ucf Undercover farming

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SCRIPTURE

Philippians 4:8-9

Fill your minds with those things that are good and deserve praise; things that are true, noble, right, pure, lovely, and honourable. Put into practice what you learned and received from me, both from My words and from my actions. And the God who gives us peace will be with you.

ucf Undercover farming

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INSIDE ...

The New Year rang in with mixed feelings – although we, in the agricultural arena experience quite a few kinds of adverse incidents and situations, it still calls for a positive outlook on the future. In everybody's conversations, that is farmers, industrialists, retailers and home owners the question of electricity cuts seem an insurmountable question. Still, as wise men do, there are those who 'saved for a rainy day'. Solar power appears on more farms and homes than ever before – it is no more a question of 'going off the grid' – it is the way to go to survive in the different spheres of the economy. Producing necessary foodstuffs in greenhouses have only one answer; higher production per square meter on a smaller area. That calls for fine-tuning management, living close to your seed supplier and greenhouse production advisor or scientist. It is with deep regret that we learn from current news reports how rain-fed farmers with recent excessive storms lost vegetables, fruit and berries. Although this deeply hurts the economy and obviously consumers, it emphasizes the importance of growing fruit and vegetables under protective cover of hail netting and in greenhouses. We cannot refrain from again stress the outstanding advantages of the relatively short return on initial investment and long duration of production in greenhouses – this should be the ultimate 'appetizer' for producers to change from rain-fed to greenhouse farming. The Undercover Farming Conference in February, held at the CSIR Conference Centre, Pretoria under the new leadership of Marion Oosthuizen offers once more a great bevvy of specialist presenters. Let us listen to people who 'have their ear to the ground'! An added benefit to readers and advertisers is the new Undercover Farming Magazine Digital Marketing Website; read all about its many advantages in this edition. May this New Year bring hope, confidence and new ideas to the fore on which we can progress our country's and Sub-Saharan greenhouse farming.

Luscious, healthy and chemical-free greens in an Oribi greenhouse

Root system of an aquaponics plant at Oribi.

Okahandja Aquaponics Producer Markets Widely

The latest aquaculture farm in Namibia,Oribi Aquaponics Namibia Trust, supplies leavy greens to all the major distributors in Namibia. Situated in Okahandja, 70km north of Windhoek.

Ryno Postma, a chartered accountant and commercial director of Oribi Aquaponics Namibia Trust, reports the Namibian trust is proud of Oribi (for short) and their loyal Aquaponics assistants. The management and staff are most production conscious and were thoroughly trained in Aquaponics systems and plant care.

"As with hydroponics, Aquaponics uses only 10 per cent of the water used in soil-based vegetable production, and subsequently the absolute answer to food production in the semi-arid central Namibia," Ryno explains.

The start

Ryno and his cousin Heindré van Zyl started investigating the concept of Aquaponics back in 2017; it basically entails utilising fish which excrete nutrients made available to plants, and purifies the water in a recirculating system. The two cousins went to Kleinskuur Aquaponics outside Pretoria to visit the owner, Colin Bremner, a reputable Aquaponics farmer to update their technical knowledge on Aquaponics production principles.

One produce crops with no chemical fertilizers or pesticides, but, should you use chemical pesticides, the fish will succumb to the pesticides. In the Aquaponics system the farmer is ensured to deliver good quality produce safe for human consumption.

Another aspect that sets Oribi apart from other production units in Namibia, is its high-care facility, where leaves are washed, dried, placed into pillow packs with modified atmosphere packaging (MAP), and kept cool. Also, additional to the salad ranges grown, Ryno said they intend to produce baby cabbage as well in expansion to their herb selection.

As high temperatures prevail in the Okahandja area, three more modular and independent units will be constructed in 2024 (greenhouse structure with aluminum shade screens by Vegtech's OptiGrow).

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The Phase 1A comprises three modular units in which a recent installed misting unit that shows already plants revive in the extra warm afternoon sun.

Improvements
Oribi is currently raising debt funding for the rest of the Aquaponics production system, which consist of a rainwater catchment system on the greenhouse roof which will enable the facility to become rainfed rather than boreholes dependent, also a plant seedling facility and a fish hatchery.

The Aquaponics system at Oribi uses Red 6 Mozambique tilapia from an Eastern Cape breeder, Rivendell Hatchery. They also plan to multiply fish in their own hatchery. Namibia is very strict on fish species allowed to be farmed with. Mozambique tilapia is an indigenous species, which is the breed that authorities would approve. Forward, trout will be introduced to market the fish protein to formal and semi-formal markets.

Trout requires an upper optimum water temperature range between 19 and 22°C, which is not ideal for Mozambique tilapia that excels in higher temperatures. The Red 6 strain is however more cold-resistant than its wild African derivatives. According to Ryno, the cool water temperatures, plus the new misting system, are key to producing plants throughout the hot Namibian days. Water is cooled by dropping two meters in vertical towers and reversible heat pumps should conversely, heat up the water in winter.

At Oribi, photovoltaic cells was planned to be constructed on the high care facility's roof by a solar energy company that is a shareholder in the Oribi Aquaponics Namibia Trust. This is not to save power in batteries; their large number and diversity of pumps make it economically not viable.

The aquaponics farm at Okahandja,central Namibia (photo: Oribi Aquaponics).

Ryno mentions that their cost per kilowatt of solar power is expected to be almost double what is currently paid. Therefore Oribi remains on the Namibian national electricity grid.

Jan Conradie of Agricon Mushrooms in Okahandja shares administrative resources, cooled transport, and storage facility through a service level agreement with Oribi.

Foreign investments
Namibia government's stability and commitment to agriculture attracts among the most foreign direct investment in Africa at the moment. Ryno says "Oribi is looking at further projects in Namibia and therefor active in other crops with the view on follow-up projects. Our country has a large drive to promote local production and hence, reduce food imports." He emphasises Oribi Aquaponics Namibia Trust's intention to improve food affordability in Namibia to have the end consumer and the general public benefit from increased access to food.

Furthermore, Oribi intends to bring crops to areas that have previously relied on imports and producing it at a fraction of the water cost of conventional cropping. "Aquaponics definitely have the edge over hydroponics systems when it comes to healthy food and less water usage," Ryno concluded.

At Oribi a special gravel media is used to grow lettuces and other greens. The nutrients from fish dams flow under the gravel

One of the fish dams at Oribi

Exploring Excellence: Unveiling the Rijk Zwaan Wokcue

It is NEW in South Africa; Rijk Zwaan's new Asian wok cucumber called Wokcue RZ, bred, planted, cared for, harvested, and carefully delivered to all the major retail stores…JUST FOR YOU!! If you love Asian Food, this Wokcue RZ is a definite must for you. If you love Cucumber in your salad or on your sandwiches, love the crispness, and wished the water content was a little lower…this Wokcue RZ is definitely for you. In this discourse, we delve into the exquisite realm of Rijk Zwaan Wokcue RZ – an epitome of freshness and culinary distinction

A CULINARY TRIUMPH: THE INCOMPARABLE MERITS OF RIJK ZWAAN WOKCUE

Embarking on a journey beyond ordinary cucumbers, Rijk Zwaan Wokcue redefines culinary delight, offering not just a crunch but an unparalleled infusion of flavor.

A Symphony of Crunch and Flavor: The Rijk Zwaan Experience
These cucumbers distinguish themselves by their unparalleled crispiness and a rich tapestry of natural flavors that elevate your culinary experiences.

It's more than a cucumber; it's a sensorial adventure.

Unraveling the Benefits: Why Choose Rijk Zwaan Wokcue?

1. Versatility Redefined: Beyond their exceptional crunch, Rijk Zwaan Wokcue unveils a world of culinary possibilities. Whether stir-fried, incorporated into salads, or enjoyed as a standalone snack, their versatility knows no bounds.

2. Nutrient-Rich Goodness: Elevating beyond mere taste, these cucumbers are a powerhouse of essential nutrients. A serving contributes significantly to your well-being, ensuring a delectable yet health-conscious culinary choice.

3. Sustainable Excellence:
Rijk Zwaan stands as a beacon of sustainable agricultural practices. Opting for Rijk Zwaan Wokcue aligns your culinary choices with eco-conscious farming methods, promoting sustainability without compromising quality.

AN IN-DEPTH LOOK: CULINARY APPLICATIONS AND NUTRITIONAL RICHES

Culinary Versatility Unveiled: From Stir-Fries to Snacking

Rijk Zwaan Wokcue isn't confined to a singular culinary application. Their firm texture makes them ideal for stir-frying, absorbing the flavors of accompanying ingredients while maintaining a

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SOUTH-EAST ASIAN SALAD WITH CUCUMBER AND ROASTED NUTS

INGREDIENTS

1 Wokcue cucumber, sliced
1 clove garlic, crushed
1 onion, thinly sliced
1 handful coriander leaves, finely chopped
1 handful roasted unsalted nuts (peanuts/cashews)

DRESSING INGREDIENTS

2 tbsp apple cider vinegar
1 tsp sugar
Sweet chilli sauce, to taste

PREPARTION

Combine the cucumber, onion, garlic and coriander together in a bowl or arrange on a serving platter.

Sprinkle over the roasted nuts. Whisk together dressing ingredients and pour over the salad.

Season to taste and serve.

RIJK ZWAAN Sharing a healthy future

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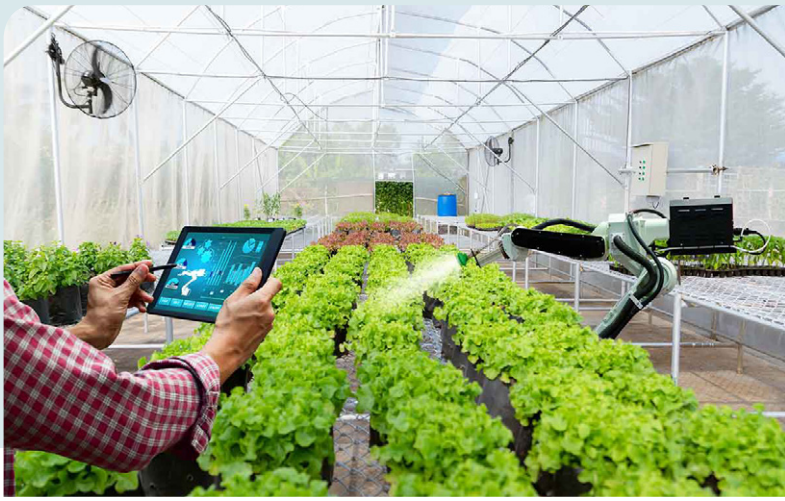
AI and automation is your workforce's ideal co-pilot



Artificial intelligence, together with automation, are rapidly evolving the landscape of the modern workplace, changing the way that humans and technology interact.

But rather than viewing artificial intelligence (AI) or automation as a replacement for human workers, it's time to recognise these technologies as co-pilots in the realm of workplace collaboration.

To fully grasp the potential of AI in workplace collaboration, it's essential to first distinguish between automation and AI and understand where each excels.

Automation

Automation, including robotic process automation (RPA) and bot workers, is the bedrock of streamlining and optimising routine, rule-based, and repetitive tasks.

This form of technology involves software programs that are trained to mimic repetitive human actions to perform various assignments, ranging from data entries in CRM systems, to automated invoicing, text recognition, and more.

RPAs can operate 24/7 and be used for different industries, from finance, insurance, automotive, healthcare and more.

This technology used to be the domain of larger companies. But it's increasingly becoming available to all sizes of businesses — and especially SMEs. If used correctly, SMEs can dramatically benefit from RPAs and even level the playing field with larger competitors. In turn, this can help SMEs grow faster and create more jobs for South Africa.

In workplace collaboration, automation's role lies primarily in handling tasks that can be clearly defined, where human intervention isn't necessarily required.

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▶ **Rijk Zwaan Wokcue from page 6**

satisfying crunch. Additionally, they seamlessly integrate into salads, adding a refreshing element to the ensemble. As a standalone snack, their crispiness provides a guilt-free indulgence.

NUTRITIONAL BOUNTY: A CLOSER LOOK

These cucumbers present a nutritional profile worthy of attention. Rich in vitamins and minerals, they contribute to overall health and well-being. Low in calories and high in water content, they support hydration and weight management. Additionally, they offer antioxidants, promoting cellular health and bolstering the body's defense mechanisms.

OPINION ALERT: A REFLECTION ON RIJK ZWAAN WOKCUE

In consideration of their culinary prowess, Rijk Zwaan Wokcue, in my estimation, transcends the commonplace. The journey from seed to harvest is a testament to their commitment to excellence. As an advocate for quality produce, I find these cucumbers to be a testament to the union of sustainability and taste.

In Conclusion: Elevate Your Culinary Repertoire with Rijk Zwaan Wokcue

In summation, Rijk Zwaan Wokcue transcends the ordinary, presenting a harmonious blend of culinary versatility and nutritional richness. Elevate your culinary repertoire, embrace sustainability, and embark on a journey of taste and well-being. It's not just a cucumber; it's an ode to culinary excellence.

Seize the opportunity to redefine your culinary experiences with Rijk Zwaan Wokcue.

Do not settle for JUST a cucumber, ask for it by name: WOKCUE!

Available from all the major retail stores.

Here, automation is supporting employees in their work by ensuring that these tasks are completed accurately and promptly. Through this support, human workers can focus their energy and capability on more complex, creative and strategic endeavours.

Strengths of AI

On the other hand, artificial intelligence (AI) is not just another tool but a tool that augments human capabilities in unique ways. Unlike automation, AI and machine learning possess the ability to learn, adapt and make decisions based on data analysis. It can comprehend natural language, recognise patterns, and even predict future outcomes.

In workplace collaboration, AI can assist in predictive analytics, customer data management, natural language processing for chatbots, and even creative tasks such as content generation and recommendation systems.

However, human intelligence is still required to vet these capabilities and ensure that they make sense.

Harmony of human-AI collaboration

The true power of workplace collaboration is realised when automation and AI are integrated into human workflows. In this world, humans remain at the centre, contributing their creativity, emotional intelligence, and strategic thinking.

The distinction between automation and AI is essential for organisations seeking to make the most of this transformation.

By striking a balance between human, automation, and AI, organisations can empower their workforce to achieve unprecedented levels of productivity and innovation.

Decisions on the integration of AI and IoT may prompt concerns among farmers, operation managers, and investors. As with any new technology, it's vital to develop trust in IoT and AI, considering them as tools and integral components of future agricultural practices.

The reliability and predictability of AI technology can intrinsically improve the accuracy of greenhouse crop production, ensuring a sustainable and profitable operation.

Bringing IoT and AI into the greenhouse can revolutionize the agriculture industry and boost productivity while being environmentally conscious.

With better control over farming variables, increased crop yields, minimized waste, and efficient use of resources - growers can achieve unprecedented business outcomes.

It's essential, however, that farmers and other stakeholders handle the adaptation of IoT and AI as a tool, setting up clear protocols and processes, and taking fact-based decisions to achieve maximum benefits.

After all, trust is the blood that runs through the veins of every operation, and IoT and AI in greenhouse operations will only advance if growers trust them enough to become deeply involved in their consistent use

Empowering the workforce is even more important when considering the high rate of unemployment in South Africa.

More than ever, we also need to ensure that South Africans are upskilled and equipped from a young age to be able to adapt to the fast-paced technological changes that are altering our world. **By: Kelvin Ho et al.**

Reducing Energy Costs in Greenhouse Farming

The ultimate goal of every greenhouse farmer is to grow top quality produce, managing hie input costs and being sustainable. The greater challenge however, in this narrow-margin business, is often growing and maintaining financial success while doing so.

The progressively competitive nature of the current greenhouse farming market is making it increasingly more important to understand, analysee, and minimize costs to improve profitability.

While the sunlight needed to grow plants is free, there are many other parts of the greenhouse process that are not, things like electricity, climate control, lighting and water, soil, & nutrients. Furthermore, building materials and maintenance, marketing, packaging and distribution come in to play.

As with most businesses, the key to sustainably improving greenhouse margins lay in reducing costs and/or consumption, and preferably both.

Energy

Greenhouse production has increased by a factor of 6 just in the last 20 years, and the energy demands world-wide to maintain is growing just as rapidly. For example, the amount of grow-room electricity just for the booming commercial cannabis and hemp industry is now estimated at 1% of all electricity consumed in the US.

With energy climbing, especially in South Africa each year, specifically during winter, greenhouse growers should also be looking to reduce consumption, rather than only seeking out alternative fuel sources. This could be achieved by insulating the greenhouse and maintaining optimal climate conditions inside while minimizing heat and air transfer with the harsh outdoors.

Saving energy

A "leaky" greenhouse, with cracks, holes, and openings in the walls or roof allows warmed air to escape. This requires the heating system to run longer and more often to maintain the required temperatures.

This negligence in maintenance can cost growers hundreds, or even thousands, in unnecessary energy costs every year, as well as placing additional wear and tear on heating equipment. Regular inspections, along with a little spray foam and caulk, can help stop these leaks in your grow rooms (and bank accounts) and can often reduce heating bills by up to 10%. Greenhouse integrity also helps maintain even temperature and humidity levels which improves growth production.

Insulation

Winter increases energy costs in compensating for the constant loss of heat through that wall. Insulating your greenhouse (using screens?) can significantly reduce heat loss and improve energy efficiency. Even during the warmer months, as much as 85% of heat loss occurs at night.

A thermal blanket or curtain helps hold in the warmth of the day, reducing energy usage during the darker hours. Thermal greenhouse blankets can be a cost-efficient investment, are easy to install, and can be rolled up each morning to maximize daylight.

The best return on your energy-saving investment, however, is to pull the plug on ever-increasing electric company prices and seek out cheaper cleaner alternative energy sources.

Use Sunlight

The largest energy cost for most greenhouse businesses is the cost of maintaining growing temperatures during the colder months of the year. With the rising expense of power-plant electricity in SA, as well as other consumable fuels, more and more nursery and greenhouse growers are converting to solar gardens and using renewable energy to reduce both their expenses and their carbon footprint.

Using the sun to power your greenhouse is unique in that it can significantly reduce operating costs without reducing the amount of energy you're using. In fact, depending on the size of your operation and the amount of solar power you can generate, you may even find yourself selling power back to the electric company!

The biggest hesitation, historically, for converting to a solar-powered business model has been the initial installation costs. But costs have fallen significantly in recent years, and many growers will qualify for special financing as well as tax credits and grants that could pay for the majority of the system.

Solar Power

Here are some reasons that greenhouse producers have begun using clean, renewable solar power options, and that more are joining the ranks every day. It takes the average business 4 to 6 years to cover the

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2024 Gauteng Undercover Farming Conference and EXPO promise to a HUGE success

The 2024 Gauteng Undercover Farming Conference and EXPO, CSIR International Convention Centre, Meiring Naudé Rd, Brummeria, Pretoria will be held on 6 and 7 March 2024.

This Conference, our 17th annual, has all the makings to be one of those "will never forget" events of 2024, as immediately after the 2023 conference delegates and exhibitors started to enquire when the dates for the 2024 conference will be.

The speaker list is finalised and as you can see from the programme, only the best and well recognized speakers will enlighten the conference audience.

In order to attend the Conference and EXPO all participants will need to complete either 1 of the following registration forms:

1. Exhibitor's Table Registration. This is also very popular as during the Conference enough time is allocated for networking and it also allows attendees to personally interact with the representatives and they can actually see the products. The pricing is also very competitive as it not only covers 1 x Trestle table (1800 x 800) and 2 x chair, but it also includes 1 x delegate with full registration.

The exhibitors also feature on all our Multi Media Advertising and News Letters. During the Conference, a roving microphone will allocate about 3 min per exhibitor to introduce themselves as well as the Company they represent on a daily basis.

2. Delegate Registration Form. This is self-explanatory. Not only is this form required for all conference delegates (except the 1 person free manning the expo table) but also if an Exhibitor has a 2nd or more, delegates

These forms are available and can be completed on-line on the Undercover Farming **Website at: https://undercoverfarmingexpo.com/gauteng-expo-conference/ or requested per e-mail at:** expo@undercoverfarming.com

My advice is that you commit and book immediately, space is limited and once we have reached the CSIR International Conference numbers (according to fire and safety regulations), we will be forced to close registrations.

I trust you will act with haste and the team and I are looking forward to see you on the 6 and 7 March at the Gauteng Undercover Farming Conference and EXPO at the CSIR International Convention Centre, Brumeria, Pretoria.

UNDERCOVER FARMING EXPO

Gauteng Undercover Farming Conference and Expo

Conference Program

6 & 7 March 2024

CSIR International Convention Centre, Pretoria

Wednesday 6 March 2024	
07:00 - 09:55	Registration: ALL DELGATES & EXHIBITORS – Network on Expo Floor
09:55	Welcome: Marion Oosthuizen, Organiser: Undercover Farming Conference and Expo
10:00 - 10:45	Deon van Rooyen – Vegtech/Netafim "New Greenhouse and Automation innovations – The important role of Humidity Control"
10:45 - 11:15	Tea & Network Session
11:15 - 12:00	Tom Murray - Woolworths South Africa "A glimpse into the not-too-distant future"
12:00 – 13:00	LUNCH - (Registered Delegates & Exhibitors Only)
13:00 - 13:45	Kobus Pienaar - Woolworths "Sustainable Farming in South Africa"
13:45 - 14:30	Duncan Napier – SQM "Iodine as a plant beneficial element in plants"
14:30 - 15:15	Nokuthula Myeza - Dube TradePort "Commercial application of plant tissue culture"
15:15-16:00	Gerhard Smit – Rijk Zwaan South Africa "The importance of choosing the correct resistance in your seed selection for SA conditions"
1600 - 17:00	Networking on Conference Floor
Thursday 7 March 2024	
09:45 - 10:30	Dawie Maree – FNB "Agricultural outlook 2024 and beyond"
10:30 - 11:15	Stiffie du Plessis – Santam "Packing Stores"
11:15 - 12:00	Tea & Network Session
12:00 - 12:45	Martin von Holdt – Greener Solutions "Sustainable & Efficient management of water & nutrients - re-use of run-off water"
12:45 - 13:30	Lindi Herbst – Agri Alchemi "Future proofing your Farm through soil management"
13:30 - 14:30	LUNCH - (Registered Delegates & Exhibitors Only)
14:30 – 15:15	Suzanne Oosthuizen – Rijk Zwaan South Africa "Importance of the grower – retailer – consumer link for successful farming in South Africa"
15:15 – 16:00	Francois Fourie – Turf Technology and Irrigation "Taking your Fertigation to the NEXT LEVEL"
16:00 - 17:00	Networking on Conference Floor

Reducing energy costs from page 10

initial installation cost. The higher than average power needs of a greenhouse business, however, means less time to reach the "break-even" point.

The average commercial property owner can reduce overall energy costs by 75 percent by going solar, potentially reducing his monthly electricity expense to a third after converting to solar power. Energy efficiency for your greenhouse is a great way to reduce your operating costs and improve the profitability of your operation.

Keep in mind that not every one of the measures described here will be appropriate for every greenhouse – sometimes an energy conservation measure is simply too expensive to install, relative to the expected savings. However, there is a great probability that some of the suggestions above will help make your greenhouse more energy-efficient and cost-effective in the coming years.

Listen to this farmer: "Our goal is to electrify and automate all steps of farming" and create a model for what sustainable agriculture could look like, said the 38-year-old Magami, who has been operating the farm as part of his start-up Chiba Ecological Energy.

All the machinery used on Magami's farm, minus the tractor and a hand-pushed tiller, are electric, charged by panels set above a small shed. Rows of batteries for the tools are lined up on a shelf.

The farm is part of a global movement called solar sharing – or agrivoltaics – that involves the simultaneous use of farmland for producing crops and generating power.

The movement is gaining adherents as the global push to replace fossil fuels is encouraging more innovative approaches to boosting capacity for renewable energy. **JS**

TABLE GRAPES PRODUCTION OFFERS ADVANTAGES

In South Africa there are five major regions growing table grapes, the three largest being the Orange, Berg and Hex River regions. Grapes from the Northern Province and the valleys of the Orange and Olifants Rivers dominate the early table grape season. These are followed by grapes from the Berg River Region. In the Hex River Region late-season table grape varieties flourish.

Differences in soil and climate enable South African growers to supply the international market from November to May. The bulk of our grape exports go to markets in Europe and the United Kingdom. Asian markets are earmarked for growth.

There are more than 270 producers and exporters farming on some 643 table grape production units. Larger producers farm multiple units in different regions as part of their risk mitigation strategy, and to prolong the production season in order to meet retail demands.

South Africa produces a varietal spread of mostly new generation table grape varieties, 92% of which are seedless. The South African table grape industry focuses on food safety, quality, traceability as well as environmental, ethical and fair labour practices. All South African table grape farms and packhouses are regularly audited and proven to adhere to local and international standards and certification.

Table grapes are seen by various authorities as a healthy industry where competent producers will continue to prosper; this, despite volatile factors such as market prices, exchange rates and weather conditions.

Heidi de Villiers, commercial manager for table grapes Africa and Middle-East at International Fruit Genetics (IFG), said Southern Africa in partnership with Beanstalk Global, the area covered under table grapes in South Africa increased from approximately 13 000 hectares 10 years ago to over 21 000 hectares" in 2021, with a particular increase from 2014 to 2018.

Furthermore, patented table grape varieties had almost doubled between 2014 and 2020. De Villiers reckons that novelty varietals have "changed the whole perspective on table grapes".

These varietals include Cotton Candy™ (which has proved to be highly successful in world markets), and new lines like Julep™ (which has a spicy flavour), Bebop™ and Kokomo™.

Challenges

The production cost of table grapes in South Africa is rising, and this is a worldwide concern.

Andy Higgins of US breeder IFG, speaking at Global Grape Congress in March 2022, said that the challenges in table grape production are significant: "We've mentioned rising input costs, rising challenges with production, transportation and logistics," he said.

"Breeding companies offer solutions to many of those challenges. The impact we can have on the entire success of the supply chain is significant and the only way to do that is to introduce new cultivars and new table grape varieties that would meet some of those challenges."

Labour intensive

Charl du Bois, Commercial Executive for Capespan, noted that table grapes were the most labour-intensive sector of the fruit-farming industry: "Planting material for new and seedless table grape varieties are often costly to get hold of and is technically challenging for emerging growers.

The South African Table Grape Industry contributed R3.2 million towards buying vines in the 2020 planting season to nine emerging farmers, and further funds were budgeted for future planting seasons. This makes it possible for those farmers to compete with the best genetics that gives them access to programmes, according to Du Bois. Of recent, much focus falls on the grower, the marketer and the packhouse, but it is known there's a genetic component to all of this.

Port delays

According to Fresh Fruit Portal, in early 2022 intakes were up but table grape exports from South Africa were down due to delays in the Port of Cape Town.

Some improvement had been noted but shipping periods are still too slow when peak table grape exports have to be executed.

THE ROLE DEMAND CONTROL VENTILATION PLAYS IN GREENHOUSE PRODUCTION

Greenhouses are closed environments where conditions are optimized for plant growth. Optimal controls require information from both the indoor and outdoor environments.

Typically, carbon dioxide (CO2), relative humidity, and temperature are measured inside greenhouses; outside measurement parameters include wind speed and direction, rain, and solar radiation.

Plants need carbon dioxide in order to grow – carbohydrates are formed from CO2 and water. Plants use carbon dioxide in photosynthesis reactions. Productivity in greenhouses can be increased with proper CO2 fertilization, using bottled CO2 or CO2 produced with burners, during daylight hours or when there is artificial light available.

The optimum CO2 conditions depend on the plant and the light conditions in the greenhouse. When the light intensity decreases in the greenhouse, photosynthesis slows down and CO2 consumption drops. Using too much CO2 increases costs unnecessarily and can be harmful for the crop.

Ventilation plays a key role in indoor agricultural applications, so demand-controlled ventilation (DCV) offers significant energy-efficiency benefits as it ensures the ventilation system is only run for a set period during the day. Using DCV not only saves energy but also prevents over-ventilation. Sufficient, optimal ventilation is obtained using as little energy as possible.

Image
The same idea can be applied to greenhouses. During daylight hours when plants are exposed to more light and photosynthesis is active, CO2 levels can be optimized using DCV to maximize growth. At night plants hibernate and no photosynthesis occurs.

If you know the best conditions for a specific plant, you can always optimize the ventilation and CO2 level accordingly. In comparison, a purely time-based control system without CO2 measurement simply feeds in the same amount of CO2 based on time of day regardless of whether or not the plants can make use of it.

Plants absorb CO2 through the stomata in the leaves. Water and

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▶ Table grapes production from page 12

Climate
Heat waves, together with general climate challenges such as the recent severe storms, cause a decrease in production volumes in certain cases, like the Olifants River region.

Despite these challenges the region is still expected to reach the lower limit of the crop estimate.

Unfortunately increasingly unpredictable climatic conditions, including late and abundant rainfall, had shown the wisdom of breeding for rain tolerance; it's not enough to be early, it's not enough to be good; the producer needs to be at least tolerant to the rain. Grappa is looking at producing the same level of resistance in different colours and at different times of the year.

Breeding varieties to survive drier weather and through longer, more intense heat waves is an equally formidable challenge. At the same time, the producers must have access to low-chilling varieties - the main factor for breeding resistance to drought conditions. The varieties must wake up in the spring easily, and for this one need low-chilling varieties. Also, especially for white varieties, it is necessary to ensure to avoid sunburn.

Future
The SA Table Grape Industry declared it has designed a unique China specification focusing on uniformity and taste, attention to bloom and stem condition. Vivian Chen of San Miguel is quoted as saying that in China, younger consumers want products that are good for their body and skin, have good taste and packaging but also "need to be easy to buy at the touch of a phone".

The California Table Grape Commission's Alyson Dias also noted this trend, saying that 86 per cent of those that had switched to buying grapes online during the pandemic would continue to do so, making digital forms of communication essential.

She added that the same research showed that food choices had changed significantly since Covid-19 as consumers continue to seek to boost their immune systems, creating opportunities for health messaging around grapes. **Source: Adama Product News**

▶ Ventilation from page 13

carbon dioxide are then converted into sugars in the green leaves. This process generates oxygen (02). This conversion process occurs with assistance from energy provided by (sun) light. The entire process of converting light energy into chemical energy (sugar) is referred to as photosynthesis.

Assimilation

The production of energy rich sugars is often referred to as assimilation. The sugars are used to produce new plant material and as an energy source. Chemical energy is stored in the sugars. This energy is released when the sugars are broken down.

This is often incorrectly referred to as 'burning'. This energy is needed to produce other substances such as proteins and fats. Humans and animals cannot produce chemical energy themselves as plants do. They need plants to supply energy rich food.

More sugars imply more growth. The substance that gives leaves their green colour is referred to as chlorophyll. Chlorophyll occurs in chloroplasts. These are the parts of the plant cell in which photosynthesis occurs. The presence of chloroplasts, and therefore chlorophyll, is detectable from the green colour of that part of the plant.

With a high light intensity, photosynthesis increases more than with low intensity of light. This is referred to as dissimilation. The sugars that have formed are oxidised ('burned') using oxygen to create water and carbon dioxide. The process does not require energy, as with photosynthesis, instead it releases energy, and which is the light energy stored up in the sugars during photosynthesis.

The energy is used in various energy demanding growth and maintenance processes. Part of this energy is released as heat. The carbon dioxide produced during the process is released into the greenhouse air.

Respiration continues day and night. This is why the C02 concentration increases in the greenhouse when it is dark, when there is no dosing.

Respiration increases as the temperature rises. In addition to the respiration processes that occur in light and dark conditions, another specific respiration process takes place only under light conditions. This is referred to as photo respiration (photos = light and respiration = respiration). During this process the plant also absorbs oxygen and releases carbon dioxide, but it is not the same as normal respiration. This is in fact a 'deficiency' in photosynthesis.

Photorespiration increases with high light intensities, high temperatures or low C02 concentrations. There are a number of essential differences between C3 and C4 plants that relate in particular to the use of C02. C4 plants use C02 very efficiently. The stomata are usually smaller, which allows C4 plants to reduce transpiration significantly. The C02 compensation point is usually lower as well.

During the day, the C02 is released in the plant again and assimilated under the influence of light via the Benson-Calvin cycle. C4 and CAM photosynthesis use more energy and CAM plants also need more biochemical 'hardware'. That is why most plants, including nearly all greenhouse crops, use C3 photosynthesis.

Source: Wageningen UR

YEAR-ROUND GREENHOUSE FARMING WITH REMOTE CONTROL

As advanced greenhouse growers, you understand that the path to year-round success in greenhouse farming is fraught with challenges. From maintaining precise climate conditions to efficient irrigation and lighting, the demands can be daunting. However, in this era of technological advancement, solutions are at hand.

Greenhouse Farming Efficiency:

Climate Control
The heart of greenhouse farming lies in climate control. Accurate temperature and humidity management are pivotal for crop growth and yield. Here's where remote control systems step in. These systems offer the precision you need to ensure your greenhouse maintains optimal conditions 365 days a year. Imagine being able to monitor and adjust your greenhouse's climate from miles away, ensuring that your crops thrive, regardless of external weather conditions.

Irrigation
Efficient water and nutrient delivery are non-negotiable in hydroponic systems. Remote-controlled irrigation solutions take the guesswork out of the equation. Fine-tune water and nutrient delivery remotely, minimizing waste, and maximizing plant health. The result? Healthier crops and reduced resource consumption, a win-win for both yield and sustainability.

Lighting
Lighting plays a pivotal role in achieving year-round cultivation. Automated lighting systems, controllable through remote technology, allow you to provide your plants with the ideal light spectrum throughout their growth cycle. The outcome? Optimal growth and consistent yields, mimicking the natural seasons with precision.

Monitoring and Data Analytics
Real-time monitoring and data analysis are the nerve centre of efficient greenhouse farming. Remote systems, offer a comprehensive overview of your greenhouse's health. Access data on pH levels, electrical conductivity (EC), temperature, humidity, and more, is available all through a single interface.

These tools empower you to make informed decisions, prevent issues before they arise, and continually improve your greenhouse's efficiency. Start transformation with a reputable automation system which is designed with advanced growers in mind and offers modular and scalable design, remote control abilities to manage your greenhouse effortlessly with a user-friendly mobile app.

In conclusion, the system should have monitor and adjustment settings ensuring that your greenhouse is always optimized for success. The AI integrated into the system is like having an expert grower on your team. It not only prevents costly errors but continually improves accuracy over time, making it a valuable asset to any advanced grower.

Source and picture:Grow Director Ltd.

SAFGA members visited Malanseuns ornamental plants and flower growers.

SAFGA MEMBERS VISITS FLOWER & ORNAMENTAL PLANT FARMS – A LOOK BACK AT 2023

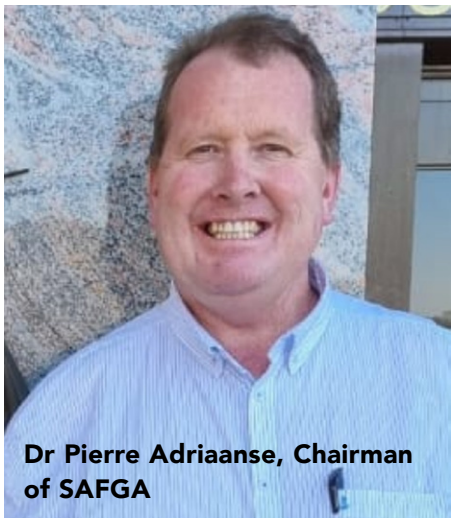
The South African Flower Growers Association (SAFGA) under leadership of their Chairman, Dr. Pierre Adriaanse, held its first flower market day at Multiflora Flower Market in March. This event was hosted at Multiflora flower market. Mirjam Ngoato-Breg organised the day on behalf of the Association. This networking event was held to promote the interactions with stake-holders in the flower grower industry.

A group of 70 consisting of flower growers, their staff and 16 suppliers joined the market day. The program started early with a visit to the Multiflora flower auction, while flowers were auctioned. The team of GHT showed visitors around and explained how the clocks worked upstairs at the view window. The management of GHT (Greenhouse Technologies) and their sales team treated the visitors to refreshments while interacting socially.

The official start of the day was at GHT, by the SAFGA chairperson Dr. Pierre Adriaanse, Manager of the Unisa (University of South Africa) Horticulture Centre. The team of GHT showed visitors around the facilities. SAFGA members also visited AFG-Worldwide Flower Export, where an export expert explained the difference between growing flowers for export and for the local market. Afterwards a visit to the Flower Centre followed, where preparation of bouquets are done for Pick 'n Pay.

The tour ended in front of the auction floor where suppliers of the industry, most of them members of SAFGA, were showcasing their products. There was also a 'meet and greet' with the team of the Multiflora Flower Auction, quality inspectors, auctioneers and operation managers who answered questions. Many production questions followed, and information was exchanged.

Later a raffle competition was held, and everyone had the opportunity to win a prize donated by the suppliers attending the event. Members were cheerful and enjoyed the event. Food vendors were available, and members could all quench their thirst and still their hunger as they desired.



Dr Pierre Adriaanse, Chairman of SAFGA

The successful event ended with a walkabout on the premises of the Multiflora market visiting the flower shops in the gallery.

During July 2023 SAFGA (South African Flower Growers' Association) held a growers' day visiting Oasis Floral Products and Malanseuns, South Africa. This successful networking event was held to promote the interactions with stakeholders in the floral industry.

The official start of the day was at the Oasis facility in Silverton, Pretoria. A group of 30 consisting of flower growers and their staff attended the visit where Elro Braak, Rick Mason and Eldene Mason welcomed the visitors. Eldene gave a short history about her father's contribution to the floral industry as a grower, floral designer and the innovative introduction of Oasis Floral Foam.

Elro and Rick then took the group on a tour through the factory where they could view the end products and their various uses. Floralife and all its benefits were highlighted and those growers already using it could testify to its benefits. The visitors were treated to refreshments before they left.

The group also visited Malanseuns Pleasure Plants, a world leader

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Jac Duif, former SAFGA Chairman and secretary, receives the Strelitzia Award from the current Chairman, Dr Pierre Adriaanse for his long acquaintance with and service to the flower industry.

growing and distributor of ornamental plants. Malanseuns celebrated their 110th birthday on 26 July 2023, and hosted SAFGA members to their Trade Day in preparation for spring. During the Trade Day, Malanseuns together with 50 other exhibitors showcased their products.

Many production questions were answered, and information was exchanged. Jimie Malan welcomed SAFGA at the nursery in Pretoria North. Jacques Malan explained the long road Malanseuns took to be successful in the South African market.

Highlighting all the challenges over the years, Malanseuns had to overcome various obstacles to become successful. "Malanseuns Pleasure Plants endeavours to continue to grow and distribute the very best ornamental plants and flowers, enhancing gardens and bringing pleasure and joy to all the citizens of South Africa for generations to come," Jacques said.

Malanseuns also mentioned that new exciting varieties such as the Agapanthus "Black Jack", and pointed out there are a few other exciting varieties of garden plants to come soon. They will definitely be showstoppers. The talks ended and everyone was treated with a wonderful spit braai lunch.

The successful event was concluded with a walkabout on the premises of the Malanseuns, appreciating all the beautiful plant decorations, exhibitions, displays and demonstrations.

SAFGA encourages new and old growers, suppliers, and participants in the Horticultural industry to become members and make use of the network advantages SAFGA can offer.

SAFGA members visited the auction facility and flower outlets at Multiflora.

Chairman's report

At the SAFGA AGM in October the chair, Dr Pierre Adriaanse Manager of the Unisa (University of South Africa) Horticulture Centre thanked all that attended the Annual General Meeting. He welcomed new members that attended the SAFGA AGM for the first time. Adriaanse reported SAFGA is alive and well, and invited more members to join.

He voiced his appreciation for all the donors to the event and Lawrence Seshako from Salepadiflora who was responsible for the flower arrangements.

Adriaanse also thanked all the committee members that attended all meetings during the past year and their regular contributions.

The Chair explained the 2024 events which included a short visit to Zimbabwe in March, and China later in 2024. A special mention and appreciation was offered to Mr Jac Duif who is the longest living member of SAFGA.

Jac served as chairman for a few years and afterwards officiated as secretary.

He was handed the Strelitzia award for appreciation of years of selfless and generous service to the flower industry of South Africa.

SAFGA

FEASIBILITY FOR AQUAPONICS IN NAMIBIA

Feasibility studies have been conducted in Namibia to assess the viability of setting up Aquaponics systems to enhance food security, sustainability, income generation, and as an educational resource.

About 430,000 Namibians are reported to be food insecure as almost 70% of food is imported from South Africa.

In this Namibian case, Aquaponics is one of the most efficient ways to combat food security.

Aquaponics and hydroponic systems use water effectively to provide sustainable agriculture. Besides food security, Aquaponics will be a sustainable agricultural system in Namibia during droughts.

(Read the editorial on the new Oribi Aquaponics farm at Okahandja in this issue).

CLIMATE CHANGE, LAND AND WATER ISSUES

In addition to population growth, climate change is projected to significantly affect food security in Africa over the coming decades. Sub-Saharan Africa is predicted to be worst affected by climate change due to the already elevated air temperatures, reliance on rain-fed agriculture and fragile local economies.

Farmers have increasingly made efforts to adapt to climate change through shifting planting seasons and planting draught-resistant crop varieties but the current trends in yield improvements will not match the projected global food demand by 2050, suggesting a necessary expansion of novel food production practices.

THE ANSWER

Aquaculture is likely to be affected by climate change, particularly temperature increments. Unlike other farmed animals, all cultured fish species for human consumption are poikilothermic.

Consequently, any increase and/or decrease of the temperature of fish habitats could have a significant influence on general metabolism and hence the rate of growth and total production.

Increased frequency and severity

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of droughts, floods and extreme weather events are expected to affect water availability, food security, health, infrastructure and thus overall development. Water stress leading to decreased water availability in major rivers and dams, can significantly affect both cage and pond-based aquaculture by reducing water availability and/or retention times.

As for conventional food production systems facing limitations for further expansion due to lack of space, reduced water availability and heightened concerns over environmental impact, has led to progressive adoption of controlled food production systems.

In this context, Aquaponics as a food production system that recycles nutrient and waste can address food security issues, particularly for arid regions or areas with poor agricultural soils. As a hybrid technology, Aquaponics can also mitigate some of the effects of climate change on food production.

IN CONCLUSION

There is no simple solution to ensuring food security, but technological innovations in food production systems can directly support food insecure people to achieve some level of food self-sufficiency, particularly nutrition security.

Aquaponics technology holds an immense potential in ensuring food security in many parts of Africa.

The continent-wide adoption of Aquaponics positively correlates with the level of aquaculture output. Egypt, Nigeria, Kenya and South Africa who are major contributors to the continent's aquaculture in Africa are also countries leading in adoption of Aquaponics.

As the continent's population continues to increase and the threats of food insecurity heightens, Aquaponics represents a promising technology for producing both high-quality fish protein and fresh vegetables in ways that utilize substantially less land, less energy and less water while also minimizing chemical and fertilizer inputs that are used in conventional food production.

It is, however, imperative that more research is directed at developing low-cost Aquaponics systems that can easily be adopted by low and middle-income Africans.

Source: Kwasi Adu Obirikorang Independent Researcher, Lilongwe, Malawi and Elliot Alhassan, University for Development Studies, Ghana (Rights for use in this publication obtained)

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