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There have been serious YSA outbreaks requiring growers to be on high alert for this pest. Scouting must begin before visible symptoms appear. The article on **page 4** outlines an interim scouting method for early YSA detection.

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 of the industry (**Page 10).**

SASRI's sugarcane production Certificate Courses are currently run at both junior (three weeks) and senior (five week) levels. To find out entry requirements and registration details, see **page 13**.

Drone ripening to transform sugarcane farming for small-scale growers

SASRI
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. Read full article on **page 8.**

Director's message

Dr Terry Stanger

With the relaxation of the Covid-19 restrictions, SASRI has had a busy start to the new year. Whilst observing the required safety protocols, it has been wonderful to have more face-to-face meetings.

After nearly a two-year absence the Junior and Senior Certificate courses are back on SASRI's programme. Utilising the KwaShukela Auditorium and observing the current legislated maximum of 50% of the venue capacity we are able to accommodate 60 attendees. Towards the latter part of 2021 the first Junior Certificate course since the beginning of the pandemic was held, followed by a Senior Certificate course in February and a second Junior Certificate course in March. A further Senior Certificate course is planned for June.

A highlight for the first quarter of 2022 was the RD&E Committees meeting with a focus on the northern irrigated regions hosted by SASRI at Komatipoort on 8 March. Attendance was some of the best SASRI has experienced with 33 stakeholders and 27 SASRI staff present in person. There was robust discussion during the break-aways, and forty-four topics were raised by the attendees. Currently the SASRI research team at Mount Edgecombe and Extension are in the process of evaluating these and considering projects that would be proposed for the 2023/2024 Programme of Work. Thanks to RCL for making their Tenbosch Lapa available for the meeting.

Pests and diseases continue to pose a major threat to the industry. In November 2021 cane cutters found several longhorn beetle larvae in a sugarcane field being harvested in the Entumeni containment area, very close to the area where a similar outbreak occurred at the same time last year.

Intensive surveys in adjacent fields revealed the outbreak was most probably confined to the first 17-hectare field where it was found. Eradication orders were issued on this and adjacent potentially high-risk fields. The situation continues to be monitored. Fortunately, no adult beetles have been seen to emerge.

In mid-February, serious outbreaks of yellow sugarcane aphid (YSA) at similar levels to those which have occurred in this region in recent years, once again became evident on the North Coast. Although not as severe as the North Coast outbreaks, YSA is currently present across all regions of the local industry. Mozambique, Zambia, Zimbabwe, Eswatini and Tanzania have also all reported serious out breaks of this pest. The complexities and biology of this pest continue to frustrate both researchers and growers.

In late February, Orange rust was positively identified on sugarcane in the South African sugar industry for the first time. Orange rust spores were detected in a spore trap in the Mpumalanga Lowveld on two occasions in recent years, but this is the first time the disease has been positively identified on cane. This is a major concern for the industry; the emergency response plan has been activated and the SASRI Biosecurity Inspectorate is currently undertaking a survey across the industry to determine the prevalence and severity of the incursion. Further updates will be shared once additional information is available.

Research, Development and Extension workshop for the Irrigated North regions

Every year, at the start of the research cycle, SASRI holds a Research, Development and Extension workshop to identify and prioritise regional issues affecting the cultivation of sugarcane. These issues are then carefully scrutinised and form the basis of either new research projects or form part of a knowledge exchange plan to share what knowledge may already be available on the subject.

This year's event took place in March in Komatipoort and attracted a healthy representation of growers from the region. Facilitated group discussions focused on four areas, namely:

- Varieties/crop management & digital agriculture;
- Pest and disease management;
- Crop nutrition and soil health; and
- Irrigation and mechanisation.

Forty-four topics were raised, of which nineteen were identified as priorities.

Yellow sugarcane aphid (*Sipha flava*)

still viewed as a serious pest

Dr Stuart Rutherford *(Principal Scientist: Integrated Pest Management)*, **Dr Malcolm Keeping** *(Senior Entomologist)* and **Dr Iona Basdew** *(Biosecurity Scientist)*

Yellow sugarcane aphid (*Sipha flava*), more commonly known as YSA, has reappeared again this season with serious outbreaks, particularly in the North Coast. This insect originated from North America where it initially was a pest on sorghum and later, sugarcane. Over time, it spread to South America, the Azores, the Iberian Peninsula in Europe, and North Africa. It was first noticed in South Africa in 2013 at Umfolozi, Pongola and Upper Tongaat having arrived in North Africa in the mid-2000s. Initially, it occurred sporadically, which made research difficult. In 2017, it started occurring in large numbers on the KZN North Coast and in Mpumalanga from 2018, with very high infestations in places. SASRI Specialists, as well as Biosecurity Officers are engaging in ongoing efforts to develop integrated pest management (IPM) plans to avert outbreaks and prevent significant damage.

YSA Research and Knowledge Exchange timeline

2013	Industry-wide YSA survey. YSA detected with damage symptoms observed in Upper Tongaat. First insects observed on SASRI Pongola Research Station.
2014	Outcomes of yield loss trials negatively affected by inconsistent YSA infestation patterns. Ranking of varietal susceptibility to YSA conducted during variety evaluation trials; this is ongoing with new and older releases.
2015	Investigation of whether YSA transmits sugarcane mosaic virus.
2016	Registrations obtained for Allice®, Ampligo® and Actara®.
2017	Yield loss trials re-established using new methodology.
2018	Information shared on where outbreaks have occurred in the past and how to monitor these areas closely. Recommendations provided on how spraying should be timed and targeted (specifically when aphids are first observed to prevent a massive build-up of the pest).
2019	Confirmed that the most effective approach to managing YSA is through early scouting and the use of an integrated pest management plan. Confirmation that YSA does not spread sugarcane mosaic virus. Variety ratings were released for rainfed regions.
2020	Yield loss trial completed; outcomes released. Establishment of species diversity of natural enemies of YSA.
2021	Project started to predict likely YSA outbreaks in advance using weather and crop management data.
2022	Projects starting on potential of UAV- and satellite-based spectral imaging for YSA detection, biodiversity management and its place in sugarcane agriculture, and effect of steel slag amendments on YSA infestations and cane yields.

Why is YSA such a difficult pest to control?

YSA can be considered as part of the "aerial plankton", as it is carried in air currents, resulting in exposure of all sugarcane farms (and other crops and grasses) in South Africa to the pest. Therefore, YSA cannot be contained and/or eradicated from a region.

Most aphids feed on young expanding plant tissues (known as "sinks" - since photoassimilate is flowing into them). YSA is different. It mostly feeds on the underside of older fully expanded leaves (known as "source" leaves), which provide the plant with most of its photoassimilates. The aphid injects a toxin into the leaves that promotes premature leaf senescence. In this way, the aphid intercepts nutrients, especially nitrogen in the form of amino acids, that the plant is attempting to recycle during the senescence process.

What is leaf senescence?

This is the deteriorative change that occurs in the leaf and constitutes the final stage of leaf development – similar to ageing. In terms of the life stages of the plant, this is a critical process for the plant's fitness as it indicates nutrient recycling within the plant and increasing plant maturity.

This pest-induced stress allows aphid numbers to build-up rapidly before symptoms become visible (i.e. yellowing, reddening and dying of leaves).

By the time symptoms are obvious, the damage has been done and the aphids may have disappeared or moved to other fields. This movement could be dependent on population density (overcrowding), plant decline as a source of nutrition and predator build-up. However, immature predators have a longer life cycle than YSA – they cannot simply follow the aphid when it moves.

> *"By the time symptoms are obvious, the damage has been done and the aphids may have disappeared or moved to other fields."*

YSA also has many alternate hosts. Signs of the presence of the pest can be detected in the indigenous vegetation and grass breaks within and between neighbouring cane fields.

Scouting advice

Growers are advised to scout for aphids. Early detection is crucial if infestations are to be treated before they cause significant damage.

Scouting should be focused on areas of stressed cane. This may be caused by water stress or soil factors such as aluminium toxicity, excessive nitrogen accumulation and poor root growth. YSA is attracted to such cane and measures can be taken to determine why the cane is stressed (e.g. leaf samples to determine if there is nutrient stress or soil samples to test for aluminium toxicity or presence of pathogenic nematodes).

In addition, make sure that scouting staff are mindful of YSA sticking to their clothing during scouting, which could increase spread of the aphid to other fields. If possible, use disposable clothing or urge staff to cover their clothing in disposable material that can be safely disposed of after scouting an infested field.

Variety rating

Varieties exhibit clear differences in leaf damage by YSA and these differences have been quantified in numerous variety trials in the different regions of the industry. Categories of leaf damage, indicating relative susceptibility of varieties to YSA, will be released to growers once the most recent information has been compiled and ratified by SASRI. Such information should assist growers in deciding whether to choose less YSA-susceptible varieties when planting their fields, to reduce future risks of severe damage and yield loss.

North Coast YSA Grower Days

Kalisha Naicker *(Publications Officer)*

SASRI Extension Specialist, Adrean Naude, hosted two grower days – one each in Umhlali and Darnall, in March this year to discuss the YSA outbreaks within the North Coast region. A question-and-answer session provided the opportunity to gain more insight into understanding the elusive nature of the pest and steps to take in controlling it.

Addressing the growers were Dr Terry Stanger (SASRI Director), Dr Stuart Rutherford (Principal Scientist on Integrated Pest Management), Dr Malcolm Keeping (Senior Entomologist) and Dr Iona Basdew (Biosecurity Scientist).

An option offered to growers by Dr Rutherford was to apply a pre-emptive chemical such as Bandito® GR in furrows or after spring rains in ratoons.

They were advised that the use of products and the timing of applications should be considered carefully and in consultation with an Extension Specialist or advisor.

Growers were advised that the most cost-effective and environmentally friendly method of treating YSA is early detection and the treatment of patchy infestations to prevent the spread to neighbouring rows or fields.

SASRI's Biosecurity Scientist, Dr Iona Basdew spoke about an on-farm biodiversity project which started in April 2022. She highlighted the importance of on-farm biodiversity - particularly for pest management through the inclusion of insectary plantings, cover crops, water sources and other features to attract and sustain beneficial insect predators. She mentioned the added benefits of reduced pesticides and savings in pest management costs.

Dr Keeping highlighted the variety ratings for YSA susceptibility and advised growers to be especially vigilant and carry out frequent scouting if they have fields with varieties included in the severe category, where the risk of YSA infestation and damage is likely to be high.

If an outbreak is suspected, please urgently contact your SASRI Extension Specialist or Biosecurity Officer for advice. For more information, please contact Extension & Biosecurity Manager, Rowan Stranack on 031 508 7459.

Addressing the growers at the Umhlali grower day were (from left) Dr Iona Basdew, Dr Malcolm Keeping, Adrean Naude, Dr Stuart Rutherford and Dr Terry Stanger.

Present at the Darnall grower day were (from left) Dr Iona Basdew, Maphilisi Zulu, William Gillespie, Dr Stuart Rutherford, Adrean Naude, Dr Malcolm Keeping, Rowan Stranack and Dr Terry Stanger.

Improving varieties through INTERBREEDING

Dr Shailesh Joshi *(Plant Breeder)*

Due to the limited number of clones used, and the repeated crossing between them in the initial sugarcane breeding programmes around the world, most countries have reached a yield-gain plateau, and South Africa is no exception. There is thus an urgent need to broaden the genetic base of parental populations. In a bid to expand the genetic base of local varieties, SASRI's Plant Breeding programme has, over the years, crossed local varieties with sugarcane (and other species closely related to sugarcane) imported from other countries.

In 2016, a Memorandum of Understanding was signed between SASRI and the West Indies Central Sugar Cane Breeding Station (WICSCBS) whereby pre-release and released cultivars would be sent to the West Indies for the purpose of crossing with selected plant material within the WICSCBS collection. SASRI chose not to conduct the crossing at Mount Edgecombe as it takes time and is challenging to import all or most of the germplasm from other research institutes, along with the fact that varieties imported from tropical countries such as Barbados or India do not flower profusely here due to our sub-tropical environment, which limits the number of cross combinations that can be generated.

Of the crosses received until 2020, over 138 are now in the first stage of field screening at SASRI's Gingindlovu research station. Potential cross offspring from this batch will also be tested in the irrigated and midlands regions in coming years. A further 36 crosses imported in 2020 were planted as a multilocation trial at Pongola (Irrigated), Bruyns Hill (Hinterland) and Gingindlovu (Coastal Long Cycle) in January 2022. The 48 crosses which were imported in 2021 have been planted on the seedling terrace at Mount Edgecombe and will then be subjected to pre-screening procedure at the three locations mentioned above in 2023.

The main anticipated outcome from this exercise will be improved plant material with a wider genetic base, which can then be used either as parents in SASRI's Plant Breeding programme or released as commercial varieties for the industry.

Another area which could be potentially exploited, will be the use of genotypes developed in this project, specifically those with high biomass and fibre levels, for use as a renewable energy source in the production of bioethanol.

Drone ripening to transform sugarcane farming for small-scale growers

Kalisha Naicker *(Publications Officer)*

SASRI has initiated a drone ripening project to explore the application of chemical ripeners with drones aimed at advancing cane quality management on a pilot scale in the small-scale grower (SSG) sector.

Dr Riekert Van Heerden, project leader and a Senior Scientist (Sugarcane Physiology) at SASRI said that the entry of the crop spraying drones into the SA sugarcane industry will revolutionise chemical ripening opportunities to the SSG sector due to the technical ability of these drones to operate effectively within a fragmented, irregularly shaped, small-field environment.

He said that the objectives of the project are:

a) To develop regional partnerships, between the relevant role-players (SASRI Ripener Specialist, SASRI SSG Extension Specialists, DARD Agricultural Advisors, SAFDA and SACGA representatives, regional mill/ CTS representatives, crop spraying drone contractors and SSG harvesting/transport contractors) needed to advance cane quality management on a pilot scale in the SSG sector.

b) Through these partnerships, to develop an approach consisting of informed ripening decision-making, state-of-the-art ripener application via drones, and harvest scheduling needed to advance cane quality management on a pilot scale in the SSG sector.

c) To test this approach on a pilot scale in selected SSG communities spanning the coastal and midlands regions of KwaZulu-Natal and the Irrigated North (Pongola and Mpumalanga) through a network of participatory demonstration trials.

d) To quantify the economic benefit that the advancement of cane quality management brought about at the individual SSG field level.

Van Heerden said that the numerous SASRI research trials, and several participatory demonstration trials conducted under both rainfed and irrigated conditions on large-scale grower (LSG) farms, have clearly shown that chemical ripeners significantly increase RV% and RV yields in immature sugarcane crops.

This allows LSGs to benefit under the relative RV cane payment system, thus unlocking the RV yield potential on their farms as they are capable of combatting low cane quality.

He said that, with proper education, the SSGs will have the potential to reap similar economic benefits.

At each demonstration trial site the project was initiated with a start-up stakeholder engagement workshop. This was followed by a field day where growers were equipped with knowledge to assist them in the identification of crops suitable for chemical ripening. Application of ripeners with a crop spraying drone was demonstrated to the growers. Shortly before harvest a field day was held to demonstrate how assessment of ripener effectiveness can be done.

Several workshops were convened with key stake holders in the various regions in which demonstrations of drone-mediated ripener application had been previously hosted.

The interactions enabled SASRI specialists to share the main economic findings from the demonstration trials and to facilitate discussions about the way forward for drone ripening on a wider scale in the various SSG communities. Bottlenecks in the potential operationalisation of the technology were identified and action steps were put in place to overcome these.

Van Heerden added that feedback received from the participants indicate overwhelming support for the project (which will continue until 31 March 2023).

This projected attracted overwhelming support from the SSGs in the various coastal and midlands regions of KwaZulu-Natal as well as the irrigated-north.

SASRI research trials, and several participatory demonstration trials conducted under both rain-fed and irrigated conditions are providing promising results.

Orange Rust found on sugarcane in South Africa

Sharon McFarlane *(Senior Plant Pathologist)* and **Rowan Stranack** *(Extension and Biorisk Manager)*

Orange rust (*Puccinia kuehnii*) has been positively identified on sugarcane in the South African sugar industry. Orange rust spores have been detected on a spore trap in the Mpumalanga Lowveld periodically from 2016, but this is the first time the disease has been observed on sugarcane in the field.

The disease was initially identified on three varieties (N41, N75 and N76) on a farm near Shakaskraal on the North Coast, but has subsequently been observed at Mount Edgecombe, on the Umfolozi Flats, Sezela, Amatikulu, Eshowe and Umzimkhulu. More varieties have been found to be infected, including N23, N36, N49, N60, N63 and N77.

Severe infections have been reported from spring to early autumn in Brazil and Florida. Infections are favoured by warm (20-26°C), humid (RH>97%) overnight conditions. Severity is reduced when temperatures exceed 32°C for extended periods.

Please be on the lookout for symptoms on all varieties of all ages and in all regions of the industry. Report any suspicious symptoms to your local SASRI Biosecurity Officer or SASRI Extension Specialist.

Yield effects

Rust pathogens reduce photosynthesis and use up nutrients while invading the plant. They damage the epidermis of the leaf, affecting the plant's ability to regulate water loss, causing severely infected leaves to die prematurely. All these factors contribute to yield loss. Severity, persistence, and associated yield loss will vary from year to year depending on the climatic conditions and the varieties being grown, but losses of 15 to 40% have been demonstrated.

Spread

Rust pathogens produce spores that are microscopic, light and hardy making them well adapted to rapid short and long-distance dispersal by wind and water splash. Rust is not spread by planting infected seedcane.

Management

Varietal resistance is the most economical management option but it becomes more challenging to breed for resistance when more than one rust pathogen infects a crop. Resistance to one rust does not mean a variety will be resistant to others e.g. N12 has excellent resistance to brown rust but has some susceptibility to tawny rust. Orange rust has now also been observed on this variety. Mixed rust infections on one variety have also been observed. Genetic changes in rust pathogens can result in resistant varieties becoming more susceptible.

Planting no more than 30% of your farm to one variety can reduce the risk and impact of pests and diseases.

Emergency response plan

In accordance with the emergency response plan, the SASRI Biosecurity Inspectorate is currently undertaking a survey across the industry to determine the prevalence and severity of the incursion. Once more information is available on the varieties affected, a decision will be taken on appropriate action. However, in the meantime, Amistar® Xtra, a fungicide that is registered against orange rust on sugarcane in South Africa, should be applied to manage the disease in infected fields. For more information, please contact your local Extension Specialist.

Brown rust

Lesions (marks) on leaf:
- cinnamon brown to dark brown
- up to 20 mm long
- more severe towards leaf tip

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

Favoured by cool, moist weather
Common in autumn and spring

Tends to occur on young crops (< 6 months)

Tawny rust

Lesions (marks) on leaf:
- orange to reddish-brown
- similar in size to brown rust
- more severe towards leaf tip

Spores:
- bright orange spores when fresh, profuse
- also occur on upper leaf surface

Favoured by cool, moist weather
Common in autumn and spring

Has been observed on cane of all ages

Orange rust

Lesions (marks) on leaf:
- orange, orange-brown to reddish-brown
- up to 5 mm long
- often more severe in middle of leaf, extending to leaf tip
- may be confused with yellow sugarcane aphid (YSA) damage

Spores:
- orange to cinnamon-brown
- usually on lower leaf surface but occasionally observed on upper surface

Favoured by humid, warm conditions

Common through summer and autumn

Has been observed on cane of all ages

Performance of the newer and rainfed varieties in the Irrigated North

Thobile Nxumalo *(Scientist: Variety Evaluation)*

Pre-released and newly released varieties are constantly tested in variety evaluation (VE) trials across the industry. The new varieties are then compared to the standard/ control "older varieties" or popular variety in that area where it is tested over several ratoons/years. If the newer varieties perform better than the older varieties in terms of RV yield, pests and diseases and have good ratooning ability then that variety is recommended for that environment. In some instances, varieties are tested in areas that are not gazetted for planting and they perform better than the gazetted varieties for that area; this speaks largely to the genotype x environment (GxE) interaction phenomenon. This is the case in the recent trials that have been planted in the irrigated north region where rainfed varieties (**not gazetted for irrigated north**) were tested with the irrigated north varieties in a late-season trial under medium to high potential soils.

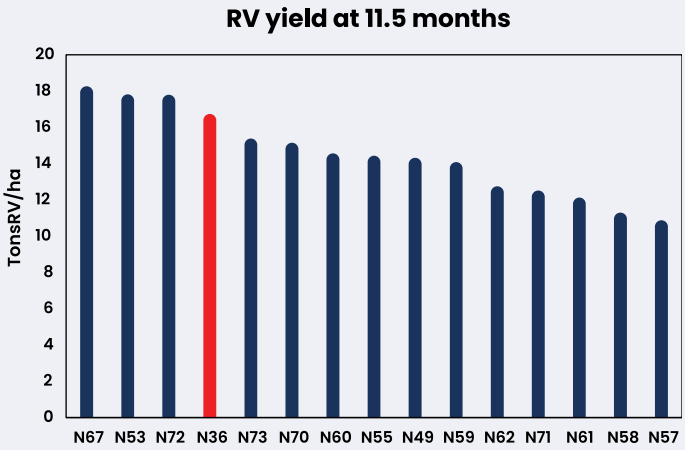


Figure 1: RV yields of the plant crop of 15 varieties planted in a late season variety evaluation trial in Pongola.

Preliminary results on the newly released rainfed varieties such as N72 and N67 have shown good performances in the irrigated region. Varieties N67 and N72 outperformed the standard or popular variety N36 in terms of RV yield in the trial (Figure 1). Performances of N67 and N72 were even better than the newly released irrigated varieties N70, N71 and N73. However, no statistical differences between the control variety N36 and varieties N67, N53 and N72 exist.

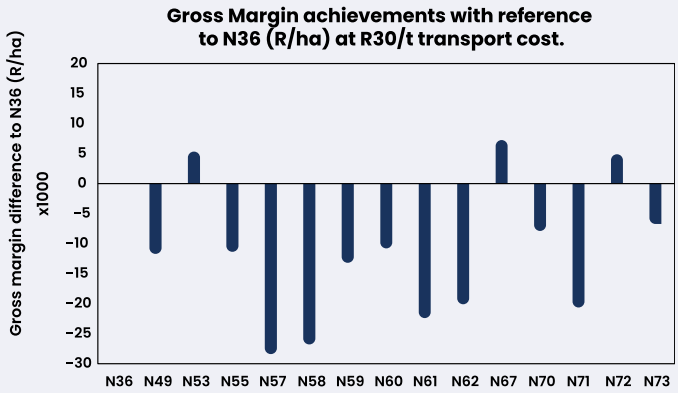


Figure 2: Gross margins (R/ha) of the plant crop of 15 varieties planted in a late season variety evaluation trial in Pongola.

When considering the economic benefits of planting the rainfed varieties in the irrigated region, there were improved gross margins for varieties N72 and N67 with reference to N36 at the transport costs of R30/t (Figure 2). Over and above these preliminary observations, variety N67 seems to be showing greater adaptability in different soil type environments, maintaining the high cane yields and sucrose content across environments. In trials at Mkuze and Umfolozi, under full/supplementary irrigation, there again it has performed very well under those conditions (data not shown).

Look out for more trial results on the ratoon crops highlighting the performances of these rainfed varieties in the irrigated north regions at Mkuze, Pongola, and Mpumalanga through SASRI communication platforms, grower days and extension newsletters. Two new early and late season variety trials were planted in Malelane, with the same varieties and objectives, with a further objective of assessing the impact of yellow sugarcane aphid damage on these varieties.

Cane Quality Management

Dr Riekert Van Heerden *(Senior Scientist: Sugarcane Physiology)*

Results from two field trials in Pongola have revealed that the new combination ripener treatment between trinexapac-ethyl and fluazifop-p-butyl is highly profitable across a range of irrigated varieties grown in the region. This observation has been shared at recent grower days in Pongola and Mpumalanga. Considerable interest was shown by growers and, based on the ripening orders that RCL has received, there will be commercial application of the new combination treatment by growers in Mpumalanga and Pongola during 2022.

Overwhelming support from growers at the recent grower days in Pongola and Mpumalanga.

A well-attended **senior course hosted!**

A successful Senior Certificate Course was held at the SASA offices in Mount Edgecombe recently, exactly two years after the pandemic hit. Due to the Covid-19 constraints, SASRI has only been able to host two Junior Courses during the pandemic, so having a full class (in a larger venue) was encouraging.

SASRI's Sugarcane Certificate courses are currently run at both the junior (three weeks) and senior (five week) levels. The courses are taught by SASRI specialists and comprise of a mix of theory and practical sessions covering all aspects of sugarcane husbandry. Guest lectures covering a variety of topics of special interest are also given.

The Junior Course is aimed at junior farm managers, agriculture students and farm clerks while the Senior Course is attended by more experienced farm managers, farm owners, agriculture students and sugarcane researchers.

Course fees, dates, application forms and procedures are indicated on our website at **www.sasri.org.za** or obtained from the course coordinator, Belinda Simpson on **031 508 7405** or email: **educane@sugar.org.za**

A full class of students at the Senior Course held at SASA offices in Mount Edgecombe in February.

The management of weeds

Anushka Gokul *(Agrochemical Scientist)*
and
Dr Stuart Rutherford
(Principal Scientist: Integrated Pest Management)

It is well documented that the control of weeds in sugarcane cultivation is essential as they can reduce cane yield and sucrose content.

Herbicides are widely used for the control of weeds, however, application to desired target needs to be carefully controlled as herbicides disrupt essential plant growth processes which are shared by both the weed and cane. Herbicide tolerance is highly desirable in sugarcane plantations, therefore the N12-Zapyr was produced. N12-Zapyr seedcane is resistant to the active ingredient imazapyr (Figure 1).

Observations revealed that N12-Zapyr can be planted directly after imazapyr application to bare soil, without the label-stipulated waiting period before replanting. The use of imazapyr as a pre-emergence treatment can control weeds so that the crop can germinate and grow in a weed-free environment with minimum competition (Figure 2). The potential exists for a label amendment for the imazapyr-based herbicide commonly used within the industry to enable this practice pending further confirmatory results.

Figure 1: Imazapyr based herbicide applied to the soil surface immediately following furrow closure over N12-Zapyr seedcane. N12-Zapyr germinated well.

Figure 2: The benefit of using N12-Zapyr seedcane is evident in weed infested fields. Above is a Cynodon infested field, the area without weeds was treated with an imazapyr containing herbicide.

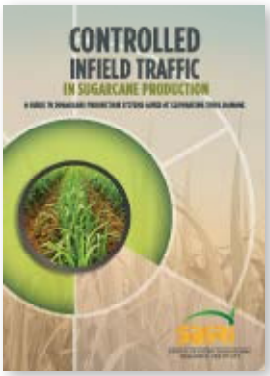
Figure 3: Germination of standard N12 (A) and N12-Zapyr (B) in soil to which an imazapyr based herbicide had been applied. The good germination of N12-Zapyr (B) contrast to the lack of emergence of standard N12 (A).

LATEST PUBLICATIONS AVAILABLE

2022 updated Pest and Disease Booklet

This pocket-sized Pest and Disease Guide contains a brief outline and associated illustrations of the most commonly found pests and diseases in sugarcane.
The booklets are available in both English and isiZulu and can be obtained from your Biosecurity Officer or Extension office. It can also be viewed on the SASRI website e-Library available at **www.sasri.orgza/e-Library.**

Controlled In-field Traffic Guide



Sugarcane stools suffer damage when driven over, resulting in poor ratoonability and significant yield losses. A controlled in-field traffic system is therefore highly recommended.

A recent publication provides guidelines for cane farmers wishing to implement a system, whereby wheels of infield vehicles or equipment are restricted to a traffic zone and not on cane rows.

Fundamental changes related to field layout and mechanisation are discussed, as well as modifications to fertilising and irrigation.

2022 Mech Reports

To assist sugarcane farmers make informed decisions based on realistic costs of various operations, SASRI publishes details on mechanisation costs annually. The 2022 edition of these Mechanisation Reports are now available.

Report 1 has information and examples that will help in estimating the total cost of operating individual machines or complete machinery systems.

Report 2 deals with systems and costs of land preparation, planting and ratoon management. This report includes a directory of local and international equipment and product suppliers.

Available for download from the SASRI website **www.sasri.org.za/mechanisation.**

WEATHER

Phillemon Sithole *(Agrometeorologist)*

Review

The industry received good rainfall during the 2021/22 summer season with most parts recording near to above normal rainfall. However, November and January rainfall was generally below normal in the coastal areas of KwaZulu-Natal. In Mpumalanga, rainy and cloudy weather prevailed until February when well below normal rainfall was received (Figure 1). This was a welcome break and augured well for crop growth due to the increased periods of bright sunshine.

Irrigation water sources remain well replenished to keep supplying adequate irrigation water during the upcoming drier months in the irrigated parts of the industry.

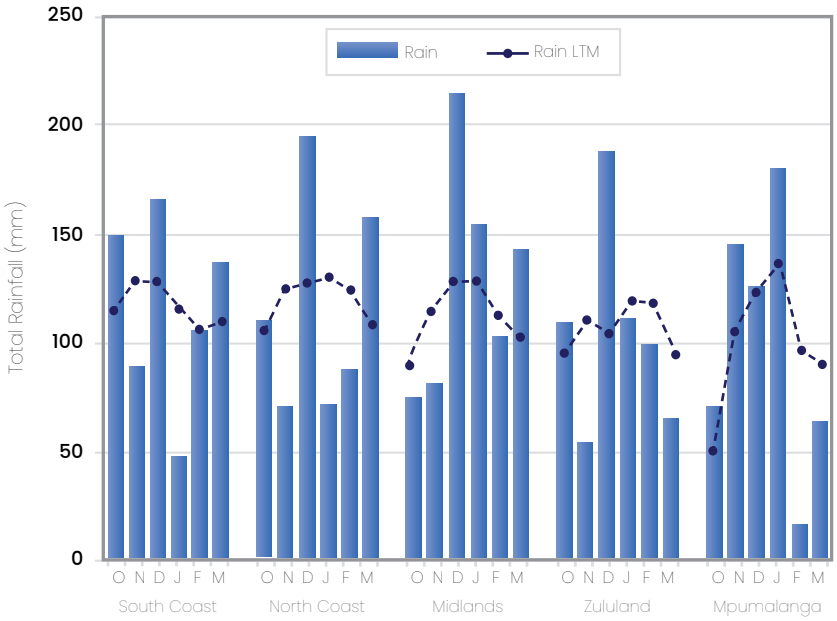


Figure 1: Regional average monthly total rainfall (Rain) for October 2021 to March 2022, compared to the monthly long-term means (Rain LTM).

Outlook

The El Niño-Southern Oscillation (ENSO) is currently in a La Niña phase but forecasts project that it will return to neutral conditions during the coming winter season. The state of ENSO has little impact on winter rainfall patterns in eastern South Africa, therefore no significant influence on winter rainfall is expected.

The South African Weather Service predicts normal to above normal rainfall while the International Research *Institute for Climate and Society* and the *European Centre for Medium-Range Weather Forecast* predict normal rainfall for the industry during the upcoming winter season. Mild minimum 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.

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