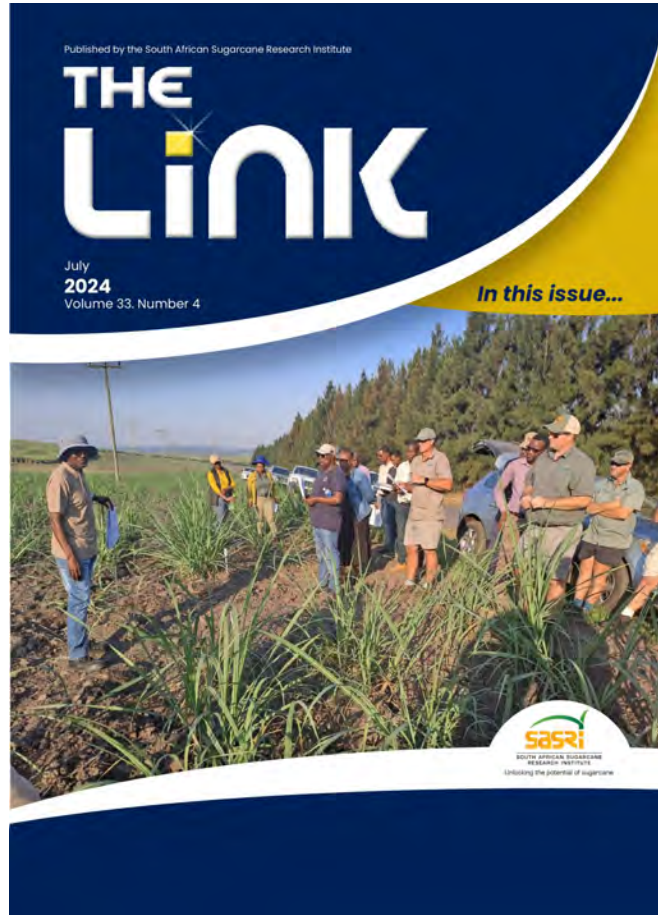


**Note:** This PDF was printed from the SASRI website.  
To view the original layout, click on the image below.





# Director's Message

**Dr Shadrack Moephuli** (*Director*)

In this issue of The Link, we discuss sustainable sugarcane production through several articles. We also show how SUSFARMS<sup>®</sup> (Sustainable Sugarcane Farm Management System) encourages sustainable, responsible and economically viable sugarcane production through better management practices.

Sustainable sugarcane production extends beyond sugarcane agronomy: it is important to ensure that the rights of local communities and employees are upheld and promoted in all sugarcane production areas. In concert, we need to conserve natural resources; including through ecosystem services to facilitate sustainable use of agricultural resources. We have included an article on how farmers could adopt better management practices to fulfil requirements for certification on sustainable agriculture.

Biodiversity is essential for sustainable sugarcane production as it contributes to the implementation of SUSFARMS<sup>®</sup>. Accordingly, we discuss issues caused by sugarcane monoculture, such as soil depletion and pest infestation. Suggestions are provided for integrated pest management through effective use of beneficial insects and other organisms; this in turn could lead to sustainable and profitable enterprises.

A key aspect of sustainable sugarcane production is the optimal choice of varieties for specific growing areas. Genetic traits of different varieties make them unique or suitable for specific growing conditions such as soil type, harvest age, yield potential, seasonality, pest and disease resistance, to mention a few. Selection of the most appropriate variety could lead to profitable and sustainable production.

Farm profitability also requires the use of appropriate tools, and where necessary, technology for on-farm assessments of sugarcane quality, ripening and harvesting. In this issue, we discuss the use of various tools such as refractometers, PurEst<sup>®</sup> and on-farm and mill yard Brix measurements. Better use of these tools and information could improve grower understanding of RV% values with insights towards greater profitability.

It is our considered hope that this issue of the Link will provide insights for sustainable sugarcane production with improved profitability. At SASRI we aim to continuously improve our offerings for better management practices.



# Topical Tips

Rowan Stranack (*Extension and Biorisk Manager*)

### ***Cane quality and crop health***

The industry has experienced relatively dry conditions during the winter so far, and the crop is under some stress on shallow soils, particularly in the southern regions. In addition, flowering is a factor and *eldana* is on the increase in some areas. These factors all influence cane quality, making the principles of harvesting the most mature, clean, and fresh cane even more critical. Your CTS delivery and cane quality report is vital to understanding what is happening to cane quality on your farm. Consult your SASRI Extension Specialist if you need help in this regard.

### ***Pest and Diseases***

Earlier this year, ***yellow sugarcane aphid*** (YSA) was problematic in many parts of the industry. Populations declined over winter but could resurge in spring once conditions become favourable. YSA is often present in the breaks and verges during winter, and its presence there could indicate a possible movement into cane. Regular scouting is therefore essential, and growers are advised to contact their Extension Specialist or Biosecurity Officer to decide on a course of action if outbreaks occur.

***Eldana*** levels have increased during the winter in some areas and severe infestations are possible as moth activity increases in the coming months. Your farm scouting team should regularly inspect fields to check *eldana* levels and damage. Monitor during harvest. 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.

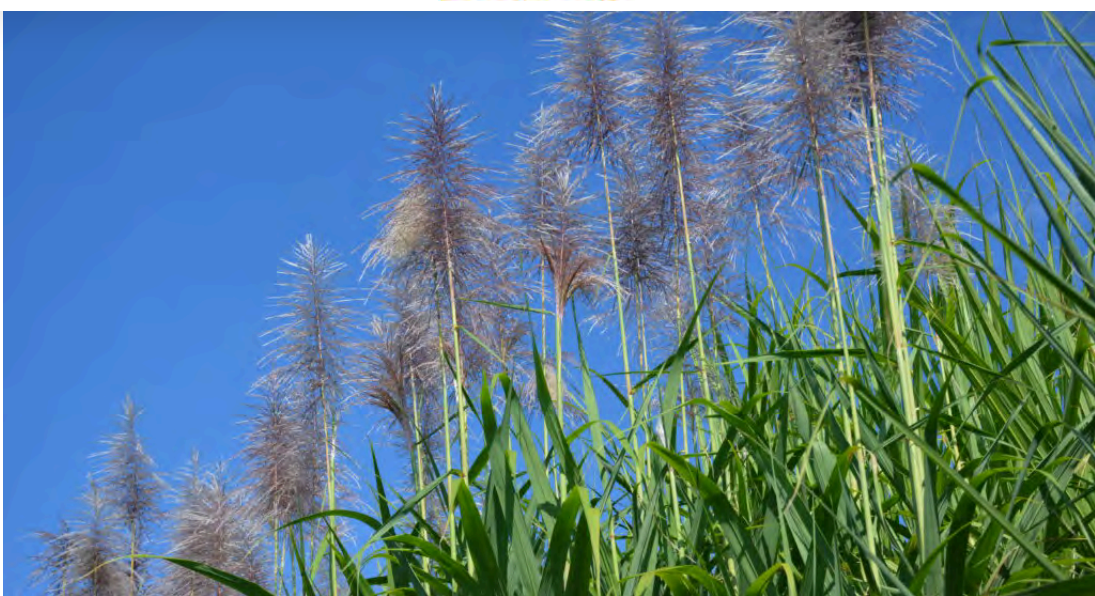
Make sure all fallow fields are free of volunteer regrowth before planting begins in spring. Regrowth can be a source of re-infection of damaging systemic diseases such as ***ratoon stunt*** (RSD) and ***smut***.

### ***Carry-over cane***

With an early closure possible for some mills, planning of carry-over fields should be finalised now. Carefully monitor *eldana* levels in potential carry-over cane, and if they reach hazard levels, these fields must be cut before the mills close. Remember there is also the option of spraying insecticide on carry-over cane if it is below the hazard level.

### ***Flowering***

By now, it should be possible to assess the extent of flowering in your fields. Any potential carry-over fields that have flowered profusely (more than 20% flowered stalks) should be included for harvest later in the current season, preferably before the end of September.



### ***RV Yields***

Losses in sucrose in the period between burn/harvest and crushing have been thoroughly researched. Deterioration sets in immediately after the cane is burnt and temperature determines the rate that losses occur. Every effort should be made to keep burn/harvest to crush delays to below 48 hours, after which deterioration accelerates considerably, resulting in significant losses in income. Deliberately delaying delivery does not increase RV yield, as some believe. The apparent increase in RV% is due to the drying out of the cane stalks, but the associated loss in mass causes a loss of overall RV yield. Burning more frequently and paying more attention to field access and the management of haulage will go a long way to reducing the losses from deterioration.

### ***Maintenance of waterways, drains, roads and irrigation equipment***

The dry weather has the advantage of enabling maintenance of waterways, drains and roads to be carried out unhindered. Ensuring that road drainage is adequate and contour structures are clear and able to flow properly is vital to ensuring that erosion does not occur in periods of heavy rain.

Winter is the best time to maintain and repair irrigation equipment. Simple checks include taking measurements of the following: operating pressures, nozzle wear and emitter flow-rates. The SA Irrigation Institute (SABI) offers training courses (for growers and managers) aimed at ensuring that irrigation system hardware is performing according to design specifications and accepted standards. Speak to your local Extension Specialist for assistance in this regard.

### ***Weed Management***

An early flush of weed growth in winter and early spring can create problems later if not dealt with effectively when the weeds emerge. Consult your Agricultural Advisor and the [SASRI Herbicide Selector](#) to decide on a strategy.

## **Programme Planning**

If you are not using one already, speak to your SASRI Extension Specialist about getting a programme planning board to plan and monitor the many field operations necessary to take your crop from one harvest to the next. The money and headache this will save you is well worth the trouble. Sugarcane farming lends itself very well to the systematic and timed implementation of certain essential and basic field operations which can be planned for a year ahead. Many growers can attest to the success of this approach.

## **Soil Management**

In the irrigated regions where some soils are prone to salt build-up, it is important to ensure that adequate drainage is in place and that existing drains are clean and functioning properly. Good drainage will prevent the accumulation of salts in the root zone.

Your fertiliser programme for the year should be set by now with application starting when the rains arrive. Ensure your programme is based on representative soil samples analysed by **FAS**. Growers in the irrigated regions who can fertigate their crops demonstrate the clear benefits of correct placement, timing and splitting of fertiliser applications so that fertiliser is taken up effectively by the crop with minimal wastage. Whilst this level of precision is not possible on rainfed farms, it is important to make as effective use possible of a high-cost input. Throwing fertiliser on the ground and hoping for the best is not a strategy. Rather, every effort should be made to adhere to the **Four Rs principle**: the **Right Type of Fertiliser**, the **Right Rate**, the **Right Placement** and **Right Timing** are all key considerations outlined comprehensively in the SASRI Information Sheets 7.1 to 7.21 available on [this website](#).

To assist you with your crop nutrition programme, contact your Extension Specialist to try out the recently developed **OptiFert** computer application which will assist in planning an efficient and cost-effective crop nutrition programme.



*Rowan Stranack has been writing Topical Tips for The Link magazine since 2002, providing over 22 years of insightful and practical recommendations for our industry. SASRI extends its heartfelt gratitude to Rowan for his unwavering dedication, wise counsel, and tireless contributions. We wish Rowan all the best in his retirement. Go well, Rowan!*





# Farmscaping: Let's bring back beneficial insects!

*Iona Basdew (Biosecurity Scientist)*

The monoculture nature of sugarcane cultivation has led to various consequences, ranging from nutrient depletion in soils to a decline in both faunal and floral biodiversity, all of which have a negative effect on long-term crop health and sustainability. This is most often manifested through increased pest infestation levels and reduced impacts from natural enemies. The economic benefits of insecticides are being minimised by injudicious insecticide usage, increased costs of insecticides, and degazetting of insecticides at a faster rate than they are produced.

**Farmscaping** is a potential remedial practice that could be implemented in-field to enhance biodiversity within the sugarcane landscape. Farmscaping involves an integrated, whole-farm approach to the biological control of pests through layout of the farm to include flowering hedges, natural insectary plantings, cover crops, water and other features to attract and sustain beneficial organisms that are primarily predators of insect pests. Beneficial organisms include insects, birds, bats, arthropods and microorganisms. With specific reference to sugarcane, predatory insects such as ladybirds, lacewings, soldier beetles, pirate beetles, hover flies, mantids, and certain species of wasp prey on the major pests currently affecting the industry, particularly yellow sugarcane aphid, eldana and thrips (Figure 1).



Figure 1. Major predatory insects (from left) Ladybird beetle adults, Ladybird beetle larva, Lacewing larva, Hover fly larva, Earwig, Praying mantid, Soldier beetle and Pirate beetle.

The main rationale behind the concept is that beneficial insects require food and shelter if they are to control pests. Planting flowering plants will increase the likelihood that predators and parasitoids will remain in an area and assist with pest management – natural insectaries. In the absence of the specific pest during the off-seasons, these predatory insects still have the capacity to feed on pollen and nectar. These insectary plantings can consist of an area reserved entirely for beneficials or, as would be most applicable for sugarcane agriculture, they can be made up of small, planted areas of indigenous flora that will serve as reservoirs for the natural enemies. In order for such a system to work, it requires the selection of the right plants, in appropriate areas of the farm (waterways, slopes, etc), to attract the right predators.

burning, that provide habitat to sustain beneficials.

Cultivation schemes that may be compatible specifically with sugarcane and/or multicropping systems of sugarcane plus macadamias/bananas/avocado include a strip (or more if resources allow) of permanent vegetation bordering a field or between two fields, e.g. between sugarcane and macadamias. A border such as this can be planted to attract beneficials throughout the cropping season if the proper plants are used. Ideally, these should be perennials.

2. **Alternative Food Source:** Some pests are generally present over a short duration of the crop growing cycle. However, this is not the case with yellow sugarcane aphid (YSA) and eldana, which are present all year round, but with fluctuations in population density. Food must be provided for predators of YSA and eldana during pest population dips through nectar and pollen from other plants.

3. **Flower-rich Habitat:** Pollen and nectar are essential food for parasitic wasps, hoverflies and lacewing adults. Pollen and nectar also provide an alternative food source to ladybirds, pirate bugs, soldier beetles, lacewing larvae and predatory flies. Annual and perennial flowering plants can supply this pollen and nectar.

4. **Environment:** The area should be rich with floral diversity and with minimal exposure to insecticides, e.g. field margins, contours, waterways, or indigenous bush zones.

### ***A successful insectary has the following characteristics:***

1. Contains indigenous perennial and annual plants that provide flowers throughout the year; usually 5-6 types of plant.
2. Contains plants of varying size and height to provide shelter for insects in different niches.
3. Is a long-term and permanent feature of the area being landscaped.
4. Provides small flowers for parasitoids (insect parasites), hover flies, wasps and robber flies.
5. Provides large and long flowers for butterflies, bees and flies.
6. Provides sturdy herbaceous shrubs for mantids to lay their egg casings against.
7. Ideal species: *Aloe*, *Lavandula* spp., *Salvia* spp., *Ocimum* spp., *Anthericum* spp., *Allium* spp., *Leonotis leonorus*, *Tulbaghia* spp., and *Crocasmia* spp.

### ***Major steps to consider before implementation:***

1. Analyse records of where, when and what pests occur and the relative abundance/severity of infestation.
2. Know the biology and ecology of the pest and the targeted predators.
3. Select the right plants for your agro-climatic region.

## ***Remember:***

1. This is not a quick, “silver bullet” system.
2. Some maintenance will be required in the first few seasons (trimming and weeding).
3. Seed/seedlings will need to be sourced.
4. Manpower will be required for planting.
5. The system will most likely require fine-tuning such as adding, removing or varying the plants.
6. Plants ideally planted in rows of alternating species, e.g. flowering annuals alongside flowering perennials, or strong aromatics alongside softer pollen and nectar producers.

This system is not meant to displace crop production, but rather to complement it in a more sustainable manner. In summary, the introduction of such functionally important biodiversity in sugarcane plantations is paramount if the industry is to survive current challenges like competitive markets and insecticide resistance, and those that are sure to emerge in the future such as degazetted insecticides, contaminated waterways and decreased soil health.



# Understanding Variety Recommendations

**Dr Marvellous Zhou** (*Senior Plant Breeder*)



Growers sometimes express the view that SASRI's variety recommendations are not clear and precise. It is important to understand that variety recommendations cannot follow a 'one size fits all' approach. Variety recommendations must consider a range of factors that will vary from one region to another, from one farm to another, and even from one field to another on the same farm. Variety recommendations must therefore be customised for each specific situation, after taking the following factors into account:

### ***Soil type***

Soil type is a major consideration for variety recommendations. Most varieties will produce high cane yield in rich soils, but very few varieties produce high cane yield in sandy, shallow and poor soils. Choosing varieties that can produce high cane yield in poor growing conditions will guarantee high cane and sugar yield and longer ratooning cycles. Varieties not adapted to harsh growing conditions tend to have very few profitable ratoons in these growing conditions.

### ***Age at harvest***

Age at harvest is an important consideration when recommending varieties for commercial planting. Generally, in poor growing conditions, age at harvest can be increased with associated benefits of increasing cane yield, while in good growing conditions higher crop ages can result in heavily lodged crops, side shooting, bull shoots and other undesirable effects, all of which will reduce cane yield and RV%.

### ***Yield potential***

Targeted yield potential is another consideration for variety recommendation. When high yield is expected, it is imperative to choose high yield potential varieties to attain this objective. Low yield potential environments associated with either poor growing conditions or low input levels must choose hardy varieties that will produce a sustainable yield under difficult conditions. A variety such as N58 is an example for the coastal regions: N58 produces high cane yield in poor, sandy soils and during periods of drought.

### ***Season of harvest***

Season of harvest is another consideration which applies for 12-month harvested cane where early, mid and late seasons are distinct. Choosing early or later maturing varieties is key and

must be matched with the expected age and time of harvest.


Some varieties produce optimum RV% earlier than others. Varieties to be harvested at the opening of mills, such as in March, must be early maturing, producing high sucrose content when growing conditions are unfavourable for sucrose accumulation. When chemical ripeners form part of crop management, low RV% varieties can be recommended for early season.

Most varieties are adapted to mid-season where the cool and dry weather forces natural sucrose accumulation/ripening.

Late season is a challenging situation where peak stalk elongation coincides with cold weather and therefore adapted varieties must have fast growth to accumulate economic yield during this period of low temperature and slower growth. They must also have high eldana resistance because they keep growing and increasing cane yield.

### ***Pests and diseases***

Pests and diseases are key considerations for variety recommendations. For example, high eldana resistant varieties are recommended for coastal environments while smut resistant cane must be considered for irrigated areas where smut infection is high. It is for this reason that Midlands varieties are not recommended in irrigated areas.

 SASRI is hosting Plant Breeding grower days on five of our research stations within the industry (See the article in this edition of the first one held at our Gingindlovu Research Station). Please look out for invitations to these events where our plant breeders will describe the plant breeding process and strategy designed to develop varieties suited to each agro-ecological region. These events will also help us to get feedback from growers on the variety adaptability and grower needs in the various regions.



# Frequently asked questions about Refractometers and PurEst®

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



Research at SASRI during 2013 – 2016 enabled on-farm assessments of cane quality for purposes of chemical ripening decision-making and harvest scheduling. The method makes use of a portable refractometer in combination with the SASRI smartphone application PurEst<sup>®</sup>. The assessment protocol, interpretation of assessment output, and boundaries for using the method, are explained in [SASRI Information Sheet 4.7](#).

Since introducing the method to industry, a few frequently asked questions (FAQs) have arisen from growers. In this article we answer these FAQs.



### ***Why are the Brix values measured with a refractometer different from the Brix values measured by the cane testing service (CTS) at the mill?***

Using juice squeezed from sugarcane stalks, a refractometer measures the dissolved sugar (Brix) concentration by mass in the juice. To the contrary, when determined through direct analysis of cane (DAC) by CTS at the mill, the reported values are Brix % cane. For example, a refractometer Brix reading of 15% implies that there are 15 grams of Brix dissolved per 100 mL of sugarcane juice, while a Brix % cane value of 15% implies that 15% of the cane sample weight consists of Brix. In addition, the fibre content of the cane sample is also used in the calculation of Brix % cane, which is not the case with refractometer measurements. Hence, Brix values measured with a refractometer on the farm cannot be directly compared with the values reported by CTS.

### ***Can a refractometer be used to track the progression of cane quality deterioration?***

No. A refractometer measures Brix in sugarcane juice but cannot determine the actual composition (sucrose versus non-sucrose). During cane quality deterioration triggered by natural events (e.g. hailstorms, frosts and overly aged cane), or following burning and harvest, there is an unavoidable breakdown of sucrose to non-sucrose (see [SASRI Information Sheet 4.5](#)). Because a refractometer cannot detect this breakdown process it might still give a high Brix reading despite considerable quality deterioration. Using refractometers to track cane quality deterioration can thus easily lead to misinterpretation.

### ***What type of refractometer should I purchase and does SASRI supply them?***

SASRI is not in the business of selling analytical instruments, but there are several reputable commercial companies that supply portable refractometers online. Portable refractometers come in either manual or digital models. Both models are good for on-farm use although some training is required to take accurate measurements with the eye using the manual model. Of greater importance is that the refractometer should feature automatic temperature compensation and a Brix measuring range of between 0 to at least 30%.

***Why are the RV% estimates provided by PurEst® often higher than the actual RV% values obtained from the mill at harvest?***

It is very common for the RV% estimates obtained with PurEst® on-farm testing to be higher than the actual RV% values for cane consignments delivered to the mill. The reason for this difference is easy to explain: the PurEst® on-farm method estimates quality parameters in living unburned stalks, stripped of all leaf material and topped at the natural breaking point. These estimates exclude the loss in cane quality because of burning, variable topping height, presence of leaf residue, stalk desiccation, presence of extraneous matter (e.g. soil) and burn to crush delays that occur during commercial harvesting. In essence, the PurEst® on-farm test values represent the best-case scenario cane quality of a field before harvesting begins. On-farm testing with PurEst® cannot replace the accredited laboratory testing of cane deliveries at the mill.

***What value will I get from using a refractometer and PurEst® on the farm?***

Irrespective of location (South Africa or international), or variety (SASRI or other), cane maturity can be assessed on the farm with a refractometer, because the Brix-gradient phenomenon is universal in all sugarcane. Refractometers and PurEst® take the guessing out of chemical ripening decision-making through quantitative estimates of whole-stalk juice purity with associated ripening recommendations.

Due to the volatile nature of cane maturity driven by climate, the need for chemical ripening varies during the season and between seasons. Informed ripening decision-making contributes to the judicious use of agrochemicals. Wasteful expenditure on chemical ripening in fields that have already matured due to natural ripening can be avoided. Chemical ripening of very mature crops, that may result in adverse effects on cane quality due to excessive crop stress, can also be safeguarded against. A refractometer alone can also be used to track the speed of the chemical ripening process after spraying thus ensuring the best return on investment.

Although the RV% estimates provided by PurEst® are often higher than those provided by the mill at harvest (because of the reasons explained in the answer to question 4), these RV% estimates are very useful for harvest scheduling purposes because relative maturity rankings between fields can be established.



**Keeping our eye on the future  
sustainability of our industry!**

*Michelle Binedell (Knowledge Manager)*

The Sustainable Sugarcane Farm Management System (SUSFARMS<sup>®</sup>) is the South African sugar industry's compendium of better management practices designed to help sugarcane farmers implement and monitor sustainable practices.

- Farmers can use the system's self-assessment tool to evaluate their current practices, track progress towards sustainability goals and identify areas for improvement. It provides guidelines for better management practices (BMPs) that consider the environment, social responsibility, and economic factors.
- Farmers can use the system to evaluate their current practices and identify areas for improvement.
- SUSFARMS<sup>®</sup> offers a self-assessment tool (The Progress Tracker)<sup>®</sup> to track progress towards sustainability goals.



Overall, SUSFARMS<sup>®</sup> helps the sugar industry by reducing the environmental impact of sugarcane production; promoting fair treatment of workers and engagement with local communities; whilst ensuring farms are profitable in the long term.

Many customers of sugarcane products require **sustainability certification** which address ethical and environmental concerns in sugarcane production. Currently, SUSFARMS<sup>®</sup> is being used in some mill areas to meet

sugar customer demands for sustainable supply of the product. In these areas, engagement with the SUSFARMS<sup>®</sup> system is greater than in areas where it is not mandatory to complete a farm assessment. However, it is likely that certification will become a more widespread requirement when the industry diversifies into alternative products such as sustainable aviation fuel.

Whilst one of the benefits of certification include market access, adoption of BMPs within a farming system will lead to greater profitability on-farm. It is within this area that SASRI's Extension Specialists engage with growers – both large- and small-scale. SASRI provides the technical know-how and guidance for implementing BMPs, encouraging farmers to apply more regenerative approaches and long-term farm sustainability practices.

Many growers find the self-assessment aspect of SUSFARMS<sup>®</sup> laborious; it is seen as an administrative burden and engagement with the actual content of the system is therefore low. In mill areas where there is no current requirement for certification, growers do not feel

Apart from market advantage, sugarcane growers can reap several benefits by implementing SUSFARMS<sup>®</sup> :

- **Sustainability:** SUSFARMS<sup>®</sup> promotes practices that minimise environmental impact, such as water conservation and soil health. This ensures long-term viability of the land and reduces regulatory risks.
- **Profitability:** BMPs often lead to increased yields and efficiency. SUSFARMS<sup>®</sup> helps growers optimise resource use and potentially reduce costs.
- **Compliance:** SUSFARMS<sup>®</sup> keeps growers up to date on relevant regulations and helps them comply with legal requirements, avoiding potential fines or penalties.
- **Self-Assessment & Improvement:** The SUSFARMS<sup>®</sup> self-assessment tool allows growers to identify areas for improvement and track their progress towards sustainability goals.

By adopting SUSFARMS<sup>®</sup> , growers can become more responsible stewards of the environment, improve their bottom line, and position themselves for success in a demanding marketplace.



# Growers explore cutting-edge plant breeding at SASRI's Gingindlovu Research Station

**Dr Ruth Rhodes**

*(SASRI Extension Specialist – Zululand South)*



# Weather

**Phillemon Sithole (Agrometeorologist)**

## Review

Rainfall during the review period (February to June 2024) was generally characterised by long dry spells, interrupted by sporadic heavy downpours. The average rainfall over that period was below the long-term mean (LTM) especially for the North Coast, Midlands and Zululand regions (Figure 1). In March, the northern irrigated areas received heavy rainfall associated with tropical storm, *Filipo*, while parts of the South Coast recorded high rainfall associated with cut-off-low pressure systems during April and early June. On 3 June, a tornado ripped through Tongaat and sounding areas in the North Coast, with golf-ball-sized hail and wind speeds of up to 265 km/h recorded in its path. The tornado left a trail of extensive damage to homes and infrastructure and, sadly, resulted in the loss of life. The associated losses for the affected farming enterprises were estimated to be several millions of rands.

There were no irrigation water restrictions in place over the review period while load-shedding remained suspended since late March.

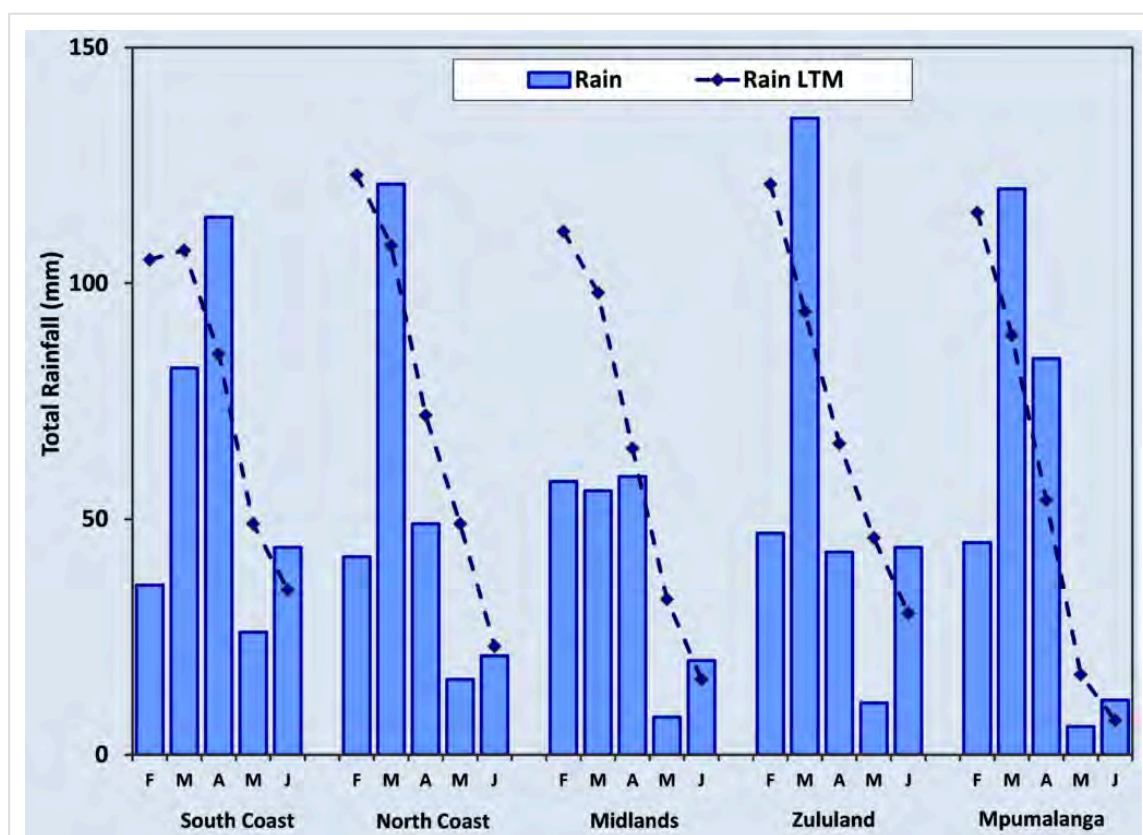


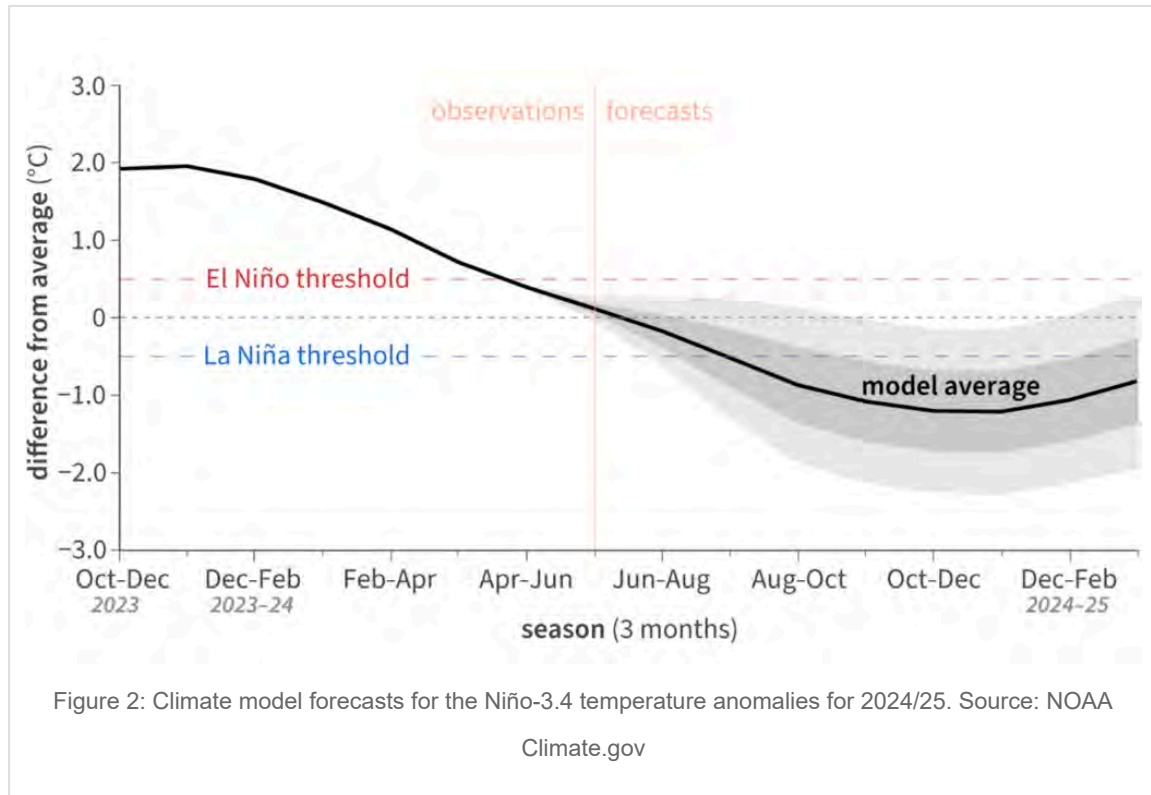
Figure 1: Regional average monthly total rainfall for February to June 2024 compared to the corresponding long-term means (LTM).

## Outlook

Oceanic and atmospheric indicators are now aligned with ENSO-neutral conditions which are expected to persist for the rest of the 2024 winter season before transitioning towards La Niña



during spring. La Niña is the most likely category during the 2024/25 summer season (Figure 2). La Niña conditions are generally associated with normal to above normal summer rainfall in eastern South Africa.



The *International Research Institute for Climate* predicts normal rainfall during the 2024 spring season and slightly above average rainfall during early summer (October to December 2024) while the *European Centre for Medium-Range Weather Forecasts* predicts near normal spring and early summer rainfall. Above average 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.

Over thirty growers and other interested visitors gathered at the SASRI Gingindlovu Research Station on the afternoon of 3 July to delve into the mysteries of the world-class SASRI plant breeding programme.



Plant breeders Dr Marvellous Zhou, Moipei Lichakane and Dr Shailesh Joshi led growers on a drive-through tour of the Ging farm, which is primarily used to test and select potential varieties. It was fascinating to hear the vast numbers of potential varieties that are bred each year, and how they are tested, and whittled down, over the years to produce just one or two new varieties annually. Each year, good parents

are specifically selected to be bred at SASRI's Mount Edgecombe plant-crossing tunnels, where they are forced into flowering and then crossed with a selected mate. The plant breeders arrange very specific marriages! From these crosses, approximately 200 000 offspring (seeds) are planted out at the various research farms, which are dotted strategically throughout the industry.

Over the following 10-12 years, the plants are intensively sampled for a seemingly endless array of variables, including all pests and diseases, flowering, yield and quality markers, and the weaker candidates are slowly weeded out until only the best remain. At the end of this long process, one or two varieties will be released – only if they produce at least 10% more sucrose than the strongest varieties currently available in the area.

The plant breeding staff work with enormous databases which they analyse constantly, looking not only for the best potential varieties, but also for potential parents which, though perhaps not suitable for release as a variety, may show promising characteristics in their genes. All of this happens over five SASRI farms, along with multiple off-site (grower-owned) sites where further information is gathered; and with 200 000 new babies being produced every single year, they have their hands full! In addition to our own substantial genetic collection, SASRI exchanges genetic material with numerous other sugarcane-producing countries, to ensure that we have access to the best genes that the world has to offer.



A question to the breeders from one of the day's guests summed up what a lot of people might wonder – "How do you fit all this work into each year?!" – and the answer is, with great

teamwork, a lot of planning and a formidable history of plant breeding excellence. This valuable insight into the plant breeding process is a reminder that growers' levies are being spent on the most important things of all – keeping our industry strong, through a research and development programme that is world-class.

SASRI has four more grower days scheduled in various regions:

- **Empangeni Research Station Grower Day on Wednesday, 24 July at 2pm**
- **Pongola Research Station Grower Day on Wednesday, 28 August 2024 at 2pm**
- **Komati Research Station Grower Day on Wednesday, 18 September 2024 at 2pm**
- **Bruyns Hill Research Station Grower Day on Wednesday, 30 October 2024 at 2pm**

*For more information, or to attend the grower days in your area, please contact your nearest SASRI Extension Office.*