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THIRD EDITION 2025

VOLUME 44



● Litchi: Breeding focus on fruit quality



● Mango: De-sapping mango



● Avocado: Packer opening markets



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IMPORTANT DATES



- | | |
|---------------------------|--|
| 5 November 2025 | SUBTROP Marketing Symposium, White River |
| 12 February 2026 | SAAGA Research Symposium, Tzaneen |
| 6-9 September 2027 | World Avocado Congress 2027, Cape Town |

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SAMGA *Chairman's Report* 2025



It is an undeniable fact that agriculture is facing increasing pressure from population growth, climate change, environmental degradation and loss of biodiversity, resource depletion, economic factors, land use changes, changing diets, and by far the most negative impact caused by disastrous political instability and irrational policies.

Our mango industry is not escaping these challenges, but I am still very positive that we are cultivating a crop that has much more potential than we currently experience. I know my report about the past season might seem a bit pessimistic, but the reality is we can address all the challenges at hand.

The past mango season was characterised by the following:

A poor crop: estimates and discussions amongst growers indicated a 35-50% lower crop than the previous season, with some exceptions. It can even be reflected in the income statement with a 32% lower levy contribution in June 2025 compared to the previous season, but there are still some direct sales declarations expected. I do, however, believe that current feedback from numerous growers indicates a much better flowering season for the coming 2025/26 season.

There were some tumultuous shipments of mangoes between week 50 and week 53. The major concern was the shipment of more than 140 containers to the Middle East, representing more than 700 000 cartons in these 3 weeks. This ultimately portrays South African mango growers as being irresponsible and impetuous exporters of fruit. Although PPECB inspection figures are very accurate, but not a live reflection of the export situation at any moment in time, the SAMGA Board has taken the decision to approach Source B.I. and AgrigateOne to set up a live mango dashboard that tracks the PPECB inspection data on a daily basis.

One of SAMGA's biggest challenges are the lack of good reliable researchers. SAMGA also experienced some really badly managed research projects the past season. The Research Committee has been mandated to make sure that



Jaco Fivaz, SAMGA Chairman

research expertise is harnessed to meet the requirements of SAMGA members as well as complying to basic research methodology. The SAMGA Board is considering scaling down on research for a period of time to evaluate its current value to growers and rather place more

emphasis on better service delivery. Projects that will continue or be finalised this coming season are:

- Evaluation of promising new mango selections.
- A literature review on flower initiation.
- Generation of data for an EU MRL for phosphonic acid in mangoes.
- Testing of 13 chemicals for bacterial black spot control. This is necessary as Bion has been withdrawn.

As expected, we also still feel the brunt of the competition from drying factories in Africa, limiting South African exports to the EU. I believe that South African factories managed the volumes quite well the past season, but the concern might be in a very good yielding season, growers might again be facing closed doors at juice and drying factories. The severity of the drying issue is presenting itself through the ideas of smaller growers that are considering building their own factories without considering the costs, logistics, food safety audits, and marketing. I do not wish to downplay their efforts or ideas, but in 2012 South Africa had 19 factories and now only 9 to 10 are functional. The problem also escalates with at least 4 factories that are only processing their own fruit, leaving normal growers in a serious predicament.

In the same breath, I might be out of line in saying this, but I strongly believe the biggest concern in South Africa is that growers who are not affiliated with a processing company, especially juice, will again feel the logistical nightmare of doors either closing due to oversupply or ending processing before the season has come to an end. I cannot provide a solution, but would stick my head out and say that we need more operational factories in season. We are completely uninformed and therefore fully exposed to what we are told,



and what juice prices should be. Maybe this exposure can be eliminated by setting up a processing forum investigating world volumes and price trends for processed mangoes.

SAMGA has been communicating with the Department of Trade, Industry, and Competition as well as with Jan-Hendrik Venter from the Department of Agriculture (DoA), regarding import tariffs for imported fresh mangoes from Malawi and Mozambique as well as treatments, or rather lack of post-harvest treatments. Imports from Malawi, Mozambique, and contemptible quality from small growers from Komatiport will be addressed this coming season by:

- Requesting a formal visit by DoA, PPECB, and SAMGA at an exporting Malawian or Mozambiquan packhouse to verify the proposed hot water treatment and trace the product into South Africa and evaluate the ultimate quality.
- Secondly, SAMGA will propose and enforce new local market maturity standards, packing, and marking requirements to eradicate the rubbish that is dumped on our local markets.

In 2023, the SAMGA Board identified the need for a course in mango production, as there are no mango production courses at tertiary education institutions in South Africa. SAMGA partnered with Agricolleges International and we are proud to say that an official mango course has been launched. Universities are also considering, or have already incorporated some mango educational material into their agricultural curriculums.

Lastly, and probably the most concerning, are the threats of possible resignations of larger SAMGA members. The question might be: how do we as SAMGA, SAMGA Board, Research Committee, and individual growers turn this picture around?

As Board members, we are in constant discussion on a formal strategic platform and several proposals have been made and will soon be implemented to revitalise SAMGA and hopefully get the resigned growers back on board. The best news is probably the re-evaluation of the levy structure, as we are well aware of the financial struggles of farmers in an ever-changing agricultural sector all over the world.

I also urge everyone that is a member of SAMGA, to actively participate towards SAMGA's success and operational endeavours. 

Jaco Fivaz

SAMGA Chairman



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The chairperson's role during a disciplinary hearing

In the labour environment the disciplinary hearing is a vital process that aims to follow fair procedures and ensure that any decision regarding an employee's misconduct or dismissal is based on substantive grounds. The chairperson plays a key role, with the responsibility to maintain neutrality, fairness, and professionalism.

Tiaan Botes

LWO EMPLOYERS ORGANISATION

KEY RESPONSIBILITIES

The chairperson is the linchpin of the disciplinary hearing. Their role requires expertise regarding the process, an impartial attitude, and a commitment to procedural and substantive fairness. Key responsibilities include the following:

Order

The chairperson is responsible for ensuring that the hearing proceeds in an orderly and efficient manner. This involves facilitating discussions, maintaining discipline, and ensuring that all parties, including the employee and the employer, have an equal opportunity to present their views. By creating a structured and professional environment, the chairperson ensures that the hearing proceeds without unnecessary interruptions or conflict.

Procedural fairness

Procedural fairness is a cornerstone of a fair disciplinary hearing. The chairperson should ensure that the process complies with labour law principles, including the employee's right to state their case, call witnesses, and present a defence. This ensures that the hearing not only meets legal standards but also instils confidence in the process among all parties involved.

Impartiality

The chairperson must hear and evaluate all testimonies and evidence presented during the hearing without bias. This includes documentation, visual material, personal testimonies, and other relevant evidence. Decision-making must be based solely on the facts and evidence presented during the hearing, without any influence of prior knowledge or external factors.

Finding: guilty/innocent

After the hearing, the chairperson makes an objective finding on the employee's charge(s) of misconduct. The role of the chairperson is to make an impartial assessment of guilt or innocence based on the information, testimony, and evidence presented during the hearing.

Recommendation of an appropriate sanction

If the employee is found guilty, the chairperson will recommend a sanction in accordance with the employer's disciplinary code. This recommendation must be fair and proportionate, considering the nature of the misconduct and the business' policy.

IMPORTANT PRINCIPLES

To effectively carry out the above duties, the chairperson must adhere to certain principles:

Impartiality and independence: The chairperson must remain completely neutral and may have no knowledge of the case prior to the hearing. Any private communication with the employer or other parties before or after the hearing may be considered procedurally unfair, which could undermine the integrity of the process.

Expertise in labour law: The chairperson must be well-versed in labour law and developments in business law to ensure that the hearing meets all legal requirements. This expertise is essential to navigate complex issues and make fair decisions.

Transparency: By maintaining a transparent process, the chairperson builds trust with all parties. This includes clearly communicating procedures and explaining decisions where necessary.

The chairperson plays an indispensable role in disciplinary hearings, not only as an administrator, but as a leader who sets the tone for a fair and professional process. By impartially considering evidence and making fair decisions, the chairperson contributes to an ethical and fair work environment where labour relations are managed responsibly. ♦

The LWO assist employers to comply to labour law. The organisation is registered with the Department of Employment and Labour and, as such, is authorised to represent its members (employers) at the CCMA, bargaining council and Court of Labour. Contact the LWO Employers Organisation, available 24/7, for more information or assistance: Tel. 0861 101 828; e-mail info@lwo.co.za; visit the website <https://www.lwo.co.za>





SUBTROP 2025 Transformation Summit

This year's SUBTROP annual Transformation Summit placed a strong emphasis on grower participation, with more growers sharing personal testimonies to inspire and encourage their peers.

Stephen Mantsho
SUBTROP

One of the guest speakers at the Summit, held at Letaba Junction on 22 May 2025, Princess Mogale from the Citrus Growers' Association - Grower Development Company (CGA GDC), unpacked the CGA's transformation model and shared valuable lessons that other growers could adopt.

Recognising that many farmers are seeking sustainable business relationships, Zander Ernest was invited to shed light on whether partnerships truly work and how they can be made successful.

Representatives from ARC-TSC presented a funded project conducted in collaboration with the Department of Agriculture (DoA). The project focuses on litchi, mango, and avocado production, offering both research insights and practical applications for growers.

The keynote address was delivered by Mooketsa Ramasodi, Director-General of the DoA. He highlighted transformation successes achieved through collaboration between the public and private sectors, shared multiple inspiring case studies, and spoke about future possibilities for the industry.

Other notable speakers included Thias Taute and Nelson Ngoveni from Hoedspruit Hub, Ruline Pieters and Sydnwell Somba from RecruitAgri, Pauline Mkhwanazi from Westfalia, as well as a panel discussion featuring Khuliso Madima, Khathutshelo Matika, Clarence Malapana, and Ernest Mukhawane.

SUBTROP recognises and thanks the Summit's sponsors – Standard Bank, Insect Science, Westfalia, CHEP, and Novasun – whose support made this event possible. 🍀



Moabelo Ramawelo, Malemeku Mogale, and Chief Nchaupa Mogale.



Ernest Mukhawane, Khuliso Madima, Khathutshelo Matika, and Clarence Malapana.



Princess Mogale, Citrus Growers' Association - Growers' Development Company.



Pauline Mkhwanazi, Westfalia.



Mooketsa Ramasodi, Director-General of the Department of Agriculture.



Stephen Mantsho and Alice Malatji, the winner of the summit competition.



SALGA Research Symposium

June 2025, Mbombela



SAMGA Research Symposium and Technical Day

July 2025, Letsitele





From one to many: how Amondel is opening markets for emerging growers

What began in 2020 as a modest partnership with just one grower has now blossomed into one of the most promising transformation stories in South Africa's avocado industry. The collaborative efforts between SAAGA, Amondel Packers, and other strategic partners are proving that with the right support, emerging growers can become key players in both local and international markets.

Stephen Mantsho
SUBTROP

In the Vondo area of Venda, a single grower of Matika Subtropical Farms took a leap of faith and began marketing avocados through Amondel Packers, with backing from SAAGA. That lone grower was part of a broader vision to empower black growers and embed them into the formal value chain.

Fast forward to 2025, and that vision is not only taking shape, but also bearing fruit. Today 10 emerging growers successfully supply avocados through Amondel. This is not just a win for the individuals involved, but also a win for the entire industry and a model for transformation.

Building a better market, together

Market development has always been a cornerstone of success in agriculture. But for emerging growers, the challenge often lies not just in growing quality produce, but in accessing sustainable and fair markets. This initiative addresses that challenge head-on.

Thanks to partnerships with Amondel, growers now benefit from:

- Technical support and packing infrastructure,
- Access to retail markets including Freshmark (Shoprite and Checkers) and Woolworths,
- Participation in local marketing initiatives, and
- Potential export pathways through established networks.

These are not just handouts, but growers' pathways to independence from government support and financial reliance.

Westfalia's parallel success

Westfalia Marketing also played a significant role in transformation efforts. Between 2015 and 2021 they supported four emerging growers who have since gone commercial and now export avocados internationally through Westfalia's marketing system. Their journey shows that with guidance and long-term investment, transformation is more than a buzzword - it is a reality.

Tackling immature fruit: a shared responsibility

A recurring concern in the avocado industry is the harvesting

and sale of immature fruit, especially from areas like Venda. Recognising this, Amondel Packers, Prokon, and extension officers are working closely with growers to conduct moisture and ripeness testing. Educational sessions and field visits are helping instil a deeper understanding of market standards, and the results are clear: the number of immature fruits reaching the market from this region is declining.

Looking ahead: planning for 2026

With momentum building, plans for the 2026 season are well underway. Amondel Packers will begin:

- Moisture and ripening tests on 'Fuerte' from mid-December,
- Packing of 'Fuerte' starting late January to early February, and
- Packing of other cultivars scheduled for late April to early May.

This structured timeline helps ensure fruit quality, market readiness, and a coordinated supply.

GlobalG.A.P: the gateway to global markets

In another development, Subtrop secured funding to help selected growers in the Amondel programme, as well as those in the 1 Hectare Project, to obtain GlobalG.A.P certification.

This international standard is the key to accessing export markets, particularly for the Hass cultivar, which remains in high demand abroad. The support includes: intensive training, certification assistance, resource mobilisation, and market facilitation. This initiative represents a critical step forward in unlocking global opportunities for emerging farmers.

From one grower to an industry movement

It all started with Khathutshelo Matika, the first grower to supply through Amondel Packers in 2021. Inspired by his success, three more joined in 2023, and six more joined in 2024.

This is not just about avocados. It is about access, equity, and showing that transformation in agriculture is not only possible, but also already happening. The story of Amondel and its growers proves that with the right partnerships, informed guidance, and a commitment to inclusion, emerging farmers can grow into commercial players that feed markets, families, and futures. 💎



One hectare at a time: SAAGA's growing impact on emerging farmers

Through its strategic funding, SAAGA continues to expand its support of emerging growers through its 1 Hectare Project, an initiative that is steadily reshaping the face of avocado farming in South Africa.

Stephen Mantsho

SUBTROP

First launched in 2020, the project was designed as a transformation initiative aimed at the development and support of emerging avocado growers, using demonstration orchards as training grounds. The goal was to equip emerging growers with practical skills and technical knowledge that would enable them to establish sustainable and competitive avocado production operations.

What started as a small pilot project in Venda has grown in reach and impact, now also active in Mpumalanga, and producing promising results.

PROGRESS AND MILESTONES

Initial phase (2021-2023)

SAAGA successfully established 7,5 hectares of orchards in Venda. This became a vital platform for skills development and practical grower education, setting the tone for long-term success.

Some of the growers who joined the project in 2022 are now participating in formal markets, and two have been selected for SAAGA's export readiness programme.

Recent developments (2024-2025)

The programme expanded to Mpumalanga, supporting three growers, each with 1,5 hectares of newly developed avocado orchards. This phase focused strongly on mentorship, technical support, and stakeholder engagement to ensure growers are fully supported throughout the process.

KEY IMPLEMENTATION COMPONENTS

Orchard planning and establishment

- Accredited nursery trees are sourced to ensure high-quality, disease-resistant plant material.
- Orchards are professionally mapped and irrigated, using efficient systems tailored to local conditions.
- Land preparation follows best agricultural practices to support strong tree performance and long-term sustainability.

Capacity building and integration

The project encourages close collaboration between growers, input suppliers, packhouses, government departments, and other key players in the avocado value chain.

Hands-on training opportunities are provided to build real-world expertise, enabling growers to apply technical

skills in their own operations.

STRATEGIC OBJECTIVES

- Skills development: Provide growers with the technical know-how and hands-on experience necessary to manage productive avocado orchards.
- Economic growth and job creation: Create employment opportunities throughout the value chain, especially targeting youth, women, elders, and men in rural areas.
- Market access and competitiveness: Help emerging growers produce high-quality avocados that can stand alongside those of established commercial producers.
- Sustainability and partnerships: Build long-term, mutually beneficial relationships between emerging growers, SAAGA, and industry stakeholders to ensure ongoing support and growth.
- Project expansion: Strengthen existing operations and support the roll-out of new projects across all avocado producing regions in South Africa.

A GROWING FUTURE

The 1 Hectare Project has proven to be more than just an agricultural initiative. It is a catalyst for empowerment, a platform for transformation, and a gateway to commercial success for emerging avocado growers.

As more small-scale farmers enter the sector, SAAGA remains committed to provide the tools, resources, and support needed to ensure that no grower is left behind. The project is a strong example of how targeted investment, practical training, and coordinated support can plant the seeds of lasting change one hectare at a time. ♦





Avocado Market Brief - China

May 2025

1.416 B
Estimated
population by 2025

100 M
Estimated
population that
can afford
imported fruit in
2025



19.5 K

Tonnes produced
in China

7.9 K

Hectares in
China

Sept - Mar

China Avocado
Season (mainly
Hass)

4

Tonnes exported to
Russia & Macao in
2023

Time from South Africa



20-35 Days

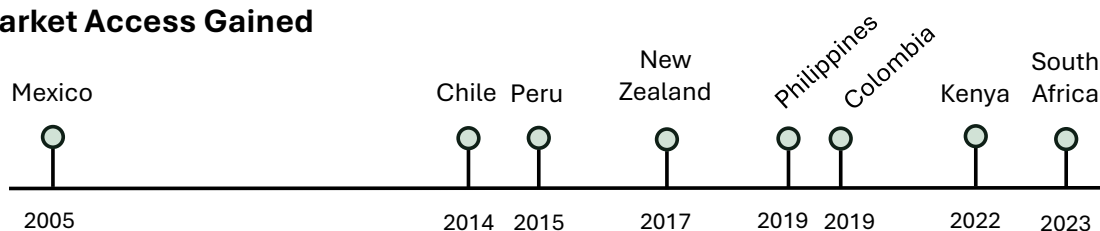


2-6 Days

7%

Import tariff and duty
for SA

Market Access Gained



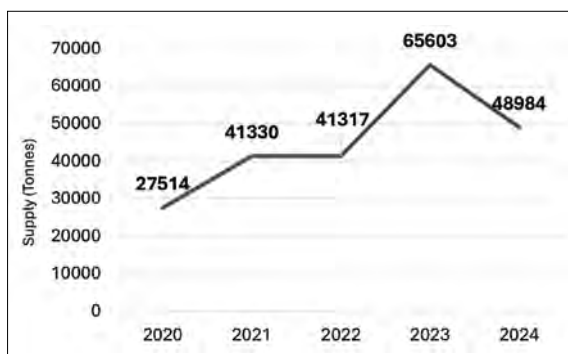
Supplier	Tariff
Peru	25% (MFN), 0% (China-Peru FTA ¹)
Chile	25% (MFN), 0% (Chile-China FTA ²)
Kenya	25% (MFN)
Mexico	25% (MFN)
New Zealand	25% (MFN), 20% (RCEP ³), 0% (China-New Zealand FTA ⁴)
Philippines	25% (MFN), 20% (RCEP ⁵), 0% (ASEAN-China FTA ⁶)
Colombia	25% (MFN)

Source: Trademap (2023), ITC Market Access Map

1. Free Trade Agreement (enacted 1/3/2010)
2. Enacted 1/10/2006
3. Regional Comprehensive Economic Partnership (enacted 1/1/2022)
4. Enacted 1/10/2008
5. Enacted 2/6/2023
6. Association of Southeast Asian Nations (enacted 1/7/2005)

Avocado Market Brief - China

May 2025



Total volume supplied to China.

Total volume supplied per country (tonnes).

	2020	2021	2022	2023	2024
Peru	15686	26289	28408	50023	37737
Chile	7059	6307	9143	8126	7527
Kenya	0	0	444	4324	1580
Mexico	4339	7088	2288	2048	753
New Zealand	118	1101	397	574	1193
Philippines	264	165	620	386	94
Colombia	48	246	17	117	0
Tanzania	0	0	0	0	76
South Africa	0	0	0	0	22
USA	0	134	0	5	2

Litchi production statistics 2024/25 season

Derek Donkin and Delané Landman
SUBTROP

Due to adverse weather conditions during flowering and fruit set, the 2024/25 South African litchi crop was the poorest on record since the year 2000 at 2 347 tonnes. A

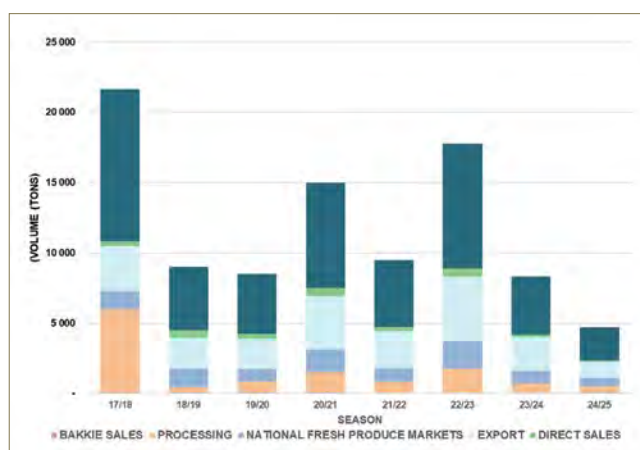


Figure 1. SA litchi production provided to various market outlets.

similar crop failure took place in 2007/08 when production totalled a mere 2 478 tonnes. Total production since 2017/18 and the split between market outlets are presented in Fig. 1.

On the export front, the US market was favoured over Europe due to good returns, emphasising the value of new markets where there is limited competition. In the 2023/24 season, 39% of exports went to the USA. This figure climbed to 42% in the 2024/25 season (Fig. 2). 

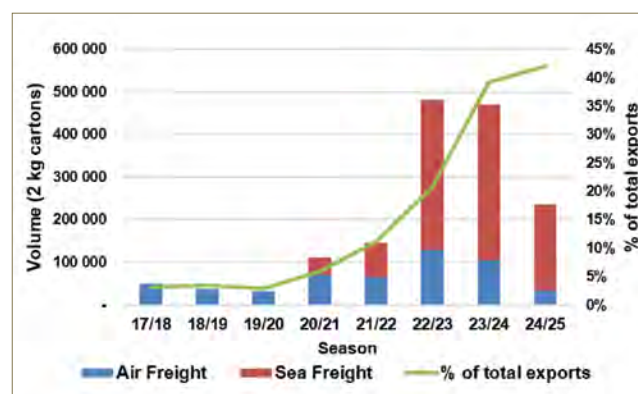


Figure 2. SA litchi exports to the USA.



Market access update



The moment you implement tariffs you disrupt trade, it's bad for economic growth but it's also typically bad for inflation. – Dawie Roodt

"What you can produce, we can buy. We can buy much more than what you can produce and we are keen to do it." When he heard that I have litchi orchards on my farm, he said: "I will buy everything you can produce because last year we could not bring in enough litchis from South Africa, and your products are very popular on the American markets." – Theo de Jager

James Mehl
SUBTROP

In my previous employment, at one time I was asked to draw up a business plan. While drafting this business plan, the overarching message coming through was that, regardless of what you are producing, you need a market. You need people to purchase whatever you are producing, otherwise you have a non-starter. From there, one can then define how your product is either superior or different to the competition and then work out a marketing strategy to increase awareness so that the product sells itself. Of course, now one can use AI to generate a business plan, but a farming business is still built on a physical product that has to be sold to people.

All three of our commodity organizations – SAAGA, SAMGA, and SALGA – have gained access to at least one special market¹. These markets include China, India, and Japan for SAAGA; India for SAMGA; and the USA for SALGA. On a technical side, market access involves Gaining, Retaining, and Optimising access to a market (the GRO principle) but we now face other challenges. In both these as well as the existing permit markets², South African produce³ competes with that from other countries, and many of these competing countries have a more favourable tariff. For example, for South African avocados going to China (current tariff 7%) competitors including Peru, Chile, New Zealand, and Philippines all have FTAs⁴ in place and their avocados thus attract no tariff. Unfortunately, as relayed recently by a DoA⁵ official to me, such favourable trade agreements take time. However, in agriculture one does not have the luxury of time.

Another problem that has emerged upon review of the markets where access must be gained, is the need for marketing – essentially creating an awareness and pull for South African produce. Markets such as Israel, Mexico, and Pakistan for avocados; China and Vietnam for litchis; and Thailand and Vietnam for mangoes, either do not import the produce

or are themselves nett exporters. While South Africa may be able to supply produce counter-seasonally to those that are nett exporters; there is still much work remaining. One final note: supply to a market is still determined by demand, which subsequently determines price and BOF⁶ income to a grower. If a market cannot provide good BOF return to a grower, then it is unlikely that South African produce will be sent there.

AVOCADOS

USA: Comments on the draft Pest Risk Assessment (PRA) were submitted in June 2023. After finalizing the PRA, the USDA-APHIS⁷ will consider the proposed Systems Approach. The technical bilateral meeting between the DoA and USDA-APHIS was postponed. The DoA continue to follow up with the USDA-APHIS on this and the other two applications noted below.

Other markets: Applications have also been submitted for access into Taiwan, South Korea, Vietnam, Thailand, Israel, Mexico, and Pakistan. Information on the progress of these applications is available to our members upon request and in the avocado app.

¹ A special market requires one or more mitigation measures (cold treatment, fumigation, irradiation, etc.) to reduce the risk of a pest accessing the destination country and establishing there.

² A permit market requires that a consignment be accompanied by a phytosanitary certificate and import permit.

³ In this article, produce refers to South African avocados, mangoes, and/or litchis

⁴ FTAs – Free Trade Agreements

⁵ DoA – South African Department of Agriculture

⁶ BOF – Back on Farm

⁷ USDA-APHIS – United States Department of Agriculture Animal and Plant Health Inspection Service

MANGOES

USA: Comments on a draft work plan were sent to the USDA-APHIS in July 2023.

China: Access for SA stone fruit and SA blueberries are to be granted before the application for SA mangoes can be processed. The Pest Information Package (PIP) has already been submitted.

Japan: Extended access for SA table grapes (the Crimson Seedless variety – current access into Japan only allows for imports of the Barlinka variety) and SA citrus need to be finalized before the PRA for SA mangoes can be processed. A systems approach proposal to ensure that production areas are free of mango seed weevil, is being finalized for submission to DoA.

Other markets: Applications for access into Vietnam and Thailand have also been submitted.

LITCHIS

USA: Two cold treatments are under consideration here, and feedback from the USDA-APHIS is pending on both:

- A protocol for trial work supporting the initial cold treatment (1 °C for 19 days) and addressing the concerns of the USDA-APHIS, was sent mid-October 2021.
- The alternative cold treatment (-0.55 °C for 22 days – T-107e): while the USDA-APHIS have accepted the proposal to use this treatment, they confirmed in the bilateral end-October 2022 that they are still reviewing the Quarantine Pest List to decide if additional mitigation treatments will be needed.

India: Information is being exchanged between the DoA and the MAFW⁸ after a successful verification visit.

China: The PIP for SA litchis has been submitted.

Other markets: Applications for access into South Korea and Vietnam have also been submitted. 🌍

⁸ MAFW – Indian Ministry of Agriculture and Farmers Welfare

The evolution of avocado marketing

If we look back just five years, social media influencers were not part of the South African Avocado Growers' Association's (SAAGA) marketing toolkit. When we first developed the 2020 communications plan, the focus was still focussed on traditional media - TV, magazines, radio and in-store campaigns. But then the world changed; the COVID-19 pandemic hit, lockdowns were announced, and our marketing strategy had to pivot overnight to reach consumers where they were spending their time: online.

Glynnis Branthwaite

PROTACTIC STRATEGIC COMMUNICATIONS

Finding new ways to connect

When lockdown was announced in March 2020, SAAGA had just launched the avocado season with an in-person media event. A week later, the country came to a standstill. With in-store activations off the table and consumers spending more time at home, we had to quickly adapt. The question was: how do we keep avocados top of mind and on shopping lists when purchasers/consumers cannot see them in-store?

The answer came from observing what consumers were doing during lockdown. People were cooking at home, watching online videos, following recipes, and engaging with social media personalities who felt relatable and inspiring. We realised that food and health influencers were the ideal partners to ensure that South Africans kept adding an avocado or two to everyday meals.

Growth of influencer partnerships

Since 2020, SAAGA's investment in social media influencers has grown significantly and they are now an integral part of our marketing plans. Our budget for influencer partnerships has quadrupled over five years, reflecting how important these relationships are in reaching today's consumers.

The influencer landscape has also changed dramatically. In 2020, there were fewer food-focused influencers and their fees were relatively low. Today, there are many more influencers, with varying follower counts and engagement rates. This increase in supply has helped us partner with a mix of influencer types:

- Macro-influencers: Broad reach but high cost, useful for brand awareness.
- Micro- and nano-influencers: Smaller followings but highly engaged audiences, ideal for driving conversations and action.

The real learning, however, has been that engagement is key.

Engagement and why it matters

It is easy to be dazzled by big follower numbers, but that is not what drives engagement or sales. Engagement refers to how people interact with an influencer's content; whether they like, comment, share, save, or click on it. An influencer with 5 000 followers but high engagement might deliver better results than someone with 500 000 followers and a disengaged audience.

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The evolution of avocado marketing

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Over time, we have learnt to brief influencers clearly, encourage them to create authentic content and track what their audience does with that content. A short video where someone shares how they add avocado to their family's breakfast, filmed in their own kitchen, often performs better than a slick post with heavy messaging. It is relatable. It feels real.

Changing consumer habits

Recent SAAGA consumer research backs up these trends. Avocados have moved firmly onto consumers' shopping lists and more people now plan to buy them, rather than make impulse purchases. In 2012, only 36% of consumers said they planned to buy avocados. In 2025, that number jumped to 70%. Social media influencers have played a role in this shift.

Consumers are looking for inspiration. Cooking programmes and food influencers have emerged as the leading communication channels for avocado information.

Research shows that:

- 48% of people regularly see avocado content on cooking programmes.
- 43% have seen avocado content from food influencers on social media platforms like Facebook, Instagram, TikTok, and YouTube.

Platforms like TikTok have grown rapidly and we now spread our efforts across television cooking shows, YouTube, TikTok, and food blogs. In-store promotions remain relevant, with 40% recall at point-of-sale.

The influencers consumers follow

Our influencer partnerships focus on local personalities. Names like The Lazy Makoti, Siba Mtongana and Cooking with Zanele have led the way. These local voices remain popular, and we continue to partner with some of them, but we regularly add new influencers, based on engagement and whether their specific content and followers complement the key messages.

In 2025, the research noted the growing presence of international influencers like Jamie Oliver and Gordon Ramsay, but this is possibly linked to global partnerships and their local retail (for example, Jamie Oliver's partnership with Checkers). South African voices remain our focus to reflect the diverse interests of our consumers.

Lessons learnt

Here are some of the key learnings that shape how we work with influencers today:

- Clear briefs matter.
- Influencers are not avocado experts. We learnt to create simple briefs explaining avocado cultivars, (green-skinned vs dark-skinned avocado), versatility, health benefits, and care and handling. Only once they understood avocados could they speak authentically about it.
- Keep it simple.
- We initially tried to include too many messages into one video. Now, we focus on one or two simple ideas: a recipe,



Influencer Zola Nene is an acclaimed cookbook author, food stylist, television chef, and a highly respected authority in the culinary space.

a storage tip, or a health benefit.

- Shorter attention spans.
- Average watch times are decreasing. We encourage short-form videos that grab attention quickly - with avocados as the hero and appetite appeal in the first ten seconds.
- Authenticity wins.
- Content performs best when influencers are authentic. Polished, scripted reels do not resonate as well as an influencer's own take on a favourite recipe where an avocado has been added.
- Engagement over followers.
- Meaningful interaction trumps big numbers.

From crisis to core strategy

Lockdown forced us to try something new and social media influencers have become an essential part of SAAGA's marketing strategy; a core part of how we build awareness and drive consumption.

The world of food and health marketing continues to change. As newer platforms emerge and consumer habits evolve, we will continue adapting. What will stay constant, however, is the need to meet consumers where they are - online, looking for ideas, inspiration, and connection. As an industry, our job is to keep avocados part of that story. 🌱



Lenticels and lenticel discolouration in mango

Lenticels are macroscopic openings found in the skin of fruit and on the stems of woody plants. These structures serve vital functions such as facilitating gas exchange and transpiration.

Regina Cronjé¹ and André Botha²

¹ARC-TROPICAL AND SUBTROPICAL CROPS, ²SUBTROP

Typically, lenticels appear white or colourless. However, under certain conditions, a physiological disorder known as lenticel discolouration can occur. This disorder manifests as a red or black discolouration around the lenticels. Although it is purely cosmetic and does not affect the internal quality of the fruit, it is undesirable to consumers and negatively impacts the market value.

Lenticels originate from stomata in young fruit, which rupture or degenerate as the fruit grows and matures. In susceptible cultivars, especially those lacking a protective wax or cutin layer inside the lenticel cavity, pressure in nearby resin (i.e. latex) ducts combined with the presence of resin volatiles or environmental stressors, can damage cell membranes around the lenticel.

This damage prompts the accumulation of phenolic compounds in surrounding cells, leading to the visible discolouration. This reaction is considered a self-defence mechanism to protect the fruit against entry of pathogens at the damaged cells.

In South Africa, cultivars such as 'Tommy Atkins' and 'Keitt' are particularly prone to lenticel discolouration. Fruit maturity also plays a role, with less mature fruit being more prone to discolouration. For susceptible cultivars, a maturity index of at least 0,5 on the SAMGA maturity chart is recommended, with an even colour distribution between the skin and pip.

Environmental conditions prior to harvest are important contributors. Particularly wet seasons, characterised by high rainfall and consequently increased soil moisture, along with low temperatures and high humidity, can raise the moisture in the fruit as well as the pressure in the resin ducts, thereby heightening the risk of lenticel damage.

Adjusting harvesting practices for susceptible cultivars, such as drying off the orchard soil prior to harvest to less than -50 kPa (where possible), picking long-stems with immediate de-sapping on a palette with chicken wire, or delaying picking to the afternoon to allow the fruit to lose turgor, are helpful to limit lenticel damage. Under no circumstances should fruit be picked during or immediately after rainfall.

Where soils cannot be dried off prior to harvest due to high rainfall, certain post-harvest handling practices can be used to reduce lenticel

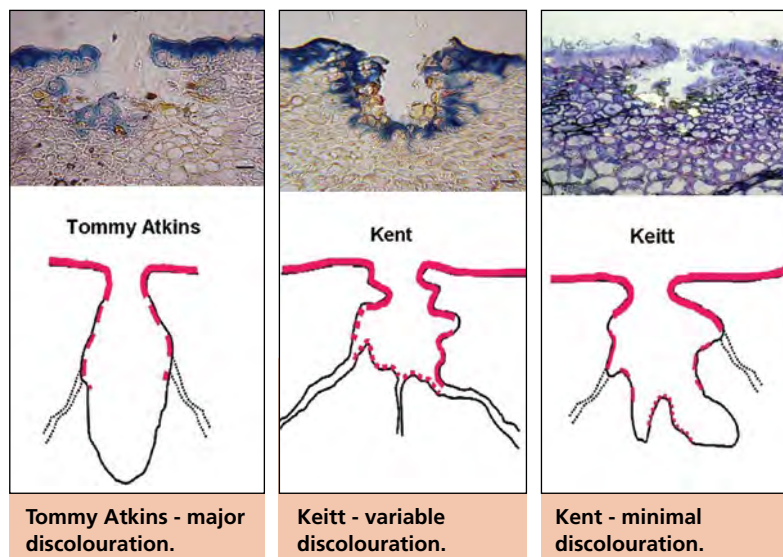
discolouration. During wet seasons, these practices include storage of morning or midday-harvested fruit for at least six hours before packing. The fruit can be stored in wooden bins, plastic bins, or crates (without paper lining on cool and humid days). Afternoon-harvested fruit should be kept overnight in wooden bins, possibly with paper lining (avoid plastic bins).

One way to assess skin moisture during wet years is by dropping a knife onto the fruit and observing if moisture exudes at the cut site. The minimum sample size should be 20 fruits. When less than 20% of the fruit exude moisture at the cut, the fruit can be packed. However, during dry seasons, when it is easier to dry off orchard soils, fruit can be packed immediately or within six hours after arrival in the packhouse.

Paper lining in bulk bins can be helpful, especially on hot days. Additionally, minimise use of handling equipment such as brushes, avoiding hard brushes, and reducing the number of contacts. Some commercial waxes can exacerbate lenticel damage and should be selected carefully.

Storage temperatures below 10 °C are also known to increase risk. Furthermore, disinfectants or any other products (i.e. for pest control) known to contribute to lenticel damage should be avoided to preserve fruit appearance and marketability.

Past research has shown that fruit turgor and latex composition are the primary contributors to lenticel discolouration. Therefore, any pre- and post-harvest practices that can reduce fruit moisture and turgor can help mitigate this disorder, as well as any steps a grower can take to protect and improve productivity. ♦





Liming and soil pH: Laying the foundation for productive orchards

Soil pH is one of the most important factors in successful subtropical fruit production, yet it is often overlooked. Whether a grower is planting new or managing mature orchards, maintaining optimal pH is key to nutrient availability, soil biology, and overall tree health. Liming remains the most effective and economical way to correct acidic soils, particularly in South Africa that is known for its acidic soils.

Franco Stander
SUBTROP

Soil pH affects nearly every aspect of soil chemistry and biology. At low pH levels (acidic conditions) the availability of essential nutrients such as phosphorus, calcium, and magnesium decreases, while elements like aluminium and manganese become more soluble. This can lead to nutrient deficiencies and root damage, both of which reduce tree vigour and yield. In contrast, a pH that is too high (alkaline conditions) can lock up micronutrients like zinc, boron, and iron, causing deficiencies even if those elements are present in the soil.

Figure 1 shows at what pH different nutrients are available. A pH of 5.5 to 6.5 gives the highest range of nutrients available to the plant.

For most subtropical crops including avocados, litchis, and mangoes, the ideal soil pH range is between 5.5 and 6.5, depending on crop and rootstock. Outside of this range, fertiliser efficiency drops and soil biology is disrupted, making it harder for trees to access the nutrients they need.

When preparing land for a new orchard, liming is one of the most critical steps to ensure long-term soil health and tree productivity. The lime should ideally be applied 6 to 12 months before planting, allowing time for the lime to react with the soil and neutralise acidity. The lime must be thoroughly incorporated into the soil profile to reach the root zone where young trees will develop.

One-time surface applications will not correct acidity at depth, especially in soils with acidic subsoils (10–30 cm). The goal is to build a favourable rooting environment that supports nutrient uptake, strong early growth, and resilience to environmental stress.

In established orchards, surface applications of lime are still beneficial but work slower. Lime moves downward through the soil profile over time, assisted by rainfall or irrigation. While it may take longer to correct subsurface acidity, regular surface applications can help maintain a stable pH in the topsoil and prevent further acidification.

Rates of application depend on the degree of acidity, soil

type, and lime quality. A typical liming rate in subtropical soils is 2–4 tons per hectare, but higher rates may be necessary in severely acidified soils. Always base lime recommendations on a proper soil analysis and consider re-testing every 2–3 years.

The choice between dolomitic lime and calcitic lime depends on the soil's calcium (Ca) and magnesium (Mg) balance. Dolomitic lime contains both calcium and magnesium carbonates and is preferred where magnesium levels are low - often below 60 mg/kg or where Ca:Mg ratios are highly skewed. It is commonly used on sandy or highly leached soils in high-rainfall areas.

Calcitic lime, on the other hand, is primarily calcium carbonate and is used where magnesium levels are adequate and only calcium and pH correction are needed. Overuse of dolomitic lime in soils already high in magnesium can lead to imbalances that negatively affect soil structure and nutrient uptake, especially of potassium and calcium.

Not all lime is created equal. The effectiveness of agricultural lime depends on its neutralising value (NV), particle size, and chemical composition - factors that vary between lime sources and mines. A finer grind will react more quickly in the soil, while a higher NV indicates greater capacity to neutralise acidity. Therefore, growers should not assume that all lime is equally effective based on price or proximity alone.

It is strongly advised to consult with an agronomist or soil consultant who can assess soil test results and recommend the appropriate lime type, rate, and source. Investing in the right product and application approach up front can significantly influence the long-term performance and sustainability of an orchard.

While gypsum (calcium sulphate) is not a liming material and does not raise soil pH, it can be useful in managing subsoil acidity. In highly acidic subsoils where aluminum toxicity is a concern, gypsum provides calcium without affecting pH, helping improve root penetration and water use. However, gypsum should complement and not replace liming in a pH management programme.

Soil pH is not something a grower can fix once and forget. It is a dynamic property that shifts over time, depending on

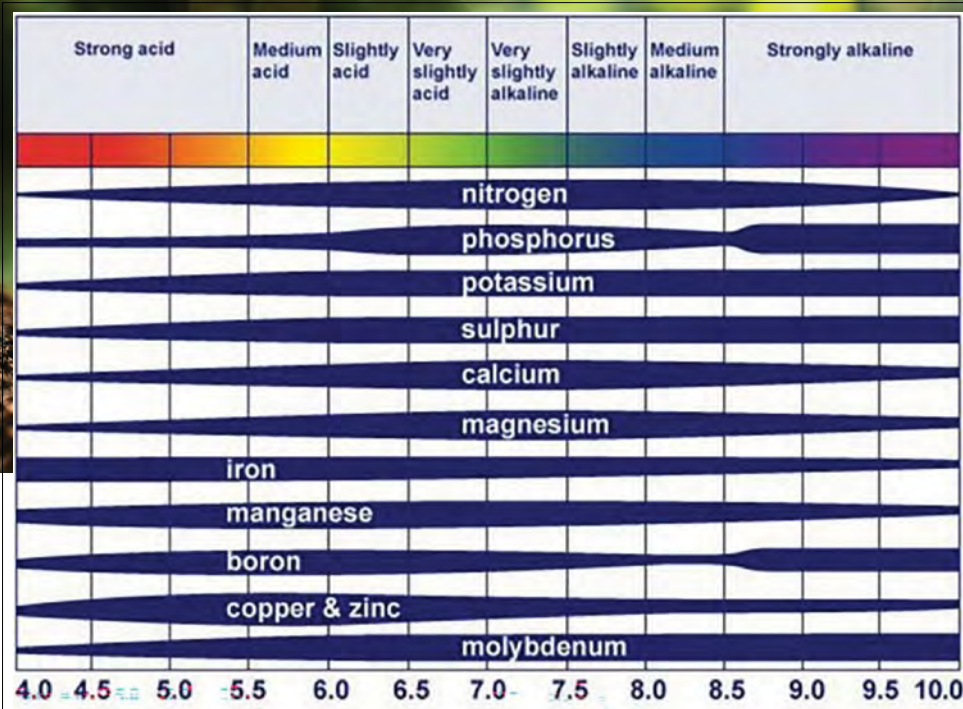


Figure 1. Availability of nutrients at different pH levels.

fertilisation, rainfall, crop uptake, and soil management. In orchards, long-term sustainability depends on routine monitoring.

Healthy orchards start from the ground upward. By actively managing soil pH through strategic liming, farmers can unlock

better nutrient availability, stronger root systems, and improved resilience against stress. As fertiliser and input costs rise, ensuring soils are in the right pH range is one of the most cost-effective steps a grower can take to protect and improve productivity. ♦

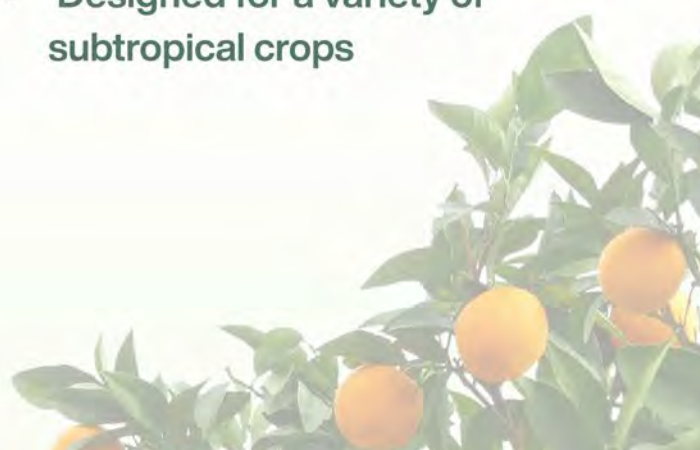
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Phytophthora - back to basics

Phytophthora cinnamomi is a soil-borne oomycete that causes Phytophthora root rot (PRR), widely regarded as the most destructive disease of mature avocado trees. The pathogen first infects fine feeder roots, turning them black and brittle, and eventually progresses into larger roots.

Ulrich Koster
SUBTROP

Root decay severely impairs water and nutrient uptake, causing canopy chlorosis, wilting and dieback, and ultimately tree death in the long run if severely affected trees are left without intervention. The pathogen produces long-lived spores (chlamydospores) and spreads readily in water or infested soil. Heavy rains and waterlogged conditions greatly accelerate disease development.

Today, South African avocado growers use an integrated approach informed by decades of research. The history of PRR in South Africa – documented in SAAGA yearbooks and industry symposia – highlights the value of combining clean stock, tolerant rootstocks, proper irrigation, and targeted chemicals to combat PRR.

CULTURAL AND PREVENTIVE PRACTICES

Because *P. cinnamomi* is persistent in soil, prevention and cultural control are essential. Growers should use only certified/ANA accredited, pathogen-free nursery plants. Remove

severely infected trees and avoid replanting immediately in infested sites. Physical barriers (ridges, mounds, raised beds) can help isolate healthy blocks.

Most importantly, irrigation and soil management must avoid prolonged saturation. Avocado roots occupy the top ~15-20 cm of soil and die if continuously over saturated conditions are present. Soils should be well-drained, and sites with free drainage or ridge planting are preferred. Use emitters or micro-sprinklers that wet only the root zone, preferably not the trunk, and schedule irrigation to avoid puddling which causes prolonged saturated conditions or poor draining soils.

A thick mulch under the canopy can help moderate soil moisture and temperature but avoid too much mulch against the trunk. Good fertility management (balanced nutrition, avoiding excess ammonium or urea) and soil pH in the neutral range also support tree vigour.

'Resistant' or tolerant rootstocks are another cornerstone in battling PRR. Current recommendations include clonal rootstocks like Dusa or Bounty. This significantly slows down disease development, giving growers a larger margin for

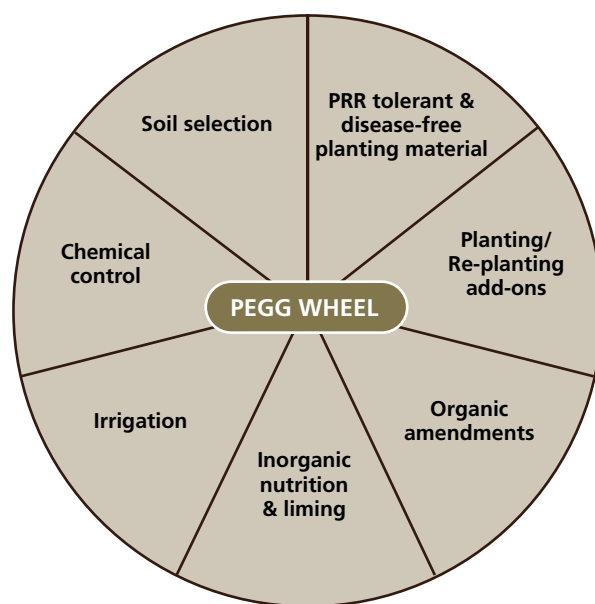
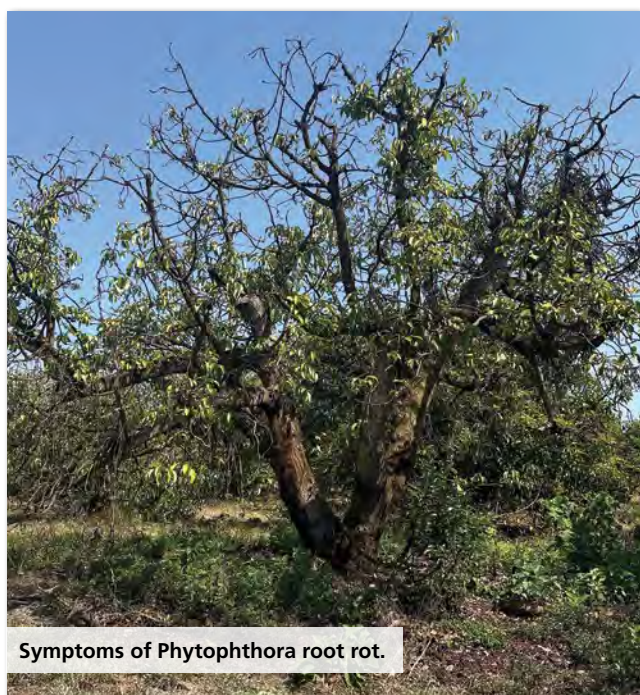


Figure 1. The **Pegg Wheel** (integrated pest management approach towards the control of PRR).

Table 1. Core methods summarised.

Method	Application	Key features
Soil drench / Irrigation	Apply phosphonate solution in soil or via irrigation lines around roots	Treats entire root zone; systemic uptake by all roots; good for young trees. Requires large volumes; uptake slower; can be diluted by rain or lost if soils are waterlogged.
Foliar spray	Spray foliage (and trunk bark) thoroughly with phosphonate solution. Also see product labels.	Easy to apply with standard spray cart; induces systemic protection and host defences. Covers canopy uniformly. Needs repeated applications (3–6/week); wash-off by rain; fruit residues possible if mis-timed.
Trunk injection	Inject concentrated phosphonate into trunk xylem (several holes, capped)	Highly efficient uptake; long-lasting; minimal chemical used; works under all weather; Labour-intensive; tree wounding; requires special kit & tools.

other controls. However, even tolerant rootstocks must be managed (good drainage, etc.) since severe conditions and high pathogen load can still overwhelm them.

Together, these practices help keep inoculum levels low and trees vigorous. Even with all cultural measures, chemical treatments are generally required to maintain control over PRR. This includes tree injections, soil drenches and sometimes even foliar sprays (not widely used). Please refer to the [SAAGA MRL](#) list to see registered products.

TRUNK INJECTION OF PHOSPHONATES

Trunk injection has become the most effective and popular method for controlling established PRR in mature avocados. In this method, concentrated phosphonate solution is injected directly into the tree's xylem via holes drilled around the trunk base. Products like potassium phosphonate (e.g. *Fighter* or *Avoguard*) or liquid fosetyl-Al can be used in injection kits.

The injected phosphite moves both upward (toward shoots) and downward (to roots) using the vascular system towards roots, hence the importance to apply when the tree roots are the stronger sink.

Advantages: Injection delivers the chemical with minimal waste or environmental impact. Trunk injection uses a low volume of chemical with minimum wastage and maximum persistence inside the plant. Practically, only a few milliliters per injection point are needed. Treatment is fast-acting and long-lasting: phosphite residues in roots remain therapeutic for many months. Because no spray drift occurs, injections are environmentally safer for workers and nearby flora.

Limitations: Injection is more labour-intensive per tree and requires multiple syringes. It is generally practical only for trees above a certain trunk diameter (e.g. >15-20 cm) and not for seedlings or very young trees. Care is needed not to over-inject (overpressure) which can harm the vascular tissue. Formulation-wise, only registered phosphite products or Aliette CA should be used. Packets of pure phosphorous acid are not labelled for injection.

Practice: Root rot only: Inject by means of a syringe into tree trunk. Number of syringes and volume per syringe depend on drip area of tree (refer to label). Inject after leaves of spring flush have hardened off and repeat when leaves of summer flush have hardened off. Optimum pH 6.5.

Typically, two injection treatments per year are sufficient for

control. For example: (Avoguard 500 SL) Inject after the leaves of the spring flush have hardened off and repeat when the leaves of the summer flush have hardened off. The calendar date for correct timing of applications will vary according to the cultivar, the weather conditions, and the region. Consult with experts and/or consultants for regions.

Trees affected by *Phytophthora* root-rot will flush later and harden off later and such trees will therefore need to be treated at a second pass through the orchard. Injecting Avoguard 500 SL too early, i.e. while the trees are still flushing, will reduce translocation to the roots and will very likely increase residues in the fruit.

PHOSPHONATE SOIL TREATMENTS (drenches and irrigation)

South African growers apply these broadly in several ways. As a soil drench, the fungicide (see availability on [SAAGA MRL](#) lists) is applied around the root zone, often via irrigation or dedicated drench applications.

Practice: For example, Ridomil-Gold 480 SL [Metalaxyl-M (mefenoxam)] can be applied evenly as a soil drench within the drip area of the tree, followed by light irrigation. Applications should be made twice per season. The first application should coincide with new growth, usually shortly before the onset of the rainy season, and the second 16-20 weeks later. The latter generally around the summer root flush, which also helps to avoid MRL problems, by applying the chemicals when the roots are a stronger sink than the fruits. The chemical is absorbed by feeder roots and translocated through the plant. This treats existing roots and helps protect new growth.

Advantages: Soil drenches can cover the entire root system at once and can be easier on the tree (no trunk wounds). They also fit well in young orchards or replant situations.

Limitations: Drenches require large volumes of water and chemical to reach the full root zone, and uptake is slower than injections. They are most effective when applied preventatively or at early disease stages. Heavy rains soon after drenching can wash chemicals away or dilute their effect. Some soils (very sandy or acidic) may bind or degrade the product differently. Historically, metalaxyl (Ridomil) was also used as a drench, but some *P. cinnamomi* populations are now resistant, so metalaxyl is not too widely relied upon today.

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Labels and SA extension bulletins often give rates normalised to tree size or canopy volume. Drench treatments are often combined with injections to ensure adequate distribution.

PHOSPHONATE FOLIAR SPRAYS

Foliar applications of phosphonate fungicides are rarely used as a preventive measure. Fosetyl-Al (Aliette-WG) or (Alyfos 800 WDG) can be sprayed onto the leaves and bark, or potassium/ammonium phosphite formulations can be used as foliar fertilisers. In either case, the material is readily absorbed by foliage and moves systemically throughout the tree. For example, after a canopy spray of Aliette, the active ingredient converts to phosphonic acid inside the plant, providing protection to new roots and shoots.

Advantages: Foliar sprays use standard orchard equipment and are relatively easy to apply to mature canopies. They treat the whole tree at once and provide rapid protection to actively growing flushes. Because phosphonic acid is systemic, good coverage of the canopy will reach the roots indirectly. Applications during key growth periods (e.g., spring, early summer) help protect the most vulnerable young roots.

Limitations: Foliar sprays are primarily protectant – they work best against new infections rather than curing deep-established decay. They require thorough coverage of the canopy, which can be difficult in dense, tall trees. Rain soon after spraying can wash the material off if it has not dried or been taken up by the leaves.

Multiple applications are needed each year (often every 3-6 weeks), which increases labour and chemical usage. In practice, repeated foliar use can lead to higher total chemical use than single injections. There is also the potential for residue in fruit (SA's MRL: for phosphite applications, one should avoid late sprays on export fruit).

Practice: (also see product labels for full guidelines)

- Corrective treatment (orchards): Apply as a foliar spray every 4 weeks throughout summer to new growth flush.
- Maintenance and preventative treatment: Apply as a foliar spray every 6 weeks throughout summer.
- Nursery trees: Apply every 6 weeks as a soil drench or foliar spray. Optimum pH 6.5 - 7.5.

First sprays are often timed after flowering or at bud break, then repeated 3-5 times through the growing season. Spray when trees are actively transpiring (not during rain or drought stress). SA Extension guides (e.g. by SAAGA) and product labels give tailored schedules.

INTEGRATED GUIDELINES AND RECOMMENDATIONS

No single method will eradicate *P. cinnamomi*, so integration of all measures is essential. In summary, key guidelines are:

- **Monitor regularly:** Scout for PRR symptoms and make use of tools like the [Ciba-Geigy](#) scale. The scale is used to quantify the severity of canopy decline, which can be a

symptom of various diseases, including Phytophthora root rot. The Ciba-Geigy avocado tree health rating scale is a system used to assess the severity of Phytophthora root rot disease on avocado trees, specifically focusing on canopy decline. It is a scale from 0 to 10, where 0 represents a healthy-looking tree and 10 indicates a dead tree. The scale provides a standardised way to evaluate the impact of the disease on the tree's overall health and vigour. Early detection allows targeted treatment before spread or further deteriorating of trees.

- **Optimal irrigation:** Maintain uniform, adequate moisture under healthy trees. Additionally, avoid runoff or waterlogging from diseased areas since sick trees may/will use less water.
- **Balanced nutrition:** Avoid over-fertilising with nitrates and use phosphorus fertilisers judiciously - high P levels can reduce phosphite uptake and movement. Soil amendments such as elemental sulphur can acidify the soil micro-site around the roots, potentially making conditions less favourable for *Phytophthora cinnamomi*. Gypsum supplies soluble calcium without raising pH, which helps strengthen root cell walls and may reduce pathogen spread. Both amendments can improve soil structure and drainage, indirectly supporting root health.
- **Rootstocks:** Replanting on tolerant rootstocks is strongly recommended in replant sites or persistent PRR zones. Even when grafted to 'Hass', a tolerant rootstock buys time and permits better growing conditions.
- **Chemical scheduling:** Maintain a year-round phosphonate programme. A practical schedule might be: drench or fertigate at early summer (pre-rain), follow with a mid-season trunk injection (at summer root flush to ensure roots are the stronger sink between fruits and roots to avoid [MRL](#) problems). Always follow label guidelines on rate and re-entry intervals.

CONCLUSION

Phytophthora root rot remains a chronic challenge, but the "basics" of management are well established. Decades of South African research have shown that regular phosphonate treatments, combined with good cultural practices, can keep trees productive for many years. As one review noted, complete eradication of *P. cinnamomi* is virtually impossible, so a multifaceted strategy is essential. Growers should build a yearly programme: maintain clean planting material, ensure optimal soil moisture/drainage, use resistant rootstocks where possible, and apply phosphonates by injection, drench, or spray as needed.

Local South African sources (SAAGA Yearbooks, SUBTROP bulletins) provide detailed protocols, but the core principles align globally. By "getting back to basics" - monitoring orchards, balancing irrigation, and using phosphonates judiciously - both new and experienced growers can effectively manage PRR and sustain healthy avocado orchards.

Sources: This article draws on South African avocado industry sources (SAAGA Yearbooks, SUBTROP factsheets). ♦



What to look for when buying avocado trees from a nursery



The success of an avocado orchard starts with selecting the right trees. Whether the grower is a new farmer with a few hectares or establishing a large commercial farm, the quality of the avocado trees purchased from a nursery will directly impact yield, orchard longevity, and long-term profitability. Here are some things to look for as a farmer when buying avocado trees from a nursery.

André Botha
SUBTROP

South African avocado growers are strongly advised to source trees only from nurseries registered with the Avocado Nurserymen's Association (ANA) and registered by the Department of Agriculture (DoA). Certification ensures compliance with phytosanitary regulations and propagation standards.

ANA registered nurseries use rootstock and scion material from mother blocks that have been indexed for diseases, implement strict hygiene protocols, and provide traceability for each tree. Farmers should request documentation verifying certification and ideally visit the nursery of choice before placing an order for trees to inspect the facility's propagation conditions. SAAGA's (<https://avocado.co.za>) website maintains a list of ANA accredited nurseries which are audited annually, which can serve as a reliable guide for growers.

While some emerging and commercial farmers may be tempted to start orchards or expand rapidly using seedlings due to lower upfront costs, this approach is strongly discouraged in South Africa's commercial context. Seedling trees are genetically unpredictable, slower to bear fruit, and more susceptible to diseases like Phytophthora root rot. Clonal trees, on the other hand, combine resilient rootstocks such as Bounty or Dusa®, commonly used in the South African avocado industry, and a known scion such as 'Hass', 'Fuerte', or 'Lamb Hass', etc. Additionally, these trees begin bearing earlier and have uniform fruit quality and yield.

Growers should open some bags when collecting trees to inspect the roots. Healthy root systems are extremely important for successful orchard establishment. Poor nursery practices can lead to poor roots. Therefore, a farmer should ensure roots are white, fine, and spread evenly, and check that growing media that drains well is used. ANA standards dictate that a growing media with <20% air porosity must be used to ensure drainage.

The graft union, which is where the rootstock and scion meet, should be healthy. The union should not show cracks or separation, and it should be above the soil level in the bag to prevent rot and pathogen entry.



Farmers should not accept trees with hidden or poorly formed grafts.

South Africa's avocado industry faces several problems, with Phytophthora root rot being the most common in young trees. Infected nursery trees can introduce this soil-borne pathogen into otherwise clean orchards, leading to rapid decline and death.

Additionally, Avocado Sunblotch Viroid (ASBVd) can be passed on through seed source mainly. Although nurseries cannot guarantee 100% ASBVd-free trees, they put in efforts to mitigate the risk by using indexed, viroid-free mother trees, sterile propagation techniques, and offer trees tested for and free from Phytophthora, Pythium, and ASBVd.

Ideal transplanting trees in South Africa are typically 6-12 months old post-grafting and are between 30-60 cm in height. These trees are easier to handle, establish more quickly, and require less staking than taller, older trees. Oversized and older trees, particularly those grown too long in bags, may suffer more from transplant shock.

Nurseries registered with ANA provide more than just trees; they offer technical support, and on-site consultations. They can also assist the grower in deciding on suitable rootstocks and cultivars for a farm, taking into consideration climate, soil, and markets.

The success of an avocado orchard depends on sound decision-making from the establishment phase. Choosing healthy, clonal trees from certified and ANA accredited nurseries is not a step to be compromised. The long-term profitability of an avocado orchard relies on tree quality, cultivar suitability, and nursery integrity. South African farmers are encouraged to work closely with nurseries affiliated with SAAGA, ANA, and the DoA.

Farmers can further familiarise themselves with the ANA manual and checklist, which will provide an additional guide on what to look for when buying avocado trees from a nursery. With proper due diligence at the nursery stage, farmers can set their orchards on a path to high productivity and long-term sustainability. ♦

Growers are advised to source trees only from nurseries registered with the Avocado Nurserymen's Association (ANA).



Understanding mango maturity

Mango maturity marks the stage at which the fruit has reached its full physical size and is ready for harvest, though it is not yet fully ripe. At this point, mangoes are firm and typically display a pale yellow to orange-yellow hue, which varies depending on the cultivar and growing region.

André Botha
SUBTROP

After harvest, fruit continue to ripen and soften. Red skin is not an indicator of maturity, quality or ripeness, and should not be used to evaluate mangoes at receipt.

Growers assess mango maturity using a range of indicators, including:

- days since full bloom,
- internal flesh colour,
- firmness, and
- development of "shoulders" (the swelling near the stem).

Although fruit size increases throughout development, it is not considered a reliable indicator of maturity. Among these factors, internal colour is regarded as the most dependable criterion. The optimal harvest stage is largely influenced by the target market for the fruit.

As mangoes mature, they undergo several physiological

changes:

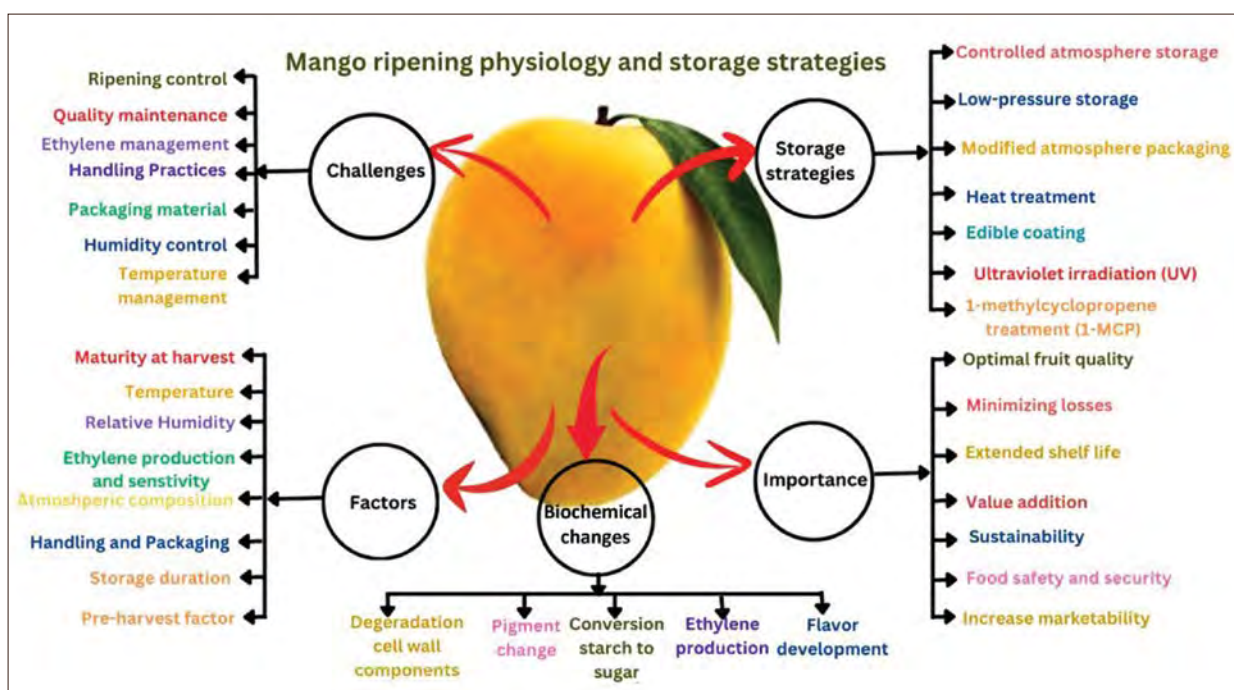
- chlorophyll degrades,
- carotenoid pigments in the pulp increase, and
- skin and flesh colour transitions from green to yellow or red.

Physiological markers include ethylene production and respiration rates. During the climacteric stage - when ripening accelerates - mangoes exhibit heightened emissions of carbon dioxide and ethylene, along with a rise in respiration. The rate of increase varies with fruit type and cultivar.

Biochemical indicators of maturity involve:

- increase in soluble solids content (e.g. sugars),
- decrease in titratable acidity, and
- ratio of soluble solids to acidity ($^{\circ}\text{Brix/acid}$ ratio).

While these biochemical measurements offer reliable insight into fruit maturity, they are often labour-intensive and require destructive sampling methods. 💎





Strengthening ties between South African and Chinese research institutions and litchi industries

The ARC-Tropical and Subtropical Crops (ARC-TSC) and SALGA have a long-standing relationship with the South China Agricultural University (SCAU) in Guangzhou, China, having led to mutual visits over the years.

Regina Cronjé

ARC-TROPICAL AND
SUBTROPICAL CROPS

The most recent visit by two SCAU professors was in June 2024, where they presented at the annual SALGA Research Symposium and shared valuable advice on pruning, top-working, and flower management during orchard

visits in the Malelane and Tzaneen areas.

In the spirit of expanding collaboration, Prof Houbin Chen invited Dr Regina Cronjé, researcher at the ARC-TSC, to attend a Litchi Breeding Workshop in Gaozhou, which was followed by a high-level delegation visit from the SCAU to the ARC and litchi industry in early July 2025.

The workshop, organised by Prof

Houbin Chen, covered topics on litchi breeding strategies and progress at different Chinese research institutions and the ARC, progress on litchi genome-wide sequencing, litchi breeding to extend maturity periods, and characterisation of litchi germplasm with phenomenal performance.

During the workshop, the huge diversity of litchi germplasm was showcased with 156 litchi cultivars and selections on display, which participants were also able to taste (Fig. 1). The displayed cultivars and selections were only part of a collection of 728 accessions maintained at the germplasm block of the National Litchi and Longan Research Centre near Gaozhou.

China's main litchi breeding focus is on fruit quality, i.e. medium to big fruit with small/chicken-tongue seeds, and sweet taste and good shelf life. One of the high quality cultivars resulting from the breeding and selection programme is 'Xianjinfeng' (Fig. 2), which is currently being promoted to replace old cultivars of lower quality, such as 'Haak Yip' and 'Nuomici'. 'Xianjinfeng' has good fruit size, excellent eating and storage quality, and almost 100% chicken-tongue seed.

Apart from the workshop, various orchards near Gaozhou and Shenzhen (Guangdong Province), and Guilin (Guangxi Province) were visited, which provided lots of opportunities to see and taste more litchi cultivars and discuss various management practices.

Managing flowering and fruit growth is being practiced in China at far greater attention to detail than in South Africa. Girdling and the use of plant growth regulators, such as ethephon and uni-

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Figure 1. Cultivar display of 156 litchi cultivars and selections during the 2025 Litchi Breeding Workshop near Gaozhou, China.



Figure 2. 'Xianjinfeng', a new high-quality cultivar that is increasingly planted in China.



Strengthening ties between South African and Chinese research institutions and litchi industries

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conazole, are used to manipulate flush growth prior to winter to ensure more successful flower induction even under warmer winter climates. The same applies to fruit growth.

As fruit quality plays an important role to achieving high prices on the market particularly during on-years, managing the number of female flowers and fruit greatly contributes to bigger fruit with better internal quality. In this regard, flower panicle pruning is done in various cultivars just before first male flowering by reducing panicle size by more than 50%. Machine pruning using an electric motor with rotating blades can also be used for this purpose. Because female flowers are evenly distributed throughout the panicle, this kind of pruning still ensures that enough female flowers can develop to high-quality fruit.

During warm winter conditions where the number of female flowers may be reduced, paclobutrazol or uniconazole are used at the early panicle development stage to keep the panicles short and thereby preserve carbohydrates for good fruit set. Fruit thinning to enhance fruit quality is used for several cultivars by leaving up to 10 fruit per panicle depending on the strength of the panicles. For 'Mauritius', Prof Chen recommended leaving 10-12 fruit per panicle as its panicles are usually strong enough to sustain a higher number of fruits.

Sunburn damage is seldom a problem in China due to the weather conditions (cloudy, high humidity) prior to harvest. For South African conditions, Prof Chen recommended opening up trees by pruning so that fruit panicles can hang inside and below the leaves of other branches and away from direct sunlight. If pruned adequately, the scattered light inside the tree will still provide enough light for good colour development.

New cultivars available for the Chinese litchi industry are generally established by top-working due to the large area of already existing plantings and the limited land available for new plantings. Although incompatibilities between rootstocks and scions used to be a challenge, good grafting skills as well as the correct size of branches to be top-worked have reduced incompatibilities to the minimum in China. According to Prof Chen, true incompatibility will show quickly in the orchard, and trees can be re-grafted without losing too much time. For top-working using bark grafting, a medium sized branch of about

3 cm in diameter is best.

Prof Chen further suggested using an inter-stock, as 'Mauritius' as rootstock causes problems with incompatibility. Budding is also an important technique to save scion material, but should preferably be done on 2-year-old rootstocks with a diameter of about 2 cm. The grafting success on thicker rootstocks is generally better than on thinner rootstocks.

Since Prof Chen's presentation on planting litchi at high



Figure 3. Litchi orchard planted in a marginal litchi production area near Guilin in the northeast of Guangxi Province. Frost and periodic snowfall in winter necessitate permanent frames (top) for frost covers to protect the trees (bottom).



Figure 4. SCAU delegation with researchers at the ARC-TSC (left) and at Tomahawk Farm near Malelane (right).



Micronutrients:

How to spot and treat deficiencies in avocado

Michael Bufé

LABSERVE LABORATORIES

Plant nutrients

Plants need specific chemical elements as nutrients for their growth and life-cycle completion. These essential elements consist of macronutrients which are required in greater quantities, and micronutrients which are required in lesser quantities.

The micronutrients are: iron (Fe), manganese (Mn), copper (Cu), zinc (Zn), boron (B), molybdenum (Mo), chlorine (Cl), and nickel (Ni). If these essential nutrients are not available in sufficient quantities according to the various plant life-cycle stages, then plant growth, development, and reproduction are adversely affected. This is termed as a deficiency and translates to suboptimal growth, yield, and quality in crops.

Identification

In order to manage deficiencies for the sake of yield and quality, early detection is vital. Although physical symptoms are useful to spot a deficiency, crop physiology has already been adversely affected for the symptoms to manifest and, arguably, it is too late to prevent at least some yield and/or quality loss.

In addition, confusion occurs as different nutrient deficiencies can have similar physical symptoms, such as leaf yellowing (chlorosis), and more than one deficiency can be simultaneously present. Therefore, it is better to remove the guesswork and monitor leaf and fruit nutrient levels analytically for

Table 1. Micronutrient deficiency symptoms in avocado.

Deficiency	Symptoms
Iron	Chlorotic leaf laminae with darker veins.
Manganese	Chlorotic leaf laminae with darker veins.
Copper	Leaves with white tips. Possible distorted leaf growth.
Zinc	Chlorotic leaf laminae with darker veins. Possible distorted and stunted leaf growth.
Boron	Leaves with shot holes, possible chlorosis and distorted growth. Fruit with distorted or hooked growth and possible sunken lesions. Branches with twisted or weeping habit and swollen nodes.
Molybdenum	Chlorotic leaves with yellow spots.

certain and earlier identification, and timely correction.

Avocado leaf samples are generally taken from mature spring flush between February and April, and fruit samples (for mineral analysis) are usually taken in February and November. Results from these analyses can then be compared to the SAAGA norms. If nutrient levels are below the norms or if trend analysis over the last two seasons indicates a significant decline, then action should be taken to correct the deficiency.

According to laboratory observations, boron and zinc are more likely to be deficient than manganese and iron in leaf samples. Boron fertilisation should be done with care as

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altitudes or other marginal areas at the 2024 SALGA Research Symposium created interest among South African farmers, he provided an opportunity to visit a litchi orchard near Guilin which is located in the northeast of Guangxi Province.

Although only at 190 m elevation, the area is the northern limit of litchi production and therefore considered marginal. The orchard visited was still young but had its first crop already after three years. The main cultivar planted is 'Xianjinfeng', which ripens two months later than in the Gaozhou area. A few other cultivars were also planted to test climate adaptability.

In winter, the area experiences extreme temperature differences with frost during the night and heat during the day as well as periodic snowfall, which can damage young shoots and flowers if not protected. Therefore, the farm erected permanent frames to cover the trees with frost cover i.e. non-woven cloth when needed (Fig. 3). Due to its location, the farm experiences few problems with pests and disease and obtains high

prices for the fruit due to the late harvest.

Labour shortages in Chinese agriculture necessitate mechanisation of orchard practices. As litchi orchards in China are mostly unstructured and limited to hilly areas, particularly in the South of China, Prof Chen initiated an orchard reformation project which includes establishing tree rows along contours to facilitate mechanisation. The reformed orchards also serve as demonstration orchards to encourage other farmers to follow suit instead of abandoning their orchards (Fig. 4).

The need for mechanisation is also the reason why the SCAU seeks to collaborate with South Africa to learn about ways to mechanise litchi orchard management. During the visit by the high-level SCAU delegation to the ARC and the South African litchi industry in July 2025, Prof Li, chairman of the SCAU, emphasised the importance of continued collaboration to address climate change challenges, promote green and smart agriculture, and facilitate training of students and growers (Fig. 4). ♦



Micronutrients: How to spot and treat deficiencies in avocado

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there is a fine line between deficiency and toxicity. Copper deficiency is seldom encountered due to its use as an active ingredient in fungicide sprays. Chlorine is known as its anion, chloride. However avocado is vulnerable to tip burn if chloride levels are excessive.

Caution should therefore be exercised regarding chloride fertilisation, and it is not recommended that potassium chloride be used. Nickel is not yet listed in the norms, but in other plants it is normally required in lesser quantities than molybdenum. As nickel can be toxic to humans at more than 1 mg per day for consumption, it should be supplemented with care.

Correction

For short-term corrections, foliar fertiliser sprays are useful, especially during a leaf flush as softer tissue facilitates nutrient absorption. Sprays are valuable at crucial times, for example after flower bud break when zinc and boron levels are low, as they are required for optimal pollination and fertilisation. The fertiliser programme must be supplemented with deficient micronutrients in sufficient time to account for uptake through the roots.

As most micronutrients have more than one physiological function, it is best to fertilise with each deficient micronutrient more frequently in a season to ensure sufficiency according to the phenological requirement. Coarse textured soils require more frequent fertilisation than heavier soils.

The electrical charge of micronutrient species and their antagonism with other nutrients affect availability and should be considered before application. If another nutrient of a similar charge is applied concurrently, especially at a high concentration, there can be competition for plant uptake or adsorption to soil colloids. At pH (KCl) 5 to 5.5, boron is mostly neutral, molybdenum is mostly negatively charged, and iron, manganese, copper and zinc are positively charged. As an example then, iron and manganese can compete for uptake. Mulder's chart is a useful tool to visualise antagonism.

Examples include the following: high amounts of phosphorous can reduce the availability of iron, manganese, zinc, and copper. High amounts of calcium can antagonise the availability of iron, manganese, and zinc. Chelated iron application is said to help increase iron in this case. Molybdenum can be fixated by high levels of iron, manganese, and aluminium oxides. In the case of competition or antagonism, applications of contrary nutrients should be timed differently and changing their formulation may also help.

For long-term correction; soil pH, organic material, irrigation, and root system health need to be optimised. The optimum soil pH (KCl) for avocado growth is from 5 to 5.5. Availability decreases for manganese, boron, copper, and zinc below pH (KCl) 4, iron below pH (KCl) 5, and molybdenum below pH (KCl) 6. Therefore it is best when adding lime, to target a pH (KCl) of 5 for iron deficiency and 5.5 for molybdenum or other deficiencies in acidic soils.

Sufficient organic material should be present on the soil

Table 2. SAAGA micronutrient norms for leaves and fruit.

Micronutrient	Concentration (ppm or mg/kg)
Leaves	
Iron	75 / 100 - 150
Manganese	75 - 250
Copper	5 - 15
Zinc	40 - 100
Boron	40 - 80
Molybdenum	0.75 - 1.5
Chloride	3000 - 5000; (0.3 - 0.5%)
Fruit	
Iron	> 60 ppm (Feb); > 40 ppm (Nov)
Zinc	> 50 ppm (Feb); > 30 ppm (Nov)

surface as it provides nutrition for nutrient-cycling microbes, acts as a source of micronutrients, and becomes humus for improved micronutrient and water retention. Nutrients need to be in solution for uptake. Therefore irrigation should be enough for mass flow and diffusion of nutrients in solution to the roots without leaching them below the root zone or waterlogging the soil.

Over irrigation also reduces soil aeration and promotes root diseases. Unhealthy roots cannot adequately absorb micronutrients, no matter how abundant or available micronutrients are. Hence roots should be treated for Phytophthora root rot or any other diseases afflicting them.

In conclusion, micronutrient deficiencies are best spotted analytically rather than visually; and corrections include prudent and timely fertilisation, pH correction, mulching or composting, optimising irrigation, and safeguarding root health.

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XIV International Mango Symposium – Mazatlan, Mexico

André Botha
SUBTROP

This year's International Mango Symposium centred on the overarching theme of climate change and its impact on mango production. Dr Victor Galán-Sauco opened the event with a presentation addressing this critical issue, discussing various strategies that could be implemented to mitigate the challenges posed by changing environmental conditions.

Key facts about the mango industry in Mexico:

- the country ranks fifth globally in mango production, contributing 4,28% of the world's supply;
- mangoes in Mexico are cultivated across 23 states, covering 207 000 hectares and yielding approximately 2 million tons annually;
- the country is home to an estimated 53 000 producers with an average productivity of 9 tons per hectare.

Despite this significant output, the industry largely relies on traditional farming methods and has seen minimal adoption of new plantings.

The main mango varieties grown in Mexico include Ataulfo (30%), Manila (15%), Kent (15%), Tommy Atkins (14%), Haden (9%), Criollo (7%), and other varieties making up the remaining 10%.

Over the three-day symposium, 43 presentations and 17 posters were showcased. Day one featured a Spanish-language workshop that primarily targeted growers. This session focussed on practical topics such as tree size management, improving fruit size, and the health benefits of mango consumption. It also explored production and market dynamics in countries like the United States, Europe, Russia, and Japan.

Day two hosted two parallel sessions, both centred on managing heat stress in mango production. Presentations addressed the effects of heat stress on mango trees, the benefits of using shade



Field trip



Ataulfo packaging

nets in Israel, pollination practices under Mediterranean conditions, and the influence of temperature on fruitlet drop.

Concurrently, another session focused on crop management and included discussions on high-density plantings in Australia, water availability impacts on potted mangoes, flowering-to-maturity growing degree day targets, pest management for hopper and fruit flies, and technological advancements in mango harvest management.

The final day of the symposium covered topics related to breeding, germplasm, and genetic diversity. While only a few new cultivars were introduced, four new ARC cultivars from South Africa



Kankun

were unveiled for the first time. Israel has yet to release any new cultivars, whereas Australia is still evaluating four promising selections. India has released 30 hybrids and 10 selections locally, although these have not significantly impacted the market. A strong emphasis was placed on the role of genomics in breeding programmes, particularly for developing cultivars with desirable traits.

The concluding sessions addressed harvest and post-harvest topics, such as chilling injury, use of irradiation to enhance post-harvest quality, NIR technology for internal quality evaluation, and the use of hot water treatment to control anthracnose. The symposium closed with compelling discussions on automated mango harvesting as a sustainable solution in the face of climate change and labour shortages. ♦



How to care for avocado trees after planting

Establishing a healthy avocado orchard begins with the successful care of young trees in their early years. After planting, avocado trees require focused attention to ensure they develop strong root systems, good vegetative growth, and eventually yield high-quality fruit.

Mukondeleli Munzhedzi

SUBTROP

Proper care after planting avocado trees plays a crucial role in setting the foundation for long-term productivity and orchard health. Despite the diverse climate and varying conditions in the different production regions, the foundational care practices remain largely the same. Herewith a comprehensive guide to caring for young avocado trees in an orchard after planting.

Site preparation and soil management

Before planting, site preparation is of prime importance. Soil should be deep and well drained, with high organic matter content. Ideally, build ridges especially if soil drainage is marginal. Apply lime / gypsum / phosphate according to the soil analysis and then deep rip to a depth of 60 cm and ensure soil pH is between 5.5 and 6.5. Avocados are sensitive to root rot (especially *Phytophthora cinnamomi*), which thrives in poorly drained soils. Ensure there is no standing water around the root zone - ridges help to mitigate this.

After planting, continued soil care is important. Mulching is a highly effective way to maintain soil moisture, regulate temperature, and reduce weed competition. Use organic mulches such as wood chips or straw, and apply them in a ring around the tree, leaving about 15 centimetres clear around the trunk to prevent fungal disease.

Irrigation management

Irrigation management is one of the most critical aspects of avocado tree care. Young avocado trees have shallow root systems and are especially vulnerable to both overwatering and underwatering.

Irrigation scheduling will depend on local weather conditions and soil type. Sandy soils drain quickly and may require more frequent watering, while clay soils retain moisture longer. The key is to keep the root zone moist but not saturated. A good rule of thumb is to allow the top few centimetres of soil to dry out slightly before watering again.

Nutrition

Young avocado trees benefit from regular but moderate fertiliser application. In the first year, focus on nitrogen, which promotes leafy growth. Use a balanced fertiliser, such as a 2:2:1 mix of LAN:MAP:KNO₃ applied at 20 g/tree as per the SAAGA young tree mix. Incorporate micronutrients such as zinc, magnesium, and boron. Increase the quantity of fertiliser

as the size of the trees increases. Be careful not to over-fertilise, as this can burn young roots and cause excessive vegetative growth at the expense of root development.

Staking, tree support and animal guarding

Due to their rapid vertical growth and relatively weak trunk structure, young avocado trees may need staking, especially in windy areas. Use a flexible tie such as sisal twine to attach the tree to a sturdy stake, ensuring it has enough movement to develop strength without risking breakage. Monitor the tie regularly and adjust it as the tree grows to prevent girdling. The stake can usually be removed once the stem has thickened and the root system is well established.

In addition to staking, installing windbreaks such as shade cloth, fencing, or rows of taller plants can help to reduce wind stress and prevent damage to young trees. Protection from animals is also essential. Browsing animals like porcupines, bucks, and bushpigs can damage flushes and branches. Use wire mesh cylinders or perimeter fencing to physically block access to young trees.

Pruning and shaping

Pruning in the first year should be minimal but purposeful. After planting, it is common to tip back the central leader to encourage lateral branching. This promotes a low, broad canopy which is more manageable for harvesting, and improves light penetration. Throughout the first two years, remove water shots, maintain a single strong trunk, and encourage an open, rounded structure. Avoid heavy pruning, as it can stress the tree and reduce early growth.

Weed management

Weeds compete aggressively with young avocado trees for water and nutrients. Keep a weed-free zone around each tree, ideally with mulch or manual weeding. Avoid using herbicides close to the stem, as young trees are sensitive to chemical exposure.

Pest and disease monitoring

Pest and disease management is mainly against *Phytophthora* root rot although young trees should be regularly inspected for insect pests such as mites, scales, mealybugs, thrips, leaf rollers, beetles, locusts, and grasshoppers.

Trees should be protected against *Phytophthora* with Aliette WP foliar sprays every 4-6 weeks at 275 g/100 l. If the trees are planted in an old orchard, the treatment should commence as soon as possible after planting. The foliar



sprays should be applied in the late afternoon only and continue until trees can be injected. Even trees on Dusa™ rootstocks must be protected against this disease to ensure development of strong, healthy roots. This rootstock is root rot tolerant, not resistant.

Frost protection

Avocados are highly sensitive to frost, particularly when young. If the orchard is in a region prone to frost, frost protection is essential during the first few years. Use frost cloth to cover the trees in winter. Keeping the soil moist (not wet) can also help moderate temperature swings. As trees mature, they become more tolerant of mild frosts, but young trees can be damaged by temperatures of 1 °C.

Sun protection

Newly planted avocado trees are prone to sunburn, particularly on their stems and exposed branches. In hot, sunny climates, paint the stem with white paint to reflect sunlight and prevent damage.

Properly caring for young avocado trees during the first 1 to 3 years lays the foundation for long-term productivity and orchard health. Consistent monitoring, proper irrigation, nutrient management, and protection from pests, diseases, and environmental stressors are all essential. With attentive care and good orchard management practices, young avocado trees will mature into healthy, fruitful trees capable of delivering abundant harvests for years to come. ❖

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