

A close-up photograph of several ripe, red raspberries hanging from a green vine with serrated leaves. The background is a blurred view of a greenhouse structure with translucent panels.

Undercover farming

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– Raspberry Farming
in South Africa**

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IT IS TIME FOR UNDERCOVER FARMERS TO RETURN TO THE CONFERENCE FLOOR

South Africa's undercover farming industry was not built in isolation. It grew because farmers, researchers, seed companies, irrigation specialists, greenhouse suppliers and technical experts came together, shared knowledge and challenged one another to improve.

In the early years, conferences were filled with growers eager to learn. Protected agriculture was still developing locally, and producers openly exchanged practical experience. Those gatherings helped shape the technically advanced industry we have today.

But success can sometimes create distance from the platforms that helped build it.

Established growers



are busier than ever.

Operations are larger, teams more specialised and responsibilities greater. Many farmers also receive information directly from suppliers or gain valuable exposure through international visits.

That exposure is important. But international travel should complement, not replace, participation in South Africa's agricultural community. The Undercover Farming Conference and EXPO, taking place on 21 and 22 October 2026 at Allée Bleue, Groot Drakenstein, Franschhoek, is one of the few places where commercial growers, farm managers, researchers, suppliers and advisers can meet on

equal ground and discuss the realities of producing under South African conditions.

And those realities are becoming more demanding.

Extreme weather, water scarcity, heat, floods, rising input costs and pressure on natural resources are affecting agricultural production across the country. Food security cannot be protected by individual farmers working in isolation. It requires a united agricultural industry sharing knowledge, experience and solutions.

"Food security during a time of weather disturbances and uncertainty cannot be carried by isolated farmers. It is the task of a united agricultural industry." Undercover farming has an increasingly important role to play. Greenhouses, tunnels, shade-net structures and protected orchards give producers greater control over weather exposure, irrigation, crop quality and production conditions. But protected agriculture is not immune to risk — and the solutions must work under South African conditions.

That is where local expertise matters.

A cultivar that performs exceptionally well overseas may behave differently under South African temperatures, water conditions, pest pressure, labour realities and market requirements. A production system designed for another climate may require significant adaptation. International exposure can inspire new thinking, but local knowledge determines whether an innovation succeeds on a South African farm.

The conference is therefore about more than listening to presentations or inspecting new products. It is about comparing practices, questioning assumptions, identifying blind spots and learning how other growers are responding to the pressures we all face. No matter how experienced a farmer becomes, agriculture never stands still. Genetics evolve. Pest and disease pressures change.

Water becomes more valuable. Energy and labour costs increase. Markets become more demanding. Technology continues to advance.

And experienced growers have something equally valuable to contribute: knowledge that cannot simply be downloaded, imported or bought. When established farmers attend, they strengthen the entire sector. They create opportunities for younger farmers, farm managers and emerging leaders to learn from those who have already faced the challenges they are beginning to encounter.

"Strong farming businesses invest not only in structures and technology, but also in the people who will carry food production into the future."

This is why growers should not only register themselves. Bring your farm managers, production managers, technical specialists and emerging leaders. One improved irrigation practice, one stronger pest-management approach, one new technology or one valuable relationship can create returns far beyond the cost of attending.

The undercover farming industry is strongest when it is visible, organised and united. A strong turnout demonstrates that protected agriculture is a significant part of South Africa's food-production system — serious about innovation, water efficiency, employment, food security and the future.

The industry cannot expect to speak with one voice if its leading growers are absent from the room. The farmers who helped build South Africa's undercover sector should be visible on the conference floor once again.

Come to learn. Come to contribute. Come to lead. Bring the people who will carry your farming business into the future. Food security is built by farmers who stand together. **SO.**

Make sure you are in the room.

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SCRIPTURE:

"See, I am doing a new thing! Now it springs up; do you not perceive it?"

— Isaiah 43:19

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*Editor's Note:****A new season, a new opportunity***

There is something special about this time of year in South Africa. Winter is loosening its grip, the days are becoming longer, and across our farming landscape there is a noticeable sense of movement. Spring is here, summer is on its way – and with it comes another production season full of possibility, challenges and decisions.

For growers, a change of season is never simply a change on the calendar. It means reassessing irrigation, climate management, crop programmes, planting decisions, labour and markets. In undercover farming, where so much can be measured and managed, understanding how the crop responds to these changing conditions becomes increasingly important.

That theme runs strongly through this issue of Undercover Farming. From peppers and raspberries to water management, root health, greenhouse technology and plant physiology, we look at the decisions that can turn controlled production into commercially sustainable production.

And then there is the opportunity to take these conversations beyond the pages of the magazine. On 21 and 22 October, the Undercover Farming Expo & Conference returns to the Western Cape, bringing growers, technology providers, researchers and industry leaders together at Allee Bleue Estate in Groot Drakenstein.

As we enter a new growing season, there is no better time to exchange ideas, see new technologies, meet fellow growers and ask the questions that can shape the next crop – and perhaps the next generation of South African protected agriculture.

Here's to spring, to new beginnings, and to growing smarter. SO.



THE COLOUR OF PROFIT

Why peppers deserve a bigger place in South Africa's protected-crop portfolio

Among the vegetables grown under protection, peppers occupy an interesting position. They are familiar to consumers, technically demanding enough to reward good management, and suited to production systems that allow growers to control important aspects of the growing environment.

Yet peppers do not receive quite the same attention as tomatoes and cucumbers when the conversation turns to commercial greenhouse production.

That may be changing.

The Agricultural Research Council includes peppers alongside tomatoes and cucumbers in its hydroponic vegetable research, while its commercial vegetable programme specifically evaluates these crops under different production systems. For growers considering crop diversification, peppers deserve a closer look — not because they are easy, but because their production characteristics fit many of the strengths of undercover agriculture.

A crop that responds to control

The fundamental purpose of protected cultivation is to give the grower greater control over the growing environment.

Peppers benefit from that principle.

Temperature, humidity, radiation, irrigation and nutrition all influence plant development and fruit production. Under protection, the

grower can reduce some of the environmental extremes that would otherwise affect the crop.

The ARC notes that greenhouse production in South Africa is used to create a more favourable environment for plant growth, including protection from strong ultraviolet radiation and reduction of extreme temperature fluctuations.

That does not mean the greenhouse solves every problem. It means the grower has more tools with which to manage the problem.

And peppers reward that level of management.

The fruit is the business

One of the most important characteristics of pepper production is that yield alone does not tell the whole story. A greenhouse can produce a large quantity of fruit and still deliver disappointing returns if too much of the crop falls outside the required quality specification.

Fruit size, shape, colour, firmness, blemishes and shelf life all affect marketability. This is one reason crop uniformity is so important in protected production.

The plant needs to maintain a productive balance between vegetative growth and fruit development. Excessive vegetative growth can complicate canopy management and reduce production efficiency, while excessive crop load can place stress on the plant.

The commercial objective is therefore not simply to grow a large plant. It is to build a plant capable of producing consistent marketable fruit over the required production period.

Start with the variety

Pepper production begins with a decision that can determine the economics of the crop long before the first fruit is harvested: cultivar selection. The right cultivar must fit the production environment and the intended market.

This means growers need to consider:

- fruit type;
- colour;
- maturity period;
- plant architecture;
- fruit size;
- disease resistance;
- tolerance to environmental stress;
- production cycle;
- market requirements; and
- whether the cultivar is suited to the intended production system.

The ARC's commercial vegetable research specifically includes cultivar evaluation in tomatoes, cucumbers, lettuce and peppers, reinforcing the importance of matching genetics to the pro-

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duction system. A cultivar that performs well in one region or structure cannot automatically be assumed to perform equally well elsewhere. Protected agriculture creates a controlled environment, but it does not create an identical environment everywhere.

Roots first, fruit later

The temptation in a fruiting crop is to focus on the canopy.

But commercial pepper production begins underground. A strong root system provides the foundation for water and nutrient uptake. This becomes particularly important in soilless production, where the root environment is determined by the interaction between substrate, irrigation frequency, drainage and nutrient solution.

The ARC notes that peppers are commercially produced in hydroponic systems in South Africa, including open-bag systems. In such systems, the grower has considerable control over the root environment — but that control also means there is less room for poor management. The root zone must receive sufficient moisture without becoming saturated. Oxygen availability matters. Drainage matters. Nutrient concentration matters.

A crop cannot compensate for a poorly managed root zone simply because it is growing inside a greenhouse.

Water is a production input, not just an overhead

Pepper production also illustrates why irrigation must be linked to plant development. The crop's water requirement changes as the canopy develops and fruit load increases. A fixed irrigation pro-

gramme may therefore be adequate at one stage and inappropriate at another. The most effective systems respond to crop demand, environmental conditions and root-zone measurements.

This is where protected pepper production fits naturally into the broader movement towards precision irrigation. South African agricultural policy and research increasingly emphasise water-use efficiency, while the ARC identifies water-use efficiency as a research priority for commercial vegetables. For pepper growers, the goal is not simply to keep plants hydrated.



It is to maintain the root environment in which plants can continuously support flowering, fruit development and fruit filling.

Climate is still king

A greenhouse provides protection, but peppers remain biological organisms.

Temperature influences growth, flowering and fruit development. Excessive heat can interfere with reproductive processes and reduce production performance.

This is where greenhouse climate management becomes important. Ventilation, shade, screen systems, evaporative cooling where appropriate and irrigation all interact.

A grower who manages these

systems independently may miss the bigger picture. For example, increasing irrigation is not necessarily the correct response to a hot day. If the root zone is already wet, additional water may create problems rather than solve them.

The plant is responding to the entire environment. The challenge is therefore to understand what the plant is experiencing rather than reacting to a single measurement.

Colour is a production decision

One of the fascinating characteristics of pepper production is the commercial importance of colour.

A green pepper and a fully coloured pepper may come from the same plant, but they represent different harvesting decisions, crop timing and market positioning.

Allowing fruit to develop further on the plant changes the production cycle and can influence the timing of subsequent harvests.

This makes crop scheduling particularly important. The grower must understand the market before planting. If the intended market requires specific colours, sizes or maturity stages, those requirements need to influence cultivar selection and production planning from the beginning.

Protected production is most successful when the crop plan begins with the market rather than ending with it.

Pest and disease management

Protection does not mean isolation. In fact, intensive greenhouse production can create its own pest and disease challenges. The ARC identifies pests and diseases as ongoing risks in hydroponic vegetable production despite the

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advantages of protected systems.

This makes integrated pest management particularly important. Prevention begins with hygiene, clean planting material, appropriate environmental control and regular crop scouting. The crop should be inspected systematically rather than only when symptoms become obvious. Early detection matters because a pest population that is small enough to manage today may become much more difficult to control later.

The same principle applies to disease. Good ventilation, appropriate irrigation, sanitation and root-zone management form part of disease prevention. Chemical intervention is only one part of the toolbox.

Labour remains part of the equation

Peppers are not a crop that can simply be planted and left alone.

Protected production often involves training,

pruning, crop inspection, harvesting and sorting.

The labour requirement therefore needs to be built into the business model. A highly productive greenhouse is not necessarily a profitable greenhouse if the production system requires more labour than the business can efficiently supply. This is why crop architecture matters.

The ideal plant is not simply one that produces many fruits. It is one that produces them in a way that allows the grower to manage, inspect and harvest the crop efficiently.

The case for diversification

For established protected growers, peppers offer another important possibility: diversification.

A business based entirely on one crop can become vulnerable to changes in price, disease pressure, market demand or production costs. Adding a second crop can spread risk — provided the new crop is genuinely suited to the infrastructure and market. The ARC's research programme demonstrates that tomatoes, cucumbers and peppers can all form part of protected and hydroponic production systems in South Africa.

That does not mean a grower should change crops simply because another crop appears profitable. The market must come first. Infrastructure, labour, climate, water availability, technical ex-

pertise and expected returns all need to be considered.

Not an easy crop — and that's the point

The strongest argument for peppers may actually be that they are not an easy crop.

Protected farming works best when the grower can turn technical management into commercial value.

Peppers reward precision.**They reward attention to the root zone.****They reward careful irrigation.****They reward appropriate climate management.****They reward good cultivar selection.****And they reward growers who understand that the crop is a biological system rather than a factory producing fruit on demand.**

That is precisely why peppers belong in the undercover conversation. South Africa's protected vegetable sector is still developing, and the ARC confirms that only a portion of vegetable production occurs under protection, with greenhouse and shade-net systems forming part of the country's production landscape.

As growers seek higher-value crops and better utilisation of protected infrastructure, peppers have a credible place in that discussion. The question is not whether peppers can grow undercover. They clearly can. The more important question is whether a grower can build the right crop, for the right market, with the right production system and the right economics.

That is where the colour of profit begins. **SO.**



RED GOLD UNDER THE NET

Raspberry Farming in South Africa - A Niche Crop with Big Export Ambitions

There is a small but quietly determined revolution happening in the orchards and tunnels of the Western Cape and Free State. While the headlines are dominated by macadamias, blueberries and avocados, the humble raspberry - that jewel-bright, fibre-rich superfood - is quietly carving out a profitable niche for South African producers willing to meet its demands.

The global raspberry market is under pressure. Weather disruptions in Morocco, labour shortages in southern Italy, and supply volatility across Europe have sent international prices soaring - in some cases to R337- R 3 5 7 / k g earlier this year. And through it all, South African producers have been seizing the gap. The 2025/2026 export season delivered approximately 1,919.8 tons of fresh raspberries off our shores, with the Middle East taking 75% of that volume and the United Kingdom accounting for the remaining 25%. Exporter sentiment has been cautiously bullish: "South African raspberries have had a good opportunity on the export market

this year," one industry source confirmed to Fresh Plaza in May 2026.

For farmers looking for a high-value crop that fits snugly into the protected cultivation systems that Undercover Farming readers know well, the raspberry deserves a second look. But make no mistake - this is not a beginner's crop. It rewards careful site selection, disciplined varietal choice, and an uncompromising approach to post-harvest handling.

"South African raspberries have had a good opportunity on the export market this year."

KEY GROWING REGIONS

- **Western Cape** (Elgin, Grabouw, Villiersdorp) - summer bearers. **Free State** (Ficksburg district) - summer bearers. **Mpumalanga** - expanding production. **Limpopo** - emerging, suited to autumn-bearing varieties

WHERE SOUTH AFRICA GROWS ITS BERRIES

Local raspberry production remains concentrated in two provinces: the Western Cape and the Free State.

The Western Cape's Elgin, Grabouw, and Villiersdorp valleys - areas where apple and pear orchards have long thrived - are natural homes for summer-bearing varieties, which require the same cold winters and moderate summers that deciduous fruit demands. In the

Free State, producers have found success around Ficksburg and the Rooiberge foothills, where chilling hours are adequate and summer temperatures manageable.

Mpumalanga is another emerging area, and industry intelligence suggests that Limpopo is increasingly being explored, particularly for autumn-bearing varieties with lower chilling requirements.



ments. The expansion into warmer zones is driven partly by the desire to extend the South African production window and catch gaps in the export market calendar.

VARIETIES: CHOOSING THE RIGHT CANE FOR YOUR CLIMATE

One of the most critical decisions a raspberry farmer makes is varietal selection - and it must be driven by climate, not convention. Two

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Sum of Volume		
Year	Variety	Total
2025	Grandeur	1462
	Maravilla	935340
	RASPBERRIES	1750
2025 Total		938552
2026	Diamond Jubilee	6086
	Grandeur	2144
	Maravilla	862655
	RASPBERRIES	13401,1
	Reyna	96944
2026 Total		981230,1
Grand Total		1919782,1

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broad bearing types dominate the South African landscape, each suited to a different environment:

Summer bearers (floricane varieties) produce a single crop on second-year canes during the summer months. They carry a high chill requirement - similar to apples - making them ideal for the cool, high-lying areas of the Western Cape.

The popular varieties Glen Prosen, Glen Lyon, and Tulameen fall into this category. Hillcrest Berries in the Western Cape, a leading industry producer, has built much of its reputation on summer-bearing production. Redberry Farm near George has found success with the Grandeur variety, describing it as sweet, reliable, and possessed of a good shelf life - a critical commercial attribute for any export-bound berry.

Autumn bearers (primocane varieties), including Heritage and Autumn Bliss, require fewer cold hours and can produce two crops per season - an early summer flush and a late summer/autumn crop. Their adaptability to warmer, more subtropical conditions makes them particularly relevant for producers in Limpopo or the warmer Free State corridors who want to target counter-seasonal market windows when European

supply is thin and prices are firm.

THE CASE FOR PROTECTED CULTIVATION

Readers of this magazine understand better than most that the move under cover is often the move toward profitability. Internationally, raspberry producers have increasingly shifted into tunnels and shade-net structures to protect the crop from rain damage, extend the harvest window, and improve fruit quality. This is not merely a luxury - rain at the wrong moment can destroy an entire crop of the delicate fruit, and in a margin-sensitive business, that is simply not acceptable.

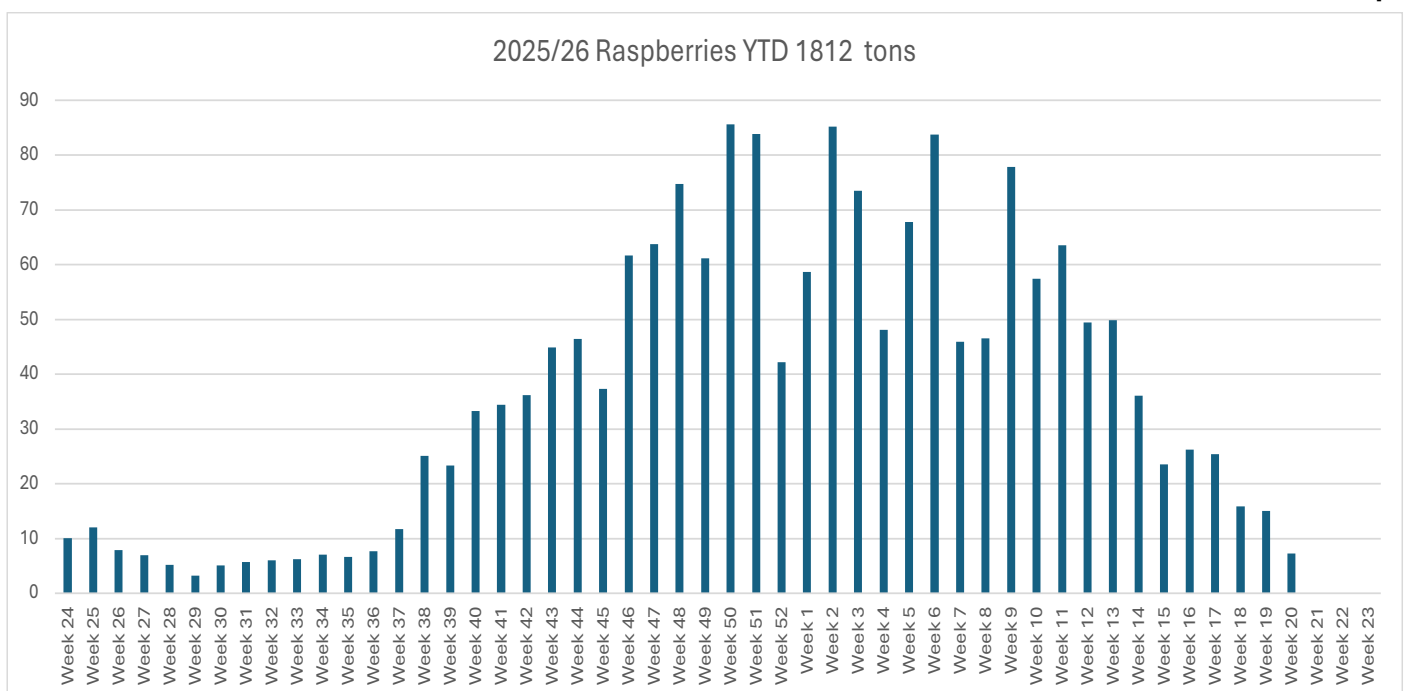
Heavy rainfall in the Southern Cape during the 2025/2026 season disrupted production forecasts for farms in that region, underlining just how vulnerable open-field raspberry production can be to weather events. The farms least affected were those with some form of protective structure over their canes.

The argument for tunnel production of raspberries in South Africa is compelling: the fruit's fragility

Sum of Volume Year	Region	Total
2025	Asia	1796
	European Union	624
	Middle East	743749
	United Kingdom	192383
2025 Total		938552
2026	European Union	7649
	Middle East	589869
	United Kingdom	383712,1
2026 Total		981230,1
Grand Total		1919782,1

demands it, a well managed cold-chain from harvesting to retail/market is key, the export market expects consistent quality, and the return on investment - when production is well-managed - can justify the infrastructure spend. Industry wisdom suggests that a well-run protected fruit operation can achieve a return on investment within 20 to 30 months. Whether this translates directly to raspberries will depend on site, scale, and market access, but the principle holds.

Agrivoltaic systems - combining solar panel canopies with crop production - are attracting growing research attention internationally (Frontiers in Horticulture, 2026). New European research has found that opaque agrivoltaic configurations can provide microclimate buffering comparable to or stronger than conventional plastic

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tunnels. While these systems are not yet widely deployed for raspberries in South Africa, they represent an intriguing future option for energy-conscious farmers who need shade structure and power generation simultaneously.

“Rain at the wrong moment can destroy an entire crop. Under cover, that risk disappears - and so does the excuse for poor quality.”

SOIL, IRRIGATION, AND PRODUCTION BASICS

Raspberries are not forgiving of poor site preparation. They demand deep, well-drained loam or sandy loam soils with a high organic matter content and a slightly acidic pH - ideally between 5.5 and 6.5. Waterlogging is fatal: root rot follows standing water as surely as night follows day.

Irrigation is non-negotiable in our climate. Drip irrigation, with precise scheduling, is the standard approach on commercial farms. Water stress at the wrong growth stage - particularly during cane establishment and fruit set - directly impacts yield and berry size. Fertigation through the drip system is widely used to deliver balanced nutrition efficiently.

Pest and disease pressure demands constant vigilance. Fungal diseases - particularly powdery mildew and anthracnose - are the primary disease threats, and the moist micro-climate inside tunnels requires careful ventilation management to prevent outbreaks. On the pest front, fruit flies, aphids, and spider mites are the main challenges. An integrated pest management (IPM) approach combining scouting, pheromone traps, biological controls, and tar-

geted chemical application where necessary is the accepted standard for any commercially oriented operation - and a prerequisite for GlobalGAP certification, which is mandatory for export markets.

Canes ripen unevenly, which means harvesting must occur regularly - typically every two to three days at peak season. This labour intensity is perhaps the biggest challenge in raspberry production, and it is one that is causing producers to exit the sector in some European countries. In South Africa, access to a reliable seasonal labour force remains a key planning consideration.

THE MARKET: WHERE THE MONEY IS

The demand signal for South African raspberries is encouraging. Globally, the health food and superfood narrative continues to drive consumer interest, and raspberries sit firmly in that category - rich in antioxidants, high in fibre, free of cholesterol, and packed with vitamins A and C. That story sells well in the UK, the Middle East, and across Europe.

Export pricing for South African fresh raspberries reached approximately R237/kg in late 2025, according to global trade intelligence platform Tridge - competitive relative to some northern hemisphere suppliers, though below top-tier prices commanded by Colombian and Netherlands product. The gap is partly explained by logistics costs and the perception gap in some markets, but quality-focused South African exporters are narrowing it season by season.

On the domestic front, the Johannesburg fresh produce market was

pricing raspberries at close to R99/kg during the 2025/2026 season. While local sales volumes remain modest, the retail grocery sector - Woolworths, Pick n Pay, Checkers, and similar outlets - offers a viable secondary channel for producers who cannot fill an export container or who produce quantities too small for the export pipeline.

CHALLENGES AND HONEST CAUTIONS

This is not a crop for the faint-hearted, and anyone who tells you otherwise is selling something. The labour-intensity of twice-daily harvesting at peak season is not a rounding error - it is a defining characteristic of the enterprise. In South Africa, where labour costs are rising and reliable skilled harvest workers can be difficult to secure, this must be planned for carefully before a single cane goes in the ground. The South African raspberry industry is still small.

A handful of producers account for the bulk of commercial production. That concentration brings risk - market power is limited, and when things go wrong at the export end (shipping delays, market disruptions, quality rejections), smaller producers feel it acutely. Linking with an established export agent or cooperative structure from the outset is strongly advisable. Input costs - particularly fertiliser and fuel, both of which have been pressured by global commodity movements in 2026 - are a live concern for all South African fruit producers.

Energy costs for climate control within tunnel structures add another layer of complexity and cost that must be modelled into any

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business plan. Weather remains a wild card. The Southern Cape experienced disruptive rains in the 2025/2026 season, affecting production. The SAWS forecast of below-normal rainfall in the Western Cape for the 2026 winter (released March 2026) adds a different kind of uncertainty for the coming spring establishment season. Irrigation planning and water storage capacity are not optional extras.

THE OPPORTUNITY: WHY NOW?

Despite the challenges, the timing for exploring raspberry farming in South Africa has rarely been better - for the right producer in the right location. The global supply disruption affecting major northern hemisphere producers has elevated prices and opened market windows. Morocco, South Africa's main competitor in the Middle East channel, experienced its own weather disruptions this season,

which directly benefited South African exporters. Spain and Italy face structural labour challenges that are reducing their competitive position.

These are not permanent shifts, but they represent a real and present opportunity. The growing appetite for South African horticulture products internationally - backed by improving port efficiency and the country's favourable counter-seasonal position relative to northern hemisphere suppliers - creates a genuine platform for expansion.

Horticultural crops already account for 27% of total South African agricultural income, and the growth trajectory is strong. For farmers currently operating tunnels or shade-net structures for other crops, the incremental cost of adding raspberry production to an existing operation may be lower than starting from scratch. For deciduous fruit farmers in the

Western Cape exploring diversification options - particularly those sitting on land with high chill hours and existing cold chain infrastructure - the raspberry offers an intriguing adjacent opportunity.

"For the right producer in the right location, the raspberry is not just a niche play - it is a serious commercial proposition."

THE BOTTOM LINE

Raspberry farming in South Africa is a demanding, capital-intensive enterprise that rewards meticulous management. It is not a crop for the casual diversifier, and it is not immune to weather, pests, or market volatility.

But for the farmer who approaches it seriously - with the right cultivar, the right protection, a water-secure site, and a confirmed market channel - it represents one of the more attractive high-value horticulture opportunities in the current South African agricultural landscape.

The global market is signalling clearly: fresh, quality raspberries are wanted, and supply is tight. South Africa is in a geographic sweet spot to supply northern hemisphere markets during their winter gap. The infrastructure of covered cultivation - the tunnels, the drip lines, the pack houses - is exactly the kind of setup that this crop needs to perform at its best.

Watch this space. The red gold under the net may not stay a secret for much longer. **SO.**



Undercover Farming Expo & Conference Western Cape

Allee Bleue Estate, Groot Drakenstein, Franschhoek

21 & 22 October 2026

**CONFERENCE REGISTRATION
NOW OPEN!**

Contact: Suzanne (WhatsApp) - 082 832 1604
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INTELLIGENT MACHINES FOR A MORE PROFITABLE GREENHOUSE -

The IDM Range at Greener Solutions

Modern greenhouse and open-field horticulture is a game of margins. Every hour of labour, every litre of agrochemical, and every metre of aisle space either adds to the harvest or eats into the return on investment. This is precisely the problem that IDM, the Spanish manufacturer of intelligent agricultural machinery, set out to solve - and it is precisely the range that Greener Solutions brings to growers across South Africa and the SADC region. With more than 25 years of hydroponic and greenhouse experience, Greener Solutions has built its reputation on pairing proven technology with local knowhow.

Three categories from the IDM range consistently stand out as the machines growers return to season after season: the A4R trolleys for greenhouse cultivation, the harvesting carts, and the sprayers. Together they cover the three tasks that define daily greenhouse operations - safe elevated crop work, efficient internal transport, and precise crop protection - and they form the core of what Greener Solutions recommends to growers looking to intensify production and secure their return on investment.

Best Seller: A4R Trolleys for Greenhouse Cultivation For growers working on rubber wheels rather than pipe-rail infrastructure, the A4R trolley is IDM's most requested access solution, and it is easy to see why. Built on a rechargeable electric and reversible

drive system on a narrow wheel track to suit greenhouse row spacings, the working platform lifts to a maximum platform height of 3,500 mm, with an aluminium grid skid floor and floating control knobs for smooth, precise speed control and direction. Power comes from a 0.5 hp motor-reducer with two 12V lead-acid batteries in series, giving electronic variable speed with ramp acceleration and smooth braking. Options are either manual or electrically controlled steering.



It is this combination of manoeuvrability, stability and simplicity that has made the A4R the stand-out choice for growers doing

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ELEVATE YOUR GREENHOUSE EFFICIENCY

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electric/petrol



Harvesting cart 3C



Manual Boom sprayer



A3R-2000 Electric trolley



Mini Sprayer 300



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trolley for half the day.

Best Seller: Harvesting Carts Internal logistics - moving crates, plants and harvested product along narrow rows - can consume as much labour as the harvest itself, which is why IDM's harvesting carts are the second pillar of the best-selling range. Built around a 4-wheel steering system, these carts turn in the tightest spaces, are light and can be utilised

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high-wire cultivation on conventional greenhouse floors. It is a very cost-effective alternative to hydraulically lifted platforms and can run on groundsheeting, which is the most common floor type in SA facilities. Stop-start control is via foot pedal, making it almost entirely a hands-free operation, so workers spend 90% of the time with their hands on the crop, rather than having to climb ladders, climb trolleys or hold onto the

from both sides, with a push-pull bar at hip height. They can carry 3 to 6 crates on an adjustable platform to suit most crate sizes. The large rubber wheels reduce rolling resistance and improve efficiency of harvesting and other activities.

Best Seller: Sprayers Crop protection is one of the highest-risk,

highest-cost activities in any greenhouse, and it is the third category where IDM consistently wins growers over. The flagship Fumimatic is a ride on sprayer purpose-built for protected crops, powered by a 26HP Lombardini-Kohler or Kubota 35HP engine with a hydrostatic transmission and independent 6x6 skidsteer drive for full six-wheel traction across soft or uneven greenhouse floors.

Its 400-litre tank feeds a piston pump delivering 50 litres per minute at up to 40 bar, through tri-directional treatment bars with ceramic-plate, 80-degree hollow-cone nozzles that adapt in width and height to the crop being treated - a machine recommended by pesticide manufacturers themselves, and designed to maximise both the safety and the

quality of every treatment. For growers who want the same reliability at a more accessible



price point, the Model 300 sprayer is a 4x4 hydraulic drive steering sprayer with a Lombardini-Kohler 26 HP engine, 4 x 4. Hydraulic motors on each wheel, small turning radius to enter in all crop rows and adjustable spray boom for crop height and width.

The machines bring a totally homogeneous spray pattern for all heights, with good penetration, high manoeuvrability, triple flow nozzles with different spray rates at different heights, easy driving, and safe spray application. Recommended by the European Crop Protection Association, ECPA. Worker exposure is reduced by 75% according to ECPA tests. 30% savings of phytosanitary products.

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Between the two, IDM's sprayers give growers the One Partner, One Range, One Objective: Profitability. What ties the IDM range together - sprayers, transporters and access platforms alike - is a single design principle: machines that reduce labour, protect crop quality, and improve the safety of every task performed inside the greenhouse.

As IDM puts it, these are machines for intelligent agriculture, built on the confidence of flexibility to match investment to operation size, without ever compromising on treatment quality.

Also in the Range Alongside these three best sellers, IDM's range extends to specialised equipment for specific production systems, including the Fumirail, a self-propelled fumigation system built for pipe-rail greenhouses, and the ACH-2800, a double scissor-lift platform designed for high-densi-

ty, pipe-rail cultivation frameworks.

Greener Solutions can advise on where these fit alongside the core range, depending on how your greenhouse is structured.

Farmers who know, Greener Solutions applies the same standard it holds for its greenhouse and hydroponic technology to the machinery that keeps that greenhouse running efficiently every day. If crop protection, internal logistics, or elevated crop work are costing your operation more time and labour than they should, it is time to see what the IDM range can do for your bottom line.

Contact Greener Solu-



tions today to discuss which IDM machine is right for your greenhouse, and take the next step toward a more efficient, more profitable operation. Visit greenersolutions.co.za to get in touch with the team. From the first conversation about your operation, through system design to delivery to operation, Greener Solutions ensures you receive the best advice and service. **greenersolutions.co.za**










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EVERY DROP HAS A JOB

Why water management is becoming the defining competitive advantage in undercover farming

Water has always been one of the most important inputs in agriculture. In protected cultivation, however, its importance becomes even more obvious because the grower has far greater control over how water enters the production system, where it goes, what it carries, and what happens to it afterwards.

That control comes with responsibility.

South Africa is a water-scarce country, with rainfall varying considerably between regions and seasons. Agriculture is the largest user of available water, making efficient irrigation more than an environmental consideration: it is a production and economic imperative.

The Department of Forestry, Fisheries and the Environment identifies agriculture as using approximately 67% of available water resources, while the Department of Water and Sanitation has repeatedly emphasised the need to improve water-use efficiency in ir-

rigation agriculture. For undercover growers, the challenge is therefore not simply to use less water.

It is to make every litre work harder.

From irrigation to water management

There is an important difference between irrigation and water management.

Irrigation is the physical application of water to a crop. Water management encompasses the entire system: the source, storage, filtration, distribution, application, root-zone environment, drainage, recycling and monitoring.

A sophisticated greenhouse can have excellent irrigation hardware and still waste water if the crop's root system is unhealthy, the substrate is poorly drained, irrigation is poorly timed, or water quality is allowed to deteriorate.

The Agricultural Research Council's work on commercial vegetables reflects this increasingly

integrated approach. Its research programme includes hydroponic production and water-use efficiency, with tomatoes, cucumbers and peppers among the crops studied in protected systems.

The message is important: water efficiency is not created by a dripline alone. It is created by the interaction between plant, root system, substrate, irrigation strategy and climate.

Know the water before you use it

The first step in efficient irrigation is understanding the water entering the farm. A grower may have an apparently abundant source, but quantity is only one part of the equation. Water quality can influence root development, nutrient availability, salinity and the long-term performance of the production system.

In hydroponics, this becomes especially important because nutrients are supplied through irri-

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gation water. The ARC describes hydroponics as production in a medium other than natural soil, with nutrients dissolved in irrigation water and supplied regularly to the crop.

• **That means irrigation water is simultaneously:**

- a hydration source;
- a nutrient-delivery system;
- part of the root-zone chemistry;
- a potential source of salts or contaminants.

A grower therefore needs to know the starting quality of the water before designing a fertigation programme. Water analysis should be treated as a management tool rather than a once-off exercise. Where source quality changes seasonally, monitoring becomes even more important.

The crop decides when water is valuable

One of the biggest mistakes in irrigation management is treating the crop as though its water requirement remains constant throughout its life.

It does not.

A young transplanted plant has a very different root system and canopy from a mature fruiting crop. As leaf area expands, transpiration changes. As fruit load increases, the plant's demand for water and nutrients changes again.

This is particularly obvious in fast-growing greenhouse crops such as cucumbers.

The same principle applies to tomatoes and peppers. The crop's demand is influenced by radiation, temperature, humidity, canopy size, developmental stage and fruit load. The objective is therefore not to establish a fixed irrigation schedule and leave it untouched.

The objective is to respond to the crop. That is where climate data, substrate moisture monitoring, drainage measurements and plant observations become useful.

More water does not mean more production



It is tempting to think that a well-watered plant is a productive plant. But the relationship is more complicated.

Roots require oxygen as well as water. A root zone that remains saturated for too long can restrict oxygen availability and impair root function. Poor drainage can also contribute to disease problems. The ARC's hydroponic guidance highlights the importance of water efficiency and the differences between recirculating and drain-to-waste systems. In a recirculating system, nutrient solution can be collected and returned to the crop after appropriate man-

agement.

The objective is therefore to maintain an appropriate balance:

- enough water for plant function,
- enough oxygen for healthy roots, and enough drainage to control the root-zone environment.

This is why substrate selection matters.

A growing medium must retain sufficient moisture while still allowing drainage and aeration. Your current issue makes exactly this connection in its discussion of expanded perlite and root-zone management.

Water efficiency starts below the surface.

The value of monitoring

Modern undercover farming gives growers something that open-field production cannot always provide to the same degree: the ability to monitor the production environment continuously.

Sensors can measure moisture, tempera-

ture, radiation and other variables. Irrigation systems can be automated. Fertigation can be adjusted. Drainage can be monitored. But technology is only valuable when the information is used to make better decisions. A moisture sensor that is installed but ignored does not save water.

An irrigation computer running a programme based on outdated assumptions does not automatically create efficiency.

A grower needs to understand what the measurements mean.

The Department of Water and San-

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itation has identified improved irrigation management and water-use efficiency as important components of climate-smart agriculture. More recently, the South African government has also highlighted the adoption of soil-moisture sensors and variable-rate irrigation as examples of technology contributing to reduced water use on commercial farms. The direction of travel is clear: measure first, then manage.

Recirculation changes the equation

One of the most important advantages of certain hydroponic systems is the ability to recirculate water and nutrients.

In a closed system, water leaving the root zone is collected, analysed or conditioned as necessary, and returned to the crop. This can substantially change the water-use equation because the grower is no longer treating every irrigation event as a one-way journey.

But recirculation is not simply a matter of collecting drainage and pumping it back.

The solution can accumulate salts and nutrients at different rates. Plant uptake changes the composition of the solution. Disease management becomes critical because water can also provide a pathway for pathogens to move through a production system.

The system therefore requires monitoring and competent management. Water efficiency without water-quality management can create a different problem.

Capture before you pump

There is another opportunity for undercover growers: harvesting water before it becomes irrigation water.

Greenhouse roofs and other structures can provide substantial collection surfaces. Rainwater har-

vesting can supplement existing sources, reduce dependence on a single supply and provide an additional layer of resilience.

The broader principle is worth considering:

water security is about having multiple strategies, not one perfect source.

Storage capacity matters because rainfall does not necessarily arrive when the crop needs it.

The grower who captures water during periods of high rainfall and stores it for later use has effectively moved some of the climate risk from the production season into the infrastructure system.

Water and the economics of the crop

Ultimately, water efficiency must make economic sense.

A litre of water has no value simply because it is saved. Its value lies in what it contributes to production. That means the most useful measurement is not necessarily litres per hectare.

It may be **kilograms of marketable produce per cubic metre of water.**

This shifts the discussion from conservation to productivity.

A crop that uses slightly more water but produces substantially more marketable product may be more water-efficient economically than a crop with lower absolute water use.

This is particularly relevant to protected agriculture, where growers often invest significant capital in infrastructure to produce high-value crops. The South African Government has explicitly linked irrigation upgrades and improved technology to greater agricultural efficiency, while national agricultural policy has long recognised that scarce water needs to be allocated and used efficiently.

The root of the matter

There is a final point that deserves more attention. Water-use efficiency is ultimately biological. A plant with a strong, healthy root system can make better use of the water supplied to it. A damaged or poorly functioning root system cannot.

This is why water, nutrition, substrate, oxygen, temperature and disease management cannot be treated as separate departments of greenhouse production.

They are one system.

The future of undercover farming will therefore not be defined simply by increasingly sophisticated irrigation equipment.

It will be defined by how accurately growers can match **water supply to plant demand.**

The question will no longer be:

"How much water did we apply?"

It will be:

"What did every litre produce?"

For South African protected growers, that is becoming one of the most important questions in the entire production cycle. **SO.**

WATER & ROOT HEALTH:

Managing Pythium Risk in Lettuce During Winter-to-Spring Transitions

Every undercover lettuce grower knows the feeling: healthy, vigorous roots one week, and a slimy, brown, collapsing root mass the next. More often than not, the culprit is *Pythium* — a water mould that thrives in the exact conditions many hydroponic systems create during the shift from winter into spring. Understanding why this happens, and what actually reduces the risk, is one of the most valuable things a grower can learn this season.

Why Lettuce Roots Are Particularly Vulnerable

Lettuce is grown almost exclusively in systems with roots in direct, near-constant contact with water - NFT channels, deep water culture, raft systems, and ebb-and-flow tables. This is efficient for nutrient delivery, but it also means there is very little buffer between a healthy root zone and a compromised one.

Unlike soil-grown crops, where root pathogens must compete with a complex microbial community and are physically restricted

in their movement, hydroponic water is an open highway. Once *Pythium* zoospores are present in a reservoir or recirculating line, they can reach every plant in the system within hours.

Lettuce roots are also fine, white, and fast-growing, with thin root hairs and limited lignification compared to fruiting crops like tomato or cucumber. This makes them physically easier for *Pythium* to penetrate, and it means damage shows up faster — often as stunted heads, wilting despite wet media, and a general “failure to thrive” look before outright rot is visible.

The Winter-to-Spring Danger Window

Pythium is not a single villain but a genus of water moulds, several species of which are active across a wide temperature range. The specific danger of the winter-to-spring transition comes from a combination of factors rather than any one cause.

Cooler root-zone temperatures slow lettuce metabolism. Root cells take up water and nutrients

more slowly, root hair regeneration slows, and any minor wounding - from handling, transplant shock, or abrasion in the channel - takes longer to heal. A slower-healing root is a more accessible entry point.

Over-irrigation becomes more likely precisely when it is least needed.

Growers accustomed to summer schedules often maintain irrigation frequency or reservoir turnover rates that were calibrated for higher evapotranspiration. In cooler weather, plants transpire less, so water and dissolved oxygen linger around the root zone longer, and the film of water on root surfaces takes longer to refresh. This creates prolonged periods of low-oxygen, high-moisture conditions.

Dissolved oxygen drops as water temperature drops less than expected, or as biofilm builds.

It's a common misconception that cold water always carries more oxygen. While cold water can hold more dissolved oxygen than warm water, poor circulation, algae buildup, or organic debris accumulating over winter can offset this, especially in systems where pumps or aerators have been run at reduced settings to save energy.



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Temperature fluctuation stresses the plant more than the temperature itself. Spring transitions bring wide day-night swings, cold snaps, or condensation events. Rapid temperature change in the root zone is itself a stressor that suppresses the plant's own defence responses, giving an opportunistic pathogen like Pythium an opening it would not have during more stable conditions.

Put together, this is a textbook scenario for Pythium: cooler, wetter, lower-oxygen root zones, feeding a weakened host over an extended period, right as spore populations in older, less-cleaned systems are often at their highest after a full winter of continuous operation.

Recognising the Early Signs

By the time roots are visibly brown and mushy, damage is usually well advanced and yield loss is close to locked in.

Growers who catch Pythium early tend to notice more subtle signals first: roots that appear yellowish or grey rather than crisp white, a slight softening or stringiness where roots meet the growing medium, a faint sour or musty smell around the reservoir, or lettuce heads that lag in growth despite normal nutrient readings. Because these signs can be mistaken for nutrient deficiency, it is worth checking roots directly rather than relying on foliar symptoms alone whenever growth seems off

during this period.

What Actually Reduces the Risk

The most effective response to Pythium in lettuce is not a single treatment but a combination of environmental management practices that remove the conditions the pathogen depends on.

Match irrigation to actual plant demand, not the calendar. As temperatures drop and transpiration slows, irrigation frequency and volume should be reduced accordingly. Monitoring substrate or channel moisture directly, rather than running a fixed schedule year-round, prevents the prolonged saturation that favours Pythium.

Maintain dissolved oxygen levels deliberately. Aeration should not be reduced in winter on the assumption that cold water needs less oxygenation. Regular checks of dissolved oxygen at multiple points in the system, especially at the ends of long channels or in deeper reservoirs, help confirm that oxygen levels remain adequate throughout, not just at the pump outlet.

Stabilise root-zone temperature where possible. Sudden swings do more damage than a consistently cool but stable environment. Insulating reservoirs, avoiding placement near draughty vents or single-glazed panels, and using root-zone heating where budgets allow can reduce the stress spikes that open the door to infection.

Keep the system clean between crops and during production. Biofilm, dead root matter, and algae are a food source and refuge for Pythium. Regular flushing of channels, filtration of recirculating water, and prompt removal of dead or dying plants reduce the inoculum load available to spread to healthy plants.

Consider UV or other water treatment for recirculating systems. For systems with a history of recurring root disease, in-line water treatment can reduce zoospore populations in circulation without relying on chemical intervention.

The Outcome: A Resilient Root Zone Through the Transition Season

None of these measures work in isolation, and none of them guarantee zero risk - Pythium is present in most growing environments in some form. What separates a bad outbreak from a manageable season is whether the root zone spends the winter-to-spring transition in a stable, well-oxygenated, appropriately irrigated state, rather than a saturated, oxygen-poor one.

Growers who treat irrigation and aeration as dynamic variables - adjusted to real plant demand and real water conditions rather than a fixed routine - consistently report steadier root health through this period, faster crop turnaround, and fewer total losses than those relying on static schedules built for warmer months.



The practical takeaway for this season is straightforward: watch the roots, not just the leaves; adjust water before the weather forces the issue; and treat winter's cooler air as a signal to do less irrigation, not more. Done consistently, this is the single biggest lever available for keeping Pythium out of the lettuce room this spring. **SO.**

TOMATOES GROWN UNDER PROTECTION:

Choosing the Right Hybrid for Greenhouse and Shade-Net Success

How modern genetics are helping South African growers produce more premium tomatoes with greater consistency

Protected tomato production is becoming increasingly important in South Africa as growers respond to climate variability, water constraints and demanding fresh-market specifications. Greenhouses and shade-net structures provide greater control over growing conditions, but the success of the crop ultimately depends on how well the genetics are matched to the production system.

Selecting a tomato hybrid is no longer simply about choosing the highest-yielding variety. Growers must consider disease resistance, plant balance, fruit quality, firmness, shelf life, heat tolerance, fruit set and the

ferent growing environments. Greenhouses allow growers to manage factors such as temperature, humidity, irrigation, nutrition and ventilation more precisely. With appropriate management, greenhouse tomatoes can remain productive for extended periods, making consistent plant performance particularly important.

Shade-net structures provide less environmental control but can reduce excessive solar radiation and protect crops from hail, wind and temperature extremes. They generally require a lower capital investment than sophisticated greenhouse systems and are widely used in warmer production regions.

These differences influence hybrid selection.

Greenhouse crops require good plant balance, reliable truss development and the ability to maintain fruit production over a long period. Shade-net crops may place greater emphasis on heat tolerance, vigorous growth, reliable fruit set and performance under fluctuating environmental conditions.

The best hybrid is therefore not necessarily the one with the highest yield potential, but the one that is best suited to the grower's environment, manage-

ment system and target market.

Genetics are about more than yield

Modern tomato breeding increasingly focuses on a combination of agronomic and market characteristics.

Breeding programmes evaluate potential hybrids for traits including plant vigour, fruit uniformity, firmness, shelf life, crack resistance, disease resistance, heat tolerance and consistent fruit set.

This reflects an important change in commercial production. Total yield remains important, but marketable yield is often a more useful measure of profitability.

A crop can produce a high tonnage per hectare, but if a significant proportion of the fruit is cracked, soft, poorly coloured, undersized or otherwise outside the buyer's specifications, the financial return will be reduced.

For this reason, growers should evaluate hybrids according to the percentage of fruit that can actually be sold at the required grade and price.

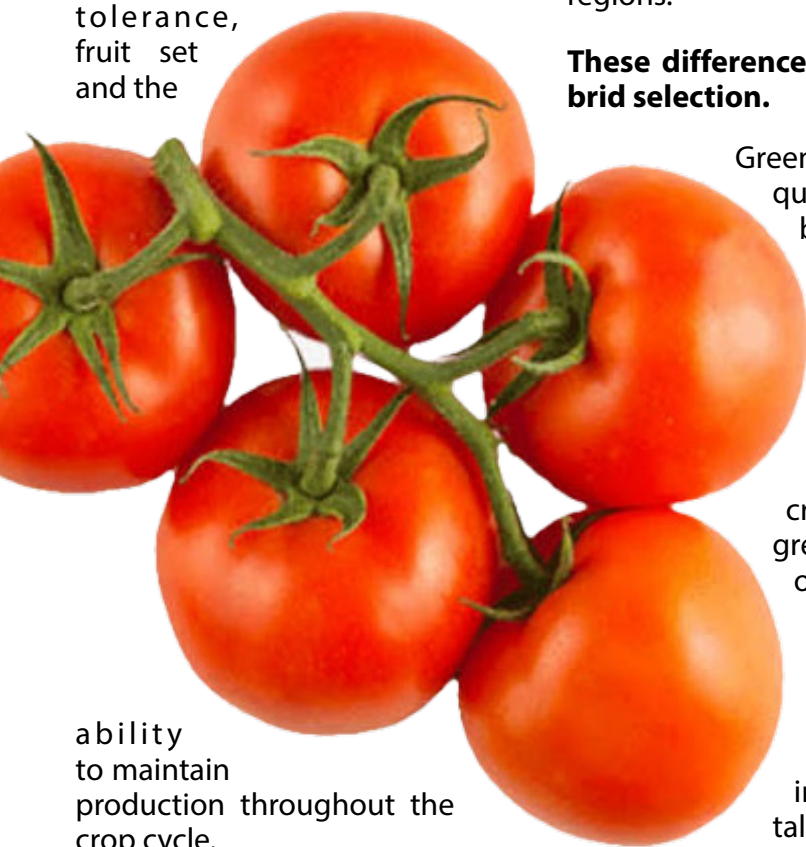
"Marketable yield - not harvested yield - is what ultimately matters to the commercial grower."

Disease resistance reduces production risk

Disease pressure is another major consideration in protected tomato production.

Long production cycles and intensive cropping can allow pathogens to establish and spread rapidly. Depending on the production re-

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ability to maintain production throughout the crop cycle.

Different systems, different requirements

Greenhouse and shade-net production are often grouped together, but they create very dif-

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gion and growing system, growers may need to consider resistance or tolerance to diseases such as Fusarium wilt, Verticillium wilt, tomato yellow leaf curl virus (TYLCV), tomato mosaic virus (ToMV), tomato spotted wilt virus (TSWV) and bacterial wilt, as well as root-knot nematodes.

Genetic resistance does not eliminate the need for good crop management. Sanitation, pest monitoring, irrigation management, appropriate crop protection and good greenhouse hygiene remain essential. However, incorporating disease resistance into the hybrid can provide an important additional layer of protection and help reduce production risk.

Fruit quality determines value

Modern tomato markets place strong emphasis on appearance and eating quality.

Uniform fruit size and colour, firmness and shelf life can be just as important as production volume. Fruit must also withstand harvesting, handling, packing and transport without excessive damage.

For growers supplying demanding retail or fresh-produce markets, characteristics such as crack resistance, firmness, uniformity and transportability can directly influence pack-out and returns.

This is why hybrid selection should begin with the market in mind.

A grower should know the preferred fruit type, size, colour, firmness and shelf-life requirements before selecting genetics. Working backwards from the market can help prevent the costly mistake of producing a crop that performs well agronomically but does not meet the buyer's specifications.

Local testing matters

South Africa's growing regions differ considerably in climate, disease pressure, water quality and production conditions.

A hybrid that performs well in another country may not necessarily perform in the same way under South African conditions. Local and regional trials can therefore provide valuable information about plant architecture, fruit quality, disease performance, heat tolerance and production consistency.

Growers should ask whether a hybrid has been evaluated under conditions comparable to their own and, where possible, visit demonstration trials or speak to other producers who have grown it commercially. This is particularly important when investing in protected infrastructure, where the cost of a poor hybrid choice can be multiplied across a large

production area and a long crop cycle.

Matching genetics, environment and management**There is no universal "best" tomato hybrid.**

The right choice depends on the interaction between genetics, environment and management.

A highly controlled greenhouse supplying premium retail markets may require different characteristics from a shade-net operation producing for a local fresh market. Similarly, a producer in a hot, high-disease-pressure area may have different priorities from one operating in a cooler region.

Growers should consider the structure, climate, production cycle, disease risks, irrigation and fertigation programme, labour capacity and target market before selecting a hybrid. Good genetics cannot compensate for poor crop management, but the right genetics can allow a well-managed production system to perform more consistently.

Looking ahead

As protected agriculture expands in South Africa, hybrid selection will become increasingly strategic.

Breeding programmes are continuing to focus on combining productivity with disease resistance, heat tolerance, fruit quality and longer shelf life. At the same time, growers are becoming more sophisticated in how they measure crop performance.

For the protected tomato producer, the objective is no longer simply to grow more tomatoes. It is to produce more consistent, marketable fruit from every square metre.

The structure creates the protected environment, crop management controls its potential, and genetics help determine how successfully that potential is converted into a profitable harvest. **SO.**



A STRONG CROP STARTS WITH THE RIGHT SEEDLING

Why premium seedling quality matters in undercover farming

Undercover farming is an investment in precision. From greenhouse infrastructure and irrigation to fertigation, climate management and crop protection, commercial growers put significant resources into creating the conditions for consistent production. Yet one of the most important decisions is made before a crop enters the production house: choosing the right seedling.

For growers operating in protected environments, the quality and uniformity of the planting material can have a direct bearing on crop establishment and the efficiency of the production programme. A strong, well-produced seedling gives the grower a better starting point - and that is precisely where Hishtil South Africa has positioned its business.

Hishtil South Africa is a commercial supplier of grafted and ungrafted vegetable seedlings, with a stated focus on quality, uniformity, technology, technical backup and professional service. Its offering is particularly relevant to intensive and undercover vegetable production, where growers need planting material that fits into carefully planned crop schedules and production systems.

The company's nursery infrastructure reflects this commercial focus. Hishtil SA operates more than 6 ha of greenhouse facilities covered with insect-proof

netting. According to the company, this creates an insect-proof chain throughout the seedling growing period, supporting the production of clean, disease-free seedlings. For a commercial undercover grower, that controlled production environment is important. The nursery is the first stage of the crop, and consistency at this stage can make crop establishment more predictable. When hundreds or thousands of plants are being managed within a high-value protected production system, uniformity is not simply a desirable characteristic — it is a practical production advantage.



Grafting adds another dimension to Hishtil's offering. The company has more than 25 years of international experience in vegetable grafting and says it was the first nursery in South Africa able to supply grafted vegetable seedlings commercially. Graft-

ed seedlings combine a selected rootstock with the desired commercial variety. This gives growers another tool when developing a production strategy, particularly where the characteristics of the root system are important to the crop and growing conditions. As with any production technology, grafting works best when the rootstock, variety, growing environment and crop management programme are considered together.

For undercover growers, the significance of grafting is therefore not simply that the plant is grafted. It is the ability to access specialist nursery expertise and select planting material appropriate to the production objective. Hishtil's experience in grafting allows growers to consider both conventional and grafted seedlings as part of their crop planning.

Hishtil's South African operation also brings international nursery experience into a local production environment. The Hishtil business was founded in 1974, while the first phase of Hishtil South Africa was established at Mooketsi in Limpopo in 2007. A second nursery facility at Riebeeck West in the Western Cape began operating in 2014.

Today, the two locations support growers in the northern and southern regions, while Hishtil SA also offers countrywide delivery and technical field support.

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The company lists technical support personnel for both Mooketsi and Riebeek West - an important consideration for growers who expect more from a seedling supplier than a delivery of trays.

Quality assurance is another part of the equation. Hishtil SA



states that it was the first nursery in South Africa to achieve GLOBALG.A.P. certification. For commercial growers operating in increasingly demanding supply chains, recognised production standards, traceability and disciplined nursery practices can add confidence to the procurement decision.

Ultimately, undercover farming is about making every input count. Growers cannot control every variable, but they can control the quality of many of the inputs that go into a crop. Seedlings are one of the first - and potentially one of the most consequential.

Choosing a premium nursery partner is therefore a production decision rather than simply a purchasing decision. It means looking at the complete offering: plant quality, uniformity, nursery technology, grafting capability, technical support, logistics and consistency of service. Hishtil South Africa brings these

elements together with a clear commercial focus on vegetable seedlings. For undercover growers looking for a reliable starting point, the combination of grafted and ungrafted seedlings, controlled nursery production, international grafting expertise and local technical support provides a strong foundation for the crop ahead.

In a sector where every square metre, crop cycle and input matters, starting well is more than a good idea. It is good business.

Hishtil South Africa | Commercial grafted and ungrafted vegetable seedlings. hishtil.co.za



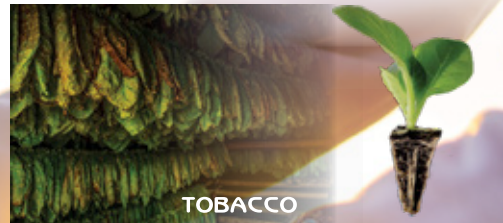
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REGIONAL PROTECTIONISM THREATENS SOUTH AFRICAN FRUIT AND VEGETABLE FARMERS

In the first half of 2026, a quiet but persistent pattern of import restrictions by neighbouring Southern African countries has continued to disrupt trade in South African fruit and vegetables. Namibia and Botswana have repeatedly imposed temporary bans or restrictions on these products, citing the need to protect and expand their domestic farming sectors.

By mid-July 2026, officials in Botswana and Mozambique were still publicly advocating measures to reduce reliance on South African food imports. These actions, occurring within the Southern African Customs Union (SACU) and against the backdrop of the African Continental Free Trade Area (AfCFTA), create uncertainty for South African producers who have long viewed the region as a reliable nearby market.

South Africa's agricultural sector is one of the country's most competitive and export-oriented industries. In 2025, total agricultural exports reached a record US\$15.1 billion. Roughly 17 to 20 percent of these exports have historically gone to the SACU region, with neighbouring countries serving as important outlets for fresh produce, particularly vegetables and certain fruits that do not always meet the stringent requirements of distant overseas markets.

Botswana has typically accounted for a meaningful share of South Africa's vegetable exports - estimates in recent years placed it around 8 to 15 percent of the vegetable trade - while Namibia and Mozambique have also been significant destinations. When these markets close or become unpredictable, the impact falls directly on farmers in provinces such as Limpopo, North West, Gauteng, Mpumalanga and the Western Cape, where horticultural production is concentrated. The

rationale offered by the restricting countries is straightforward and, on its face, understandable. Governments in Botswana, Namibia and, more recently, Mozambique wish to stimulate local production, improve food security and reduce dependence on imports. Bank of Botswana Governor Lesego Moseki has called for accelerated efforts to cut reliance on food imports.

Mozambique's Minister of Agriculture, Environment and Fisheries, Roberto Albino, has similarly spoken of pursuing import substitution. These ambitions align with broader continental goals of agricultural development and self-sufficiency. Yet the method—unilateral or frequent temporary bans on products from a SACU partner—clashes with the principles of free movement of goods that underpin the customs union. SACU is designed to allow products to flow freely among its members (South Africa, Botswana, Lesotho, Namibia and Eswatini), subject only to limited exceptions such as disease outbreaks or national security concerns. The recent restrictions on fruits and vegetables have generally not been justified on phytosanitary or disease grounds.

For South African fruit and vegetable farmers the practical consequences are immediate and cumulative. Producers plan plantings, irrigation schedules and labour hiring months in advance on the expectation of regional demand. When a ban is announced with little notice—or when borders open and close in a stop-start pattern—surplus produce can flood

the domestic market, depressing prices. Farmers who have already invested in inputs, water and seasonal workers face lower returns or outright losses. Smaller and medium-scale growers, who often lack the scale or cold-chain infrastructure to pivot quickly to distant export markets, are particularly exposed. The Western Cape's deciduous fruit and vegetable producers, already recovering from severe flooding earlier in 2026 that caused an estimated R6.3 billion in damage and production losses to the pome and stone-fruit industry, now confront an additional layer of market risk in the region.

The broader economic effects extend beyond the farm gate.



Reduced regional demand can lead to lower packing-house throughput, fewer transport jobs and pressure on input suppliers. In rural towns that depend on horticulture, the loss of a reliable cross-border outlet compounds existing challenges such as logistics inefficiencies, rising input costs and, in some areas, labour shortages following the recent migrant-worker exodus. While South African consumers may temporarily benefit from lower domestic prices for certain vegetables, the long-term effect of weakened farm viability is reduced investment, slower employment growth and diminished resilience in the

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face of climate or global market shocks. Agricultural economist Wandile Sihlobo, chief economist at the Agricultural Business Chamber of South Africa (Agbiz) and Presidential Envoy on Agriculture and Land, has argued that the correct response is collaboration rather than confrontation. South African agribusinesses already share cultivars, best practices and technology through organisations such as the Citrus Growers' Association of Southern Africa.

Extending this model-through technical assistance, investment partnerships and knowledge transfer-could help neighbouring countries expand production without resorting to protectionist barriers. Closing borders risks raising food inflation in the restricting countries themselves when domestic supply falls short, while simultaneously undermining the trust required for deeper regional integration under the AfCFTA.

At the same time, the episode underscores a strategic reality for South African farmers and policy-makers: the Southern African region can no longer be treated as the primary or default destination for agricultural exports. Persistent friction within SACU, combined with the need for South Africa to consult its customs-union partners before concluding many bilateral trade agreements, has limited the country's agility in opening new high-value markets.

Diversification toward Asia, the Middle East and other regions has become an urgent priority. Progress on phytosanitary protocols, cold-chain logistics and market-access negotiations will determine whether South African fruit and vegetable growers can offset



any further erosion of regional demand.

The restrictions also highlight tensions inherent in the current SACU architecture. While the union has delivered benefits in terms of revenue sharing and a common external tariff, its rules have not prevented repeated unilateral actions on agricultural products.

Calls for a review of the agreement—aimed at clarifying the conditions under which temporary restrictions may be imposed and improving notification and consultation procedures - have grown louder among South African agricultural stakeholders. Without clearer disciplines, the risk remains that protectionist measures will become more frequent as neighbouring countries pursue their own agricultural development agendas.

None of this diminishes the legitimacy of Botswana, Namibia or Mozambique's desire to strengthen domestic farming. Shared regional prosperity requires higher agricul-

tural productivity across Southern Africa, not perpetual dependence on one dominant supplier. The challenge is to pursue that goal through investment, technology transfer and open markets rather than through repeated border closures. For South African fruit and vegetable farmers, the stakes are concrete: reliable regional offtake supports cash flow, employment and the viability of labour-intensive horticultural enterprises that form a critical part of the rural economy.

As of early August 2026, the pattern of restrictions continues and the diplomatic conversation remains unfinished. South African producers will watch closely whether the engagement promised by political leaders translates into more predictable trade rules, or whether the region drifts further toward fragmented, protectionist practices. The outcome will influence not only farm incomes in the coming seasons but also the credibility of Southern Africa's broader commitment to economic integration. **SO.**

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GROLITE® EXPANDED PERLITE:

A growing medium built on sound science for undercover farming

Choosing the right growing medium is one of the most consequential decisions a grower can make. For growers operating tunnel and shade-net environments across South Africa, Pratley Minerals' Grolite® Expanded Perlite offers a substrate solution backed by verifiable properties and a long-established supply chain.

Grolite® is not a manufactured or synthetic product. It is a naturally occurring volcanic mineral that is thermally expanded to produce a lightweight, porous growing medium. The product carries an eco-friendly classification and is produced without a harmful environmental footprint - a consideration that has become increasingly relevant as producers navigate sustainability requirements and the expectations of export markets.

At a functional level, Grolite® addresses one of the central challenges in root zone management: balancing drainage with moisture retention. The

expanded perlite structure promotes water drainage while simultaneously retaining the moisture content required for healthy root development. This allows growers to maintain more consistent irrigation schedules and reduces the risk of waterlogging, which is a particular concern in high-density production environments.

Aeration is equally important to root zone health. Gro-

lite® maintains optimal aeration within the root zone, supporting oxygen exchange, vigorous root development, and efficient nutrient uptake. Related to this, the product improves fertiliser efficiency by enhancing nutrient interaction at the root zone - meaning improved plant health and growth without a direct increase in input volumes.

For producers prioritising bio-se-
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GROLITE

SUPERIOR PERLITE FOR HORTICULTURAL & HYDROPONIC USE

Key Benefits:

- Increased fertilizer efficiency, which improves plant health and growth.
- Promotes water drainage whilst still retaining optimal moisture conditions in the root zone.
- Maintains optimal soil aeration.
- Free of weeds and pathogenic microbes (sterile).
- Compared to other ordinary horticultural Perlites, Grolite has a much stronger surface structure. This prevents damaging degradation and attrition during mixing and transport.
- Available in various grades to suit all growing requirements.



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curity, Grolite® is free of weeds and pathogenic microbes. This reduces the risk of introducing soil-borne disease into a production system and lowers the need for corrective chemical intervention - a practical benefit in any intensive growing operation.

Grolite® is available in multiple grades to suit different horticultural applications: Type 1 Fine (0–1mm), Type 1 Medium (0–2mm), Type 1 Coarse (1–3mm), and Unscreened (0–8mm), with additional Type 2 variants including a Coarse grade of 1–8mm and a Fine grade of 0–1mm. This range allows growers to match particle size to specific applications, from

seedling propagation through to substrate blending for mature crop production.

Pratley Minerals is ISO certified and a member of the International Perlite Institute, with Halaal certification also held for the group. The company operates from its facility in Krugersdorp, Gauteng, and supplies both local and international markets.

Perlite is sourced from South Africa, and the ore is processed using proprietary technology developed in-house by the Pratley group - a company with a history in minerals processing stretching back to 1974, when its first perlite processing factory was built in Chamdor following years of pros-

pecting work in Zululand. That depth of institutional experience matters in a category where consistency of supply and product quality can make or break a season's production.

For growers weighing up substrate options, a locally sourced, locally processed material with decades of proven application removes a layer of uncertainty from an already complex production system.

For producers looking for a natural, eco-friendly growing medium with consistent performance characteristics, Grolite® warrants serious consideration.

For more information, visit www.pratleyminerals.com.

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THE DILUTION EFFECT:

What's Really Happening to the Nutrient Density of Our Produce

Nutrient Density - It deserves a harder look, and a South African one in particular - because the debate playing out internationally maps onto a very local reality: a commercial sector producing some of the most sophisticated horticultural exports in the world, sitting alongside small-holder systems working some of the continent's most nutrient-poor soils. The claim that fruit and vegetables are "less nutritious than they used to be" is not folklore - it is backed by real, if imperfect, international data. But locally, the more urgent nutrient density story is not historical decline, it's geography.

The international baseline, and its limits

The most cited evidence globally is Donald Davis and colleagues' 2004 analysis in the *Journal of the American College of Nutrition*, comparing USDA nutrient composition tables for 43 garden crops between 1950 and 1999.

It reported statistically reliable declines in six nutrients - protein, calcium, phosphorus, iron, riboflavin, and vitamin C - with some crops showing drops of up to 38% in riboflavin and 15% in vitamin C. A parallel British analysis in the *British Food Journal*, comparing UK produce from 1930 to 1980, found average calcium content across

20 vegetables down around 19%, iron down 22%, and potassium down 14%.

These are real figures from real government datasets, and industry readers shouldn't wave them away. But the caveats matter. Davis and colleagues could only measure nutrients that were actually tracked in the 1950s baseline - magnesium, zinc, vitamin B6, vitamin E, and dietary fibre were not part of the original dataset, so claims about those are extrapolation, not measurement.

A later statistical re-analysis, published in the *Journal of Trace Elements in Medicine and Biology*, found no clear overall loss in calcium, magnesium, and potassium balance once methodological noise was accounted for, and argued that the widespread adoption of soil testing and precision fertilisation across modern commercial agriculture cuts against a simple "depleted soil" story. South Africa's commercial sector - much of it exporting citrus, table grapes, and deciduous fruit under some of the strictest phytosanitary and quality protocols in the world - sits closer to that well-monitored end of the spectrum than the 1950s American farms in the original study.

A more local mechanism: dilution by yield, not poisoned soil

The mechanism Davis himself now

emphasises is not soil exhaustion but a breeding trade-off: selecting for yield, size, and pest resistance has outpaced a plant's capacity to synthesise or take up nutrients, so the same total nutrient pool gets spread across a bigger, faster-growing crop. Because growers are paid by weight, the incentive structure of any commercial supply chain - South African or otherwise - points toward exactly the traits that produce this dilution.

There's a related, more local wrinkle. Maize, South Africa's dominant staple and the calorie base for a large share of the population, relies on mycorrhizal fungal partnerships that act as root extensions, improving nutrient and water uptake. High-input, high-yield production can degrade the conditions these partnerships need, quietly reducing a plant's own nutrient-foraging ability even where soil test results look adequate on paper.

Where South Africa's real nutrient density problem sits

This is where the international literature and the local picture diverge in an important way. Research from the Agricultural Research Council's Institute for Soil, Climate and Water and independent studies - including work on resource-poor farming communities in KwaZulu-Natal - consis-

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tently find that African soils are inherently low in organic matter and several key micronutrients, worsened by erosion, continuous cropping, and limited fertiliser access in smallholder systems. Unlike the commercial sector, where testing and precision inputs are routine, subsistence and smallholder farms across the country and the wider region often see nutrient withdrawal by crops substantially exceed what's replaced through fertiliser or organic inputs. Micronutrient deficiencies in produce are, as one Southern African review put it, readily corrected in commercial farming but frequently go unreported and unaddressed in the smallholder sector.

The public health consequence of this soil-to-plate gap is what nutritionists call "hidden hunger" - sufficient calories, insufficient micronutrients. Vitamin A deficiency remains a significant problem in South African children, which is why the country has become one of the more active sites globally for biofortification.

Orange-fleshed sweet potato, bred for higher beta-carotene content, has reached large-scale availability locally, and provitamin A-biofortified maize — bred through conventional methods to raise carotenoid content, which also gives the kernels their distinctive orange colour - has moved through development and field trials aimed specifically at smallholder systems, with HarvestPlus and partner breeding programmes releasing dozens of varieties across the region. Consumer acceptance of the orange colour has been a genuine adoption hurdle, but uptake among children has outpaced that among adults in trials to date.

The CO2 variable nobody in the industry can opt out of

Layered on top of both the international decline debate and the local soil story is a mechanism no grower - commercial or smallholder, South African or otherwise

- can manage away: rising atmospheric CO2 is measurably changing crop composition independent of soil or breeding decisions. Free-air CO2 enrichment (FACE) experiments, which test real field conditions rather than artificial chambers, have repeatedly shown that C3 crops such as wheat and soybeans grown at elevated CO2 concentrations produce lower concentrations of zinc, iron, and protein in the edible portion.

A widely cited meta-analysis by Irakli Loladze, covering 130 plant species over three decades, found elevated CO2 associated with reductions of 8% or more across a broad set of minerals per unit of dry weight. Modelling published in *Science Advances* has projected that CO2-driven zinc declines could push several hundred million additional people into deficiency risk this century, with the heaviest burden falling on grain-dependent populations - a category that includes much of Southern Africa.

What this means on the ground

None of this means South African fruit and vegetables have become nutritionally worthless, or that supplementation should replace dietary diversity - both are overreaches too common in consumer coverage of this topic. What the evidence supports is a more precise, defensible set of claims: Historical nutrient declines documented internationally are real for specific nutrients in specific crops, but uneven across datasets, and extrapolation to unmeasured nutrients is not the same as evidence.

The dominant mechanism researchers point to is yield-driven dilution through cultivar selection, not primarily soil depletion - though in South Africa's smallholder sector, genuine soil nutrient deficits remain a distinct and more pressing issue than in the well-monitored commercial sector.

Biofortification - orange maize, orange-fleshed sweet potato - is a locally active, evidence-based re-

sponse to the soil-to-nutrition gap rather than a theoretical one.

Rising atmospheric CO2 is an independent, ongoing driver of nutrient dilution in staple grain crops, verified under field conditions, and represents a nutrition security question no farming system can breed or fertilise its way out of alone.

For an industry that spans world-class citrus orchards and subsistence maize plots within the same borders, the useful takeaway isn't a single national story about declining nutrition. It's that yield, cultivar selection, soil biology, and atmospheric chemistry are all quietly pulling on the same nutrient pool - and which of those levers is available to a given grower depends enormously on which side of that divide they're farming on. **SO.**





THE MOST USEFUL TOOL IN A GREENHOUSE

- a shade screen

If you're wondering where to start with your greenhouse, the answer might surprise you. It's not fans. Not wet walls. Not even heating.

Rather, it's a shade screen. A simple, retractable cloth, drawn horizontally across the inside of a greenhouse, operated by a single gear motor.

This one system can shade a full hectare of crops in under three minutes, cut your heating bill by 30 to 50%, and respond automatically to changing weather conditions throughout the day.

And it's super cost-effective. No other single investment gives you that kind of return across so many dimensions.

Here's why. Two jobs, one system

A shade screen does two jobs, and it does both of them remarkably well.

The first is shade (when you need it).

In warm climates with high solar radiation, closing the screen shades your crop the way an awning shades your patio. But as farmers, you need control over when to shade your crops. That's why we only set up retractable screens.

These screens, controlled by the greenhouse climate computer, open and close automatically based on radiation sensors and temperature readings. Clouds pass over the sun, the screen opens. The sun comes back, the screen closes. You get the light without the heat stress.

For all that movement across 10,000 m², you're only running a single gear motor. Compared to the alternative - extraction fans, circulating fans, and wet wall pumps running continuously - your electricity bill is but a fraction. The motor turns, moves the screen, and stops. It doesn't use power while the screen is in place.

The second job is energy conservation.

Picture your greenhouse at night: the peak of the roof might be six or seven metres tall, but your crop only occupies the lowest metre or two. Without a screen, your heating system is trying to warm that entire volume of air, including the metres of empty space.

Close the screen, and you effectively divide the greenhouse into two compartments. The warm air is trapped below, around your plants. The cold air sits above the screen, unheated.

That's why screens typically deliver 30 to 50% savings on heating costs. Some multi-layer installations achieve even more. The screen closes in two or three minutes, and you get the benefit all night long without drawing another watt. In cold climates, you'd struggle to find a commercial greenhouse without one. Screens typically pay themselves back in two to four years, and in many cases, less. Just by reducing energy costs.

Choosing the right cloth

The right cloth depends entirely on your climate and your crop.

If you're growing in a warm climate where heating isn't a concern (like parts of Mpumalanga, Limpopo, North and East Africa), you want a permeable, open-weave cloth, because it allows hot air and humidity to pass through the fabric and vent out of the greenhouse.

If you use an impermeable cloth in a hot greenhouse, you end up trapping heat and moisture.

In cooler regions, the opposite applies. An impermeable, closed-weave cloth creates a thermal blanket effect that seals the warm air below and keeps the cold air

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above. This is the cloth you want in the Western Cape highlands, the Free State, or any winter production environment.

Beyond open-versus-closed woven screen cloths can also be engineered to manipulate how light passes through them.

Some cloths diffuse direct sunlight, scattering it more evenly across the canopy. This is brilliant in glass greenhouses, where direct light through glass panels can cause uneven crop growth. In plastic greenhouses, it's a great way to upgrade your light quality without replacing your roof cover.

The shade factor varies widely. A 30% shade cloth handles moderate radiation. A 50% cloth suits higher-intensity conditions. The right specification depends on the crop, the climate, and the season.

Why quality matters

A screen system is a mechanical installation with moving parts. It's not like installing a shade net and



walking away. The cloth moves back and forth every day, sometimes several times a day, driven by motors and cables that must all work together reliably for years.

That's why the quality of the components and the design of the system matter as much as the cloth specification. Poorly designed slip blocks, loose cable tension, or substandard profiles lead to uneven closure, cloth wear, and maintenance headaches that eat into the savings your screen was supposed to deliver. We partner with **Alweco**, a Dutch manufacturer that has been designing and building greenhouse screen systems for over 35 years.

They develop many of their components in-house, including the Ultra Lock screen profiles and Ultra Delay slip blocks that ensure a tight seal when the screen is closed. It's a partnership we chose specifically because their engineering focus matches how we approach greenhouse design: get the details right, and the system performs for years without constant attention.

Start with the screen

If you're weighing up climate control investments for a new greenhouse, or looking for the highest-impact upgrade to an existing structure, a shade screen is your best bet.

The running costs are negligible. The energy savings are immediate. And the right cloth, matched to your climate and your crop, gives you a level of environmental control that matches the gains from far more expensive systems. We'll help you match the right cloth, the right mechanical system, and the right specification to your climate, your crop, and your budget.

Get in touch on +27 21 987 6980 or info@vegtech.co.za.



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Raspberry Cobbler

This might be one of the easiest desserts you'll ever make! A simple batter is combined with raspberries to create a homemade dish that everyone will enjoy. And that's exactly why it's called lazy cobbler! Not only is it tasty, but baking this recipe is a great way to bring together friends and family.

Ingredients

4 tbsp unsalted butter
 ¾ cup all-purpose flour
 1 cup granulated sugar
 2 tsp baking powder
 ½ tsp salt
 1 tsp vanilla extract
 ⅔ cup whole milk
 2 cups fresh or frozen raspberries

Instructions

Add the butter to a 20 cm x 20 cm baking dish. Set the baking dish in the oven and preheat the oven to 180°C. Prepare the batter ingredients while the butter is melting. Once the butter is melted in the oven, after 4-6 minutes, remove the baking dish.

Mix the flour, sugar, baking powder, and salt in a bowl. Whisk to incorporate evenly. Add the milk and vanilla extract and whisk until smooth.

Pour the batter into the baking dish with the melted butter. There is no need to stir. Sprinkle the raspberries directly on top of the batter.

Bake in the preheated oven until the cobbler is golden and set in the middle, 45-55 minutes. Once baked, remove from the oven and cool 15 minutes before serving.



Notes: The baking dish does not need to be sprayed or greased for this recipe, which truly makes it even easier! When the butter is melted in the baking dish as the first step, it creates a naturally greased surface that will allow the cobbler to be scooped out easily. When pouring the batter into the melted butter in the baking dish, there is no need to mix the two together. As the cobbler bakes, the butter and batter will combine and envelop the raspberries that were sprinkled on top.

Source: <https://www.wyseguide.com>

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