBIA Registration Number/Registrasie Nommer N-AR1859

READ THE LABEL BEFORE USE
KEEP OUT OF REACH OF CHILDREN AND ANIMALS

GROUP/GROEP	28	INSECTICIDES	INSEKDODERS

An oil dispersion formulation insecticide used for the control of a range of chewing and sucking insect pests in crops as listed.

'n Olie dispersie formulasie insekdoder vir die beheer van 'n verskeidenheid van kouende en suigende insekplae in gewasse soos aangedui.

HAZARD STATEMENTS:
May cause an allergic skin reaction.
Very toxic to aquatic life with long lasting effects.
PRECAUTIONARY STATEMENTS:
Prevention:
Avoid breathing mist or vapors.
Wash skin thoroughly after handling.
Avoid release to the environment.
Wear protective gloves.
Response:
If skin irritation or rash occurs: Get medical advice/ attention.
Collect spillage.

WARNING

Active ingredient
cyantraniliprole
(anthranilic diamide) – 100 g/L

Aktiewe bestanddeel
cyantraniliprool
(antraniliese diamied) – 100 g/L

Net Volume 250ml, 1L **Netto Volume**

REGISTRATION HOLDER/REGISTRASIEHOUER
FMC Chemicals (Pty) Ltd
Company Registration Number: 1988/001451/07
West End Office Park
Building C
Cnr West Ave & Hall Street
Centurion, 0014
www.ag.fmc.com/za/en

Batch Number
Date of Manufacture
Expiry Date

Printed on Container
Printed on Container
3 Years from Date of Manufacture

Lot Nommer
Datum van Vervaardiging
Vervaldatum

UN Number/VN Nommer 3082

For any emergency or poisoning contact: Griffon Poison Information Centre (24 hrs)
Vir enige noodgeval of vergiftiging kontak Griffon vergiftiging Inligtingsentrum (24 hr)
+27-(0)-82-446-8946

BENEVIA 100 OD, ENGLISH, DECEMBER 2022 1

Seedcane has been a prominent topic lately due to several areas not meeting the seedcane deadline of March 2023. Earlier this year, each Local Pest Disease and Variety Control Committee (LPD&VCC) provided a detailed plan of the specific challenges, objectives, milestones and guidance required to achieve or maintain compliance. In March 2023, SASA Council approved interim measures until 2028 to monitor LPD&VCCs' progress toward compliance with the original Seedcane 2023 deadline. Under these interim measures, non-compliant LPD&VCCs will be required to report to SASA on progress every six months. Within the proposed five-year period of interim measures, SASA, through the LPD&VCCs, will agree on and publish appropriate remedial operations in the event of non-compliance.

To complement small-scale grower training initiatives on soil health and conservation practices, teaching aids and several two-minute videos have been developed. These resources will upskill DARD Agricultural Advisors in soil science and conservation agriculture practices. The materials will then be utilised by the Agricultural Advisors during their ongoing interactions with small-scale growers.

With the World Meteorological Organisation predicting a full El Niño phenomenon developing later this year, SASRI has released Extension Newsletters alerting growers to the high probability of a dry summer. Eldana infestations intensify during periods of below-normal rainfall. Yellow sugarcane aphid (YSA) also thrives when the crop is stressed. The newsletters provide detailed recommendations (customised separately for the irrigated, coastal and midlands regions) on limiting the impact of these pests through a range of field practices. See article on page 6.

Junior Certificate Course

in Sugarcane Agriculture

Secure your spot for the next Junior Certificate Course in Sugarcane Agriculture which is held in October 2023 and March 2024.

The Junior Certificate Course has been relocated to the Shukela Training Centre starting October 2023. Shukela Training Centre (STC) is dedicated to Training Today's People for South Africa's Tomorrow.

This three-week course is designed to enhance the performance of sugarcane farmers. It focuses on developing best farm management practices and essential skills for both farmers and their workers. The course places a strong emphasis on sustainability across all four pillars: human, social, economic, and environmental.

The course is tailored for a diverse audience, including new entrant farmers, experienced professionals in the sugar industry, and young individuals seeking knowledge about sugarcane production for employment opportunities.

For further details, please feel free to reach out to:

Philisiwe Gomba on 031 508 7706/ philisiwe.gomba@sasa.org.za

Nkuthalo Mthembu on 031 508 7748 / 060 520 1064/ nkuthalo.mthembu@sasa.org.za

Nolwazi Madlala on 031 508 7736 / 082 655 8563/ Nolwazi.Madlala@ sasa.org.za

Don't miss out on this incredible opportunity!

Topical TIPS

Rowan Stranack *(Extension and Biorisk Manager)*

Crop management

With the possibility of a drought and resulting 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, because 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.

Flowering

Flowering has been profuse across most of the industry. Unfortunately it is inevitable this season that flowered cane will have to be carried over and so if possible try not to carry over cane with more than 20% flowered stalks. Also, be on the lookout for delayed flowering, particularly in the variety N12, where flowers often emerge in late spring. One can check for this by slicing open the top of the cane stalk to reveal the apical meristem to see if a flower has formed. It is advisable to carry out these checks regularly and early enough so that fields for carry-over can be changed if possible.

Crop nutrition

One of the major areas of focus during dry years is crop nutrition. In addition to the long-term soil health issues already mentioned, what type of fertiliser, how much and when to apply are always important considerations, even more critical during dry spells.

In this regard it is useful to remember the four Rs (See SASRI Information Sheet 7.1 *Developing a nutrient management programme*) 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 Rs are established by taking a soil sample and having it analysed by FAS. Timing and placement can be advised by consulting with your SASRI Extension Specialist.

Fertiliser and ameliorants form a significant part of the farm budget so provide realistic yield targets with your sample submissions. It is a waste fertilising for yields which are not achievable due to weather or other factors.

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. In dry times, splitting becomes even more important, and the second application could possibly be done away with if it gets really dry.

Test plots can always be used to monitor the response to applied nitrogen in particular and action taken according

to the response in the state of the crop (See Information Sheet 7.3 *Nitrogen management: N-Monitor plots*).

When could you consider reducing fertiliser rates? One obvious scenario is when a drought is predicted. Also, 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 applications, especially if it is dry.

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 season's leaf testing indicates excessive uptake of a nutrient, consider cutting back on next season's application rate.

If the previous season's 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. organic manures) adjust your conventional fertiliser application rates accordingly. In acidic soils that are limed, you can reduce Nitrogen (N) application in the year 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, as per FAS recommendation. Try maintaining a balance in nutrient supply (even if applied at lower rates) rather than dropping one nutrient in favour of another. K is an important nutrient required to enable the crop to survive a drought. Do not eliminate this nutrient entirely if it is recommended, rather cut back the mixture proportionately.

Grouping soils on your farm into soil management units, e.g. all deep red clay soils or shallow grey sandy soils will help prioritise and manage fertiliser applications to ensure minimal losses and appropriate timing and placing of fertiliser. This, together with a comprehensive soil and leaf sample history, are necessary to effectively address all potential limiting factors and to obtain maximum yields.

Irrigation

Although considerable challenges with loadshedding remain, water supplies are still adequate in the irrigated areas, and maximum advantage should be taken of the coming summer peak growing season to obtain optimum yields. A strong El-Niño is expected to set in this summer, so check irrigation systems and hardware thoroughly to ensure optimal irrigation.

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.
- Check the filter flushing cycle and reset if necessary.
- Check pivot motors, tower panels, main control cabinet and all switches.
- Clean all infield drainage pipes.

Plan and evaluate your irrigation scheduling programme. Germinating and very young cane requires less than 50% of the water requirement of mature cane. Avoid over irrigation.

Finally, do not remove or burn tops, the mulch helps to reduce soil water loss from evaporation.

Late season ripening

In the irrigated areas, late-season ripener-application should be planned. Make sure there are 8 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 product recommendations.

Pest Management
during a dry summer

Rowan Stranack *(Extension and Biorisk Manager)*

There is much talk about the possibility of a strong El Niño this coming summer. Whether this occurs or not should not stop us from being prepared in every way possible. The severe droughts of the past have taught us valuable lessons which could cost us greatly if ignored.

Dry conditions not only affect yields, but an increase in certain pests and diseases is also likely. There is a high demand on management during these times with extra attention needed for operations such as irrigation scheduling, fertiliser application and weed control.

SASRI has several decision support tools (DSPs) available which growers can use to create possible yield scenarios for the coming season, based on region, locality, soil TAM and your chosen weather outlook. StalkGro and MyCanesim Lite are two such DSPs available on the SASRI website (https://www.sasri.org.za) or via your local SASRI Extension Specialist.

Attention should be given to basic soil health and moisture conservation measures to help the crop survive droughts. Correcting subsoil acidity, compaction, salinity and sodicity are vital to creating a friendly root-zone where the crop can extract sufficient water and nutrients to survive. The addition of organic matter will also help. This can be achieved by mulching or at least not burning crop residues after harvest, but rather spreading these.

The major pest and disease threats in a dry summer are likely to be eldana, YSA and smut.

Eldana

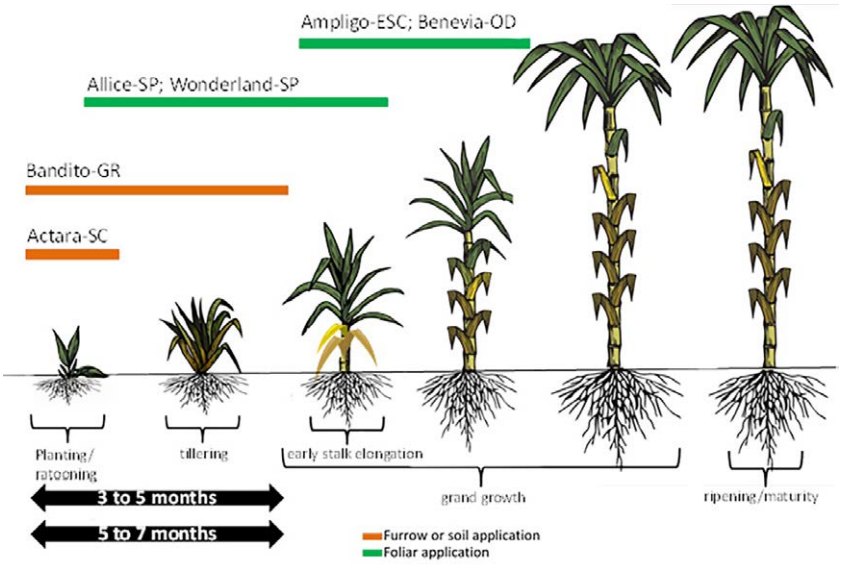
The problem of unplanned carry-over cane could well be with us for a while in some areas. However, even in normal planned carry-over cane, the threat of a build-up of eldana exists. During a drought, old cane places farms and areas at risk from excessive eldana damage since populations build up as the 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 eldana susceptible varieties, and fields with soils that are prone to stress.

Your farm scouting team should be regularly going through fields to check eldana levels and damage. Last season, many growers were caught out by either not spraying at all, or not completing their spray programmes during the late moth peak. The price paid for this was in badly damaged cane and poor cane quality at the start of the season; some of the cane being unmillable and rejected. 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. Drench treatment requires application within a day or two of harvest and does not necessarily provide long-lasting eldana control. Follow-up scouting will determine the need for further treatment.

There is a new diamide-based chemistry available for the control of eldana, YSA and thrips; Benevia® 100 OD. Growers should be following IRAC compliant spray options timed to achieve maximum efficacy of the various insecticides while preventing resistance build-up. Examples of IRAC spray programmes for 12, 18 and 24 month crops are available from your Extension Specialist.

Yellow sugarcane aphid (YSA)

While levels of this elusive and potentially damaging pest declined over winter this year, there are now signs of the pest, and incidence could escalate rapidly if it gets very dry. In the irrigated regions, YSA is already affecting certain varieties such as N57 and N23. In problem areas, growers have been successful in containing it through early detection and preventative spraying. Regular scouting is therefore vitally important to avoid potential problems. Carefully consider treatment of outbreaks and consult your SASRI Extension Specialist or Biosecurity Officer for advice. For timing of applications for the control of thrips and YSA ,see registered treatments below.



Smut

In the irrigated northern areas, smut roguing of commercial fields should be well under way by now. Getting in early and detecting smut when still in the incipient stage is critical to prevent the accumulation and spread of smut spores. Roguing can either be manual or chemical *(See information sheet 9.12 Roguing)* and should be ongoing throughout the summer. Consult your local SASRI Biosecurity Officer or Technician for assistance with training staff to identify smut in its early stages.

Unfortunately, smut is becoming a problem in certain varieties in the southern rainfed regions. The popular variety N59 has recorded high levels of smut in past seasons and, if urgent measures are not taken, we are likely to lose this excellent variety. The variety N54, popular in the midlands regions, is also proving highly susceptible to smut, and control measures are also urgently required to preserve this variety.

Dry conditions in summer could favour the spread of smut across all regions, so be vigilant.

Enabling small-scale grower sugarcane quality management

Dr Riekert van Heerden ***(Senior Scientist - Sugarcane Physiology)***

In South Africa, chemical ripeners are mostly applied by air onto sugarcane fields to improve low cane quality. Through manipulation of plant growth processes these chemicals accelerate stalk ripening. Large-scale growers that implement chemical ripening best practice, unlock RV yields, and associated economic benefits on their farms. An important component of this best practice is informed decision-making about the need for chemical ripening on a field-by-field basis. The **PurEst®** smartphone application, together with a hand-held refractometer, enable growers to make these decisions. In contrast to large-scale growers, small-scale growers (SSGs) in South Africa generally have not experienced the benefits of chemical ripening. The small field sizes, and the spatially fragmented distribution of fields, make it difficult and dangerous for conventional aerial crop-spraying methods to accommodate the cane quality management needs of SSGs.

The recent availability of crop-spraying drones in South Africa creates chemical ripening opportunities for SSGs because of the ability of these drones to effectively apply chemical ripeners in fragmented small-field environments. Furthermore, the **PurEst®** smartphone application can assist these growers with decisions about ripening and harvest scheduling. A technology development project, recently completed by SASRI, introduced cane quality management principles, the **PurEst®** smartphone application, and crop-spraying drones to the SSG sector. The project was founded on a network of participatory demonstration trials in different SSG communities.

Small-scale growers and other participants at a stakeholder engagement workshop in the Richards Bay region.

Demonstration trial fields were identified in 11 diverse SSG regions in KwaZulu-Natal and Mpumalanga. At each demonstration trial location, a stakeholder engagement workshop was convened with the SSGs, community leaders, contractors, government Agricultural Advisors, SASRI Extension Specialists, representatives of the two industry canegrower associations, and cane-procurement personnel from the local sugar mill to create awareness of the project.

Small-scale growers and other participants attending a drone spraying field day in the Pongola region.

These workshops were followed by a field day at each trial site where the concepts of cane maturity assessment and chemical ripening decision-making were introduced. Each demonstration trial field was then sub-divided into an unsprayed (control) and ripener treatment. On the agreed spray date, a field day was convened so that the SSGs and other participants could witness the drone application of the ripener (fluazifop-p-butyl in all trials). Shortly before the planned harvest date, another field day was convened at each demonstration site to introduce the concepts of ripener efficacy assessment and harvest scheduling.

In-field estimations of cane yield and RV% with the **PurEst**® application before drone spraying, and again before harvest, were used to estimate the RV yield response to ripening. Economic analysis involving consideration of RV yield response and input costs related to ripening, harvesting and cane transport to the mill were conducted to estimate the gross margin benefits (R/ha) from ripening.

Aerial photo of a small-scale grower drone ripening demonstration trial in the Mtwalume region. The colour contrast between the control (left) and ripened (right) part of the field can be seen.

A total of 16 drone ripening demonstration trials in association with 48 field days were conducted during the project. This participatory approach led to direct and frequent interaction with SSGs and other industry participants. The ripener treatments led to RV yield increases of between 0.21 – 1.78 t/ha in the various demonstration trials. The magnitude of RV yield response depended on trial location, variety, and climatic conditions during trial execution. Economic analysis revealed gross margin benefits from ripening in the range of R1567 – R8896/ha, which compares well with observations made in large-scale grower demonstration trials. The yield and economic results were shared with the small-scale growers and other stakeholders at post-trial grower days.

Small-scale growers and other participants attending a grower day in the Komatipoort region where demonstration trial findings and potential adoption barriers were discussed.

These demonstration trials elicited considerable interest amongst SSGs in chemical ripening and drone spraying technology. However, during the interactions with the growers it became evident that there are several challenges that will have to be tackled to bridge the gap between demonstration and wider implementation at a mill supply level. Some of these challenges, together with possible solutions, will be addressed in a follow-on knowledge exchange project currently under development by SASRI research and Extension Specialists. The new project will aim to facilitate pilot implementation of drone ripening in SSG regions at mill supply level to improve SSG profitability.

Seedcane
- from laboratory to field

Kalisha Naicker *(Publications Officer)*

A field day organised by the South African Sugar Industry Agronomists' Association (SASIAA), themed "Seedcane - from laboratory to field," provided a remarkable opportunity for attendees to witness the NovaCane® tissue culture process. This experience provided attendees with an exceptional opportunity to gain a comprehensive understanding of the seedcane journey, its challenges, and the innovative techniques employed along the way.

SASRI's Principal Biotechnologist, Dr Sandy Snyman, outlined the NovaCane® process which utilises tissue-culture techniques in a laboratory to reproduce disease-free, true-to-type sugarcane plants. The process begins with the careful selection of healthy donor plants, ensuring their suitability for tissue culture. Small sections of the donor plant, known as explants, are carefully excised and decontaminated to eliminate any potential microbial contaminants.

Once decontaminated, the explants are placed onto a nutrient-rich growth medium containing essential minerals, vitamins, and plant growth regulators. The medium is optimised to provide the necessary components shoot multiplication. After a series of subculturing steps, root development is stimulated. Once the shoots have well-formed roots, they are ready for acclimation to real world/ ex-vitro conditions. This involves gradually exposing the plantlets to the external environment, starting with greenhouse conditions and eventually transitioning to the open-field conditions.

Gareth Chittenden, owner of Zululand Nurseries, then described the cultivation and hardening-off techniques employed for NovaCane® plantlets in their well-managed commercial nursery. This provided attendees with a deeper understanding of the procedures necessary to ensure the successful growth and adaptation of NovaCane® plantlets.

Rowan Stranack, SASRI's Extension and Biorisk Manager, shed light on the legal aspects associated with seedcane production. This comprehensive overview equipped attendees with a thorough understanding of the regulatory framework surrounding the NovaCane® tissue culture process.

Participants were privileged to embark on a tour led by farm manager Hercules Maritz, exploring the rich history and operations of Colin Hohls' Sunset Farm. This experience provided valuable context and insights into the practical application of the NovaCane® technology.

SASRI's Agricultural Engineer, Dr Peter Tweddle, led a visit to a plot of N78 NovaCane® and provided an overview of a new SASRI project focused on the agronomic management of NovaCane® plantlets. This segment offered attendees a glimpse into ongoing research and development efforts aimed at optimising the growth and productivity of NovaCane® plantlets in the field.

The field day culminated with a lunch at the picturesque Sunset Farm dam, allowing participants to reflect on the events of the day.

Rat damage in Eston

Sharon McFarlane *(Senior Plant Pathologist)* and Paul Botha *(Extension Specialist)*

In June this year, an Eston grower reported large dry patches in some mature, lodged fields of N62. On inspection, sections of the affected stalks, in particular the growing point, showed evidence of chewing damage. Rats were identified as the cause of the damage, with the lodged cane providing a perfect shelter and environment for the rats to feed.

Rats are an important pest in other sugarcane industries, including Australia where the reduction in cane and sucrose yield can be as high as 30% in damaged fields. Sugar Research Australia reports that the rats feed mainly on shoots and seeds of grasses and broadleaf weeds in summer, but as temperatures and rainfall decline, sugarcane becomes an important food source. Damage tends to be more common in maturing fields that border non-crop areas where the rats breed.

Their recommendations to manage populations include keeping fields weed free and slashing back verges to prevent grasses and weeds going to seed. Owl nesting boxes and artificial perches are also recommended. Research on barn owl populations in Florida has shown that a family of 5-6 owls can consume up to 3 000 rats a season. Some sugarcane growers in the region, where rat damage was estimated to cause losses of $30 million per annum in the 1970s, now report that they have eliminated the need for rodenticides since installing barn owl boxes on their farms.

While rats would be well protected from predators (like owls) in cane fields, particularly when lodged, breeding populations of the rats would be vulnerable to predators in the non-crop areas.

Responsible management

of empty pesticide packaging

Anushka Gokul *(Agrochemical Scientist)* and Slindile Nqayi *(Assistant Research Officer)*

The mismanagement of agrochemical waste can have detrimental effects on the environment and human health. Agrochemical waste includes any substance, solution, material or any items containing chemical residues that are no longer in use, including empty pesticide containers. The re-using, selling or donating of hazardous waste or nominal packaging is unlawful. Furthermore, according to National Environmental Management Waste Act No. 59 of 2008, it is a criminal offence to bury or burn hazardous waste and nominal packaging.

Risks associated with agrochemicals waste containers

- Burning hazardous waste and improper disposal of agrochemical containers can have serious consequences, including injuries and property damage.
- Agrochemical waste may contain flammable or combustible materials, increasing the risk of accidents.
- Dumping and burying empty agrochemical containers can lead to soil, water, and ecosystem contamination.
- Agrochemical containers should never be used for domestic purposes to avoid potential health hazards.
- Exposure or ingestion of hazardous substances from agrochemical waste can cause acute or chronic health issues, including poisoning.
- To minimise risks, it is crucial to follow guidelines for proper agrochemical waste management.

Cleaning and discarding of agrochemicals waste containers

CropLife SA has a well-structured empty pesticide packaging management programme in place since 2012. The association currently boasts a national network of 181 certified recyclers. Furthermore, CropLife SA has developed decontamination protocols for various pesticide packaging together with standardised decontamination and disposal statements for pesticide labels.

Growers are encouraged to assist with the management of empty pesticide packaging by adequately cleaning empty pesticide packaging according to the "*CropLife SA Farmer Guidelines*" and thereafter recycle the cleaned packaging through the CropLife SA certified recycler network.

The guidelines recommend triple rinsing the container as it removes approximately 99.9% of chemical residues. Before triple rinsing agrochemical containers, the correct PPE as indicated on the product label should be worn. Fill the empty container quarter-full with water and shake thoroughly for 30 seconds. The water used to rinse the containers should be decanted into the tank mixer for spraying or into separate container for waste disposal. This should be repeated three times. Thereafter the container should be punctured before it is collected by a certified service provider for recycling or safe disposal.

Additional information or details of a certified service provider in your area visit www.croplife.co.za under "Container Management" tab.

CropLife South Africa is a non-profit industry association that serves and represents responsible manufacturers, suppliers and distributors of sustainable crop protection, public health and plant biotechnology solutions in South Africa.

ORANGE RUST UPDATE

Sharon McFarlane *(Senior Plant Pathologist)*

After the orange rust incursion in February 2022, incidence declined in May 2022, while the incidence of brown and tawny rust increased. The good spring-early summer rains in 2022 favoured the development of orange rust, with new infections first being reported from Umfolozi in early January 2023. The disease was observed in the Midlands for the first time in February 2023, and in Mpumalanga after the February 2023 floods. It is now present in all Pest and Disease Control Areas. Growers were advised to apply a registered fungicide in the problematic fields.

At this stage, the Umfolozi Flats seem to be particularly favourable for orange rust, with several varieties showing mild to severe infections. While symptoms in this area were most severe from January to April, fresh infections continued through July, although symptoms were mild.

Time of year when rust infections can be expected (dark shading indicates most favourable periods for infection):

Orange	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Brown	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Tawny	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Over 60% of commercial varieties have shown some susceptibility to infection. Infections were mild on most of these varieties under favourable conditions. However, some varieties have shown moderate to severe symptoms in some instances.

As of date, no orange rust has been observed on the following varieties: N36 (Irrigated / Rainfed) and N54, N55, N56, N59, N61, N67, N72, N74, and N77 (Rainfed).

However, severe infections have been recorded in some fields planted to the following varieties:
N23, N41, N49, N60, and N70 (Irrigated), and N52, N62, N63, N66, and N76 (Rainfed).

The SASRI Biosecurity Inspectorate continues to monitor and report on orange rust incidence in all Pest and Disease Control Areas. Research to improve our understanding of the disease in the SA industry, through yield loss and monitoring trials, is ongoing.

For more information, please contact your local Extension Specialist.

Out and about

SASRI advances the sugarcane industry through collaboration and innovation

Kalisha Naicker *(Publications Officer)*

SASRI plays a crucial role in advancing the sugarcane industry by actively sharing knowledge with growers. The institute remains at the forefront of enhancing yields and cane quality. Recent events organised by SASRI have exemplified the institute's unwavering commitment to collaboration and innovation in pursuit of these goals.

During June, grower days were held at the SASRI Research Stations in Pongola and Mpumalanga. Senior Plant Breeder, Dr Marvellous Zhou, presented data collected over several years, showcasing the breeding process of two promising new sugarcane varieties specifically tailored for the Irrigated Region. These meetings served as platforms for discussion and collaboration between SASRI scientist and growers. Local growers observe the varieties and engaged in discussions regarding their performance and traits. These varieties will undergo evaluation and approval by industry committees before being released to the Local Pest, Disease, and Variety Control Committees.

In keeping with the spirit of knowledge exchange, SASRI Extension Specialists organised a well-attended event at the Umhlali Country Club, catering to North Coast growers. This event, which also took place in June, focused on sugarcane variety options, their agronomic characteristics, and their yield performance within the specific local growing conditions. Additionally, experts delved into the crucial aspect of effectively managing cane quality within these varieties. Thobile Nxumalo, SASRI's Variety Evaluation Specialist, and Riekert van Heerden, SASRI's Cane Quality Management Specialist, shared their valuable insights and expertise with the growers, empowering them to make informed decisions and optimise their farming practices.

To further empower growers with knowledge about fertiliser spreaders and their specifications, a field day took place on 20 June at Mattison Farm in Empangeni. This exhibition showcased fertiliser spreading equipment providing growers with the opportunity to engage in fruitful discussions with industry professionals.

At a grower day in Midlands North, SASRI Biosecurity Officer, Janet Edmonds, provided a crucial update on the eldana situation in the region, shedding light on the current status. Stuart Rutherford, SASRI's Principal Scientist: Integrated Pest Management, offered valuable advice to growers, detailing effective strategies to mitigate the adverse effects of both eldana and yellow sugarcane aphid (YSA), especially in the light of anticipated El Niño conditions developing later this year.

Soren Bruce from SA Canegrowers further highlighted the substantial financial impact that eldana imposes on the industry each season. SASRI Extension Specialist, David Wilkinson, elucidated the consequences of carry-over cane on both cane quality and the prevalence of eldana infestations in the region. To add to the learning experience, there was a demonstration on the utilisation of drones as an effective means of applying eldana-controlling chemicals.

To find out more about grower days in your area, contact your local Extension Specialist.

Weather

Phillemon Sithole *(Agrometeorologist)*

Review

Average rainfall during autumn and up to mid-winter (March to July) 2023 was generally near normal despite below average rainfall in March and April, while May rainfall was well above average across the industry (Figure 1). Soil water, and consequently crop status, over this period remained generally good in the rainfed areas. Irrigation water sources also remained stable, with all major sources at or near full capacity. No water restrictions are anticipated for the foreseeable future. However, rolling blackouts (load shedding) continue to add strain on irrigation operations with many growers unable to irrigate fully, leading to considerable crop stress in some fields. The impact of the blackouts on crop status will likely worsen as we approach summer, with crop water demand increasing with increasing temperature.

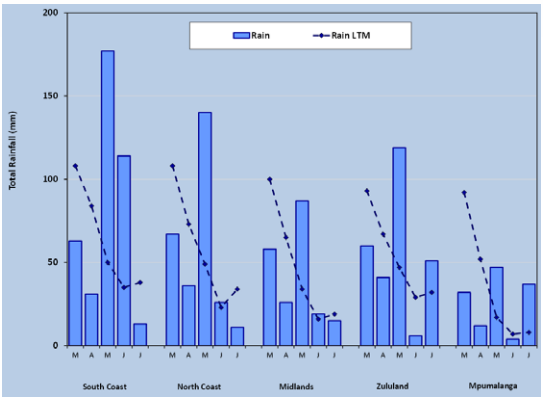


Figure 1: Regional average monthly total rainfall for March to July 2023 compared to the monthly long-term means (LTM).

Outlook

The El Niño-Southern Oscillation (ENSO) is now in a warm phase and the Climate Prediction Center issued an El Niño advisory in July 2023.

As of mid-August 2023, the previously moderate El Niño conditions strengthened further and are expected to last till autumn 2024. El Niño conditions are generally associated with warm and dry summer in Southern Africa (Figure 3) including eastern South Africa, therefore, below average rainfall can be expected during the 2023/24 summer months. SASRI has already distributed Extension Newsletters for the Midlands, Coastal and Irrigated regions indicating what mitigating activities growers needed to consider to minimise crop stress in those areas.

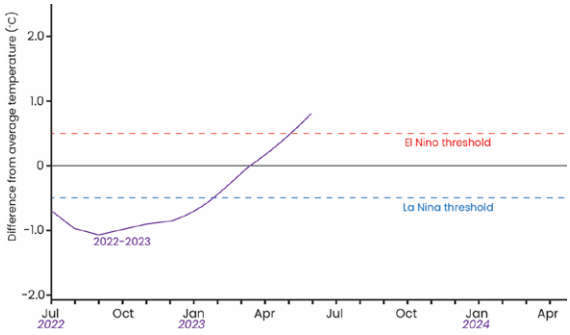


Figure 2: Monthly sea-surface temperature in the Nino 3.4 region of the tropical Pacific. The current El Niño event (purple line) reached the El Niño threshold in June 2023 (*source: NOAA Climate.gov*).

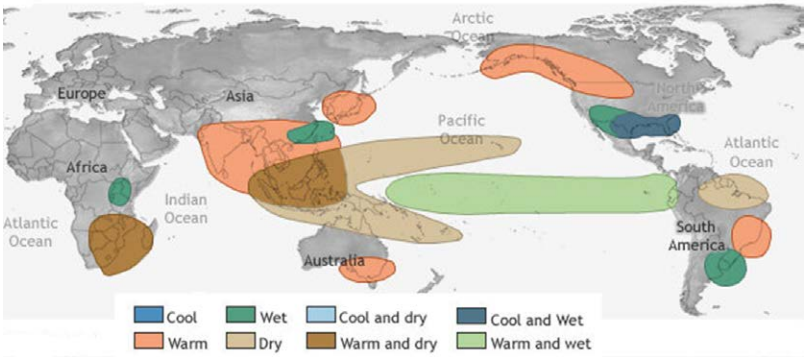


Figure 3: Map showing the general global El Niño climate impacts during December to February.

The South African Weather Service predicts slightly above-normal rainfall, while the *International Research Institute for Climate and Society* and the *European Centre for Medium-Range Weather Forecast both* predict normal rainfall, the early summer months (October to December 2023) for most of the industry. Above average minimum and maximum temperatures are expected.

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.

Editorial Team: *Kalisha Naicker, Poovie Govender, Michelle Binedell, Iona Basdew, Sharon McFarlane, Ruth Rhodes, Terry Stanger, Rowan Stranack, Riekert van Heerden, Anushka Gokul and Phillemon Sithole.*

Layout & Design: *Wayne Mthembu*
Publication Details: *Published three times a year in January, May and September.*

Feedback & Enquiries:
Email: pubs@sugar.org.za
Website: www.sasri.org.za