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JANUARY/FEBRUARY 2023 | VOLUME 20 NO 1 | ★★★★★ | R45.00 PER ISSUE

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NEW YEAR SCRIPTURE OF HOPE

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. –

Philippians 4:8-9

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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.

Optimizing cucumber yields in a greenhouse environment

Cucumber producers, like most other fresh vegetable and salad producers are very aware of current production limitations such high input costs, electricity outages, uneven market responses and a host of other subjects. It is therefore of high importance that the cucumber producer arm himself continuously with production technologies to increase yield per square metre.

Beginning with the soil

Cucumber plants prefer light textured soils that are well drained, have high organic matter and have a pH of 6 - 6.8. Cucumbers are adapted to a wide-range of soils, but will produce early in sandy soils, yet are fairly tolerant to acid soils (down to pH 5.5).

Greenhouse produced cucumber plants generally grow quite well in a wide range of soil pH (5.5-7.5), but a pH of 6.0-6.5 for mineral soils and a pH of 5.0-5.5 for organic soils are generally accepted as optimum. If the pH is too low, the producer should add ground calcitic limestone, or an equal amount of dolomitic limestone when the magnesium level in the soil is low, to raise it to a desirable level. Usually the pH in most greenhouse mineral soils is above the optimum pH range (6.0-6.5). A simple, though temporary, solution to a high pH problem is to add peat, without neutralizing its acidity with limestone. Peat also helps to maintain a good soil structure, but it must be added yearly to make up for loss through decomposition.

The plant

The cucumber responds like a semitropical plant. It grows best under conditions of high temperature, humidity, and light intensity and with an uninterrupted supply of water and nutrients. Under favourable and stable environmental and nutritional conditions and when pests are under control, the plants grow rapidly and produce heavily. The main stem, laterals, and tendrils grow fast. They need frequent pruning to a single stem and training along vertical wires to maintain an optimal canopy that intercepts maximum light and allows sufficient air movement.

Specialists have it that, under optimal conditions, more fruit may initially develop from the axil of 4 each leaf than can later be supported to full size, thus fruit may need thinning. Those plants that are allowed to bear too much fruit will become exhausted, abort its fruit, and fluctuate widely in productivity over time.

Excessive plant vigour is indicated by rapid growth, thick and brittle stems, large leaves, long tendrils, deep green foliage, profusion of fruit, and large, deep yellow flowers. On the other hand, cucumbers are very sensitive to unfavourable conditions, and the slightest stress affects their growth and productivity.

Temperature

The main environmental component influencing vegetative growth, flower initiation, fruit growth, and fruit quality is air temperature. The growth rate of a cucumber crop depends on the average 24hour temperature. The higher the average air temperature is, the faster growth will be experienced. Also; a greater variation in day night air temperature creates a taller plant and smaller the leaf size.

Although maximum growth occurs at a day and night temperature of about 28°C, maximum fruit production is achieved with a night temperature of 19-20°C and a day temperature of 20-22°C. These recommended temperatures are designed after much research for sustained, high fruit productivity combined with moderate crop growth throughout the growing season.

During warm weather (i.e., summer and early autumn), reduce air temperature settings, especially during the night, by up to 2°C to encourage vegetative growth when it is retarded by the heavy fruit load. This regime saves energy because a 24hour average can be ensured by the prevailing high temperatures and favourable light conditions.

Soil temperature

To ensure satisfactory stand establishment, soil temperatures should not come below 15°C. The higher the soil temperature, the more rapidly seedlings emerge and the less vulnerable they are to insects and damping-off diseases.

It is found that at 15°C, 9 to 16 days are required for seedlings to emerge. At 21°C, only 5 to 6 days are required. Even after emergence, cucumbers remain sensitive to cold temperatures. In cold areas, seeds should always be planted late enough to avoid frosts. Exposure to cool conditions will slow growth even if temperatures remain above freezing.

Slow-growing seedlings are vulnerable to Flea beetles or Chrysomelidae (whose chewing significantly reduces leaf area of young plants). Too high temperatures during flowering decrease pollen viability. Be aware; a cool and cloudy growing season may cause bitter fruit!

Light sensitivity

Cucumber plant growth depends on light. Plant matter is produced by the process of photosynthesis, which takes place only when light is absorbed by the chlorophyll (green pigment) in the green parts of the plant, mostly the leaves. But do not underestimate the photosynthetic productivity of the cucumber fruit which, because of its size and colour, is a different

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story. In the process of photosynthesis, the energy of light fixes atmospheric carbon dioxide and water in the plant to produce carbohydrates such as sugars and starch.

It should be emphasized that, not only do poor light conditions limit photosynthetic productivity, but also limited carbohydrates produced during the day are largely expended by the respiring plant during the long nights.

The low supply of carbohydrates available in the plant during the winter seriously limits productivity, as evidenced by the profusion of aborted fruit. A fully grown crop benefits from any increase in natural light intensity, provided that the plants have sufficient water, nutrients, and carbon dioxide and that air temperature is not too high.

Generally, the rate of photosynthesis relates to light intensity, but not proportionally. The importance of light becomes obvious in the winter, when it is in short supply. In the short, dull days of late autumn, winter, and early spring, the low daily levels of radiant energy result in low levels of carbohydrate production.

RH

High relative humidity (RH) generally increases growth. Though, reasonable growth can be achieved at medium or even low relative humidity. Cucumber crops can adjust to and withstand relative humidity from low to very high but reacts very sensitively to drastic and frequent variation in relative humidity. Its sensitivity to such a variation is greatest when the crop is developed under conditions of high relative humidity.

Further disadvantages of cropping under conditions of high relative humidity include the increased risk of water condensing on the plants and the development of serious diseases. The resultant low transpiration rates are blamed for inadequate absorption and transport of certain nutrients, especially calcium to the leaf margins and fruit.

During low relative humidity, irrigation becomes critical, because large quantities of water must be added to the growth medium without constantly flooding the roots and depriving them of oxygen.

Harvesting

Fresh-market cucumbers are ready for harvesting when they are about 6 to 10 inches long and 1.5 to 2.5 inches in diameter. The cucumber should be dark to medium green, without any signs of yellowing. On average, 58 to 65 days are required from seeding to maturity, depending on the cultivar and the growing conditions. Fresh-market cucumbers are harvested by hand.

Since the individual fruits do not develop and mature consistently, the timing of maturity is not uniform within a field. As

a result, fresh-market cucumbers are normally picked between 6 to 8 times over a 3-week period. Depending on favourable circumstances, cucumbers can be harvested up to 12 to 15 times in a season.

The number of pickings depends on when the seeds are planted and the supply and demand situation in the market. Price is an important factor in picking. Once prices for cucumbers fall below a certain level sadly, it becomes un-economical for growers to continue harvesting.

Advice to new greenhouse cucumber producers; find a seed supplier with the variety that is in demand, contact a reputable seedling grower – this saves you losses in seed while learning to grow seedlings. Your seeds man will give the best advice on his product – from planting to harvesting. Train, or get your greenhouse assistants well-trained in cucumber production from planting to harvesting – it will pay dividends.

S. Robinson, MU

UNDERCOVER FARMING GOES DIGITAL

– TO INFINITY AND BEYOND!!

The Undercover Farming Magazine Team takes great pleasure in welcoming Tiaan and Cynthia van Straten into the Undercover Farming fold. They have created the all NEW Undercover Farming Magazine Digital Marketing Website specializing and focusing not only on South Africa, but also Sub-Sahara countries. Tiaan will be responsible to manage and run our Digital Marketing Division while Cynthia will be responsible for content and content writing. We look forward to a long and happy relationship with them and their two beautiful children Asher and Mila Zaan.

Speaking to Tiaan, he explains exactly what direction the New Media Marketing team will take: "As digital marketers with more than 8 000 articles published worldwide, we understand the fundamental importance for agricultural companies to start a digital campaign into their marketing strategy.

"Digital marketing makes reaching large audiences much more accessible, it can open up new horizons for your business, and it can be an essential tool to improve the online presence of both established and startup agricultural companies. With the ability to generate traffic, increase conversions and boost ROI by targeting potential customers with specific campaigns, digital marketing is a powerful tool for any agribusiness.

"We specialise in helping agribusinesses get the most out of their digital presence. From creating compelling content to leveraging social media, PPC and SEO. We can help you to identify your target market, develop a comprehensive digital marketing strategy and manage the entire campaign from start to finish. Here are some of the digital marketing services that we offer to agricultural companies:

- **Content Marketing** – Creating compelling content to connect with your target audience and establish a strong online presence.
- **Social Media Marketing** – Leveraging social media platforms to build relationships with customers and generate brand awareness.
- **SEO** – Optimising your website content and structure to improve visibility on search engine result pages (SERPs).
- **PPC Advertising** – Setting up an effective pay-per-click advertising campaign to target potential customers online.
- **Email Marketing** – Using email campaigns to drive engagement with existing customers and potential leads.

How we leverage artificial intelligence and machine learning:
At Undercover Farming Digital Marketing, we use artificial intelligence and machine learning to further optimize all aspects of digital marketing for agribusinesses. Thanks to the power of AI and ML, we are able to develop better targeted campaigns that run more efficiently, collect data from customer behavior faster, and provide insights into customer preferences so you can make smarter decisions about your online presence.

We also use natural language processing (NLP) and sentiment analysis tools to gauge how people feel about your brand or a particular product. This is an invaluable asset when it comes to understanding the needs of customers in the agricultural sector. As such, we are able to create content and campaigns that speak directly to their interests and needs helping you reach new heights with your digital marketing efforts.

Lastly, as a result of the above, we have been able to help experts in the industry reach millions of consumers and capture a wealth of data that continuously aided them when launching new products and services, and we aim to continue to help other businesses in the agri industry reach their full potential and boost sales and profit to heights they've never experienced before.

The Undercover Farming Digital Marketing Website is planned to go live on 1 March 2023...
A LIVING MAGAZINE IS BORN...
www.Undercoverfarmingexpo.com

The Fruit Logistica convention and exhibition centre, Berlin.

Fruit Logistica 2023 once more marked 'Most successful'

Fruit Logistica 2023, staged in Berlin, Germany had 63,470 trade visitors and buyers from over 140 countries as well as 2,610 exhibitors from 92 countries – this year (2023), the leading trade fair for the global fruit trade was more international than ever and gathered the sector's key players, say the organisers. Taking as its slogan 'All in One',

Fruit Logistica celebrated its thirtieth anniversary and from 8 to 10 February showcased the entire value chain of the fresh produce sector. In 27 halls the focus was on the latest trends and innovations in the global fresh fruit trade.

Kai Mangelberger, project manager for Fruit Logistica commented: "We are very satisfied. Exhibitor and visitor numbers are nearing pre-pandemic levels again. Over 40 national representations occupied displays larger than before the pandemic, including that of Spain.

"Particularly in economically challenging times, with the industry facing high energy prices, supply chain issues and inflation worldwide, it shows us we need face-to-face meetings. Fruit Logistica brings the sector together and facilitates dialogue, establishing contacts and finding out about market innovations."

Successful business deals at Fruit Logistica

The participants in this year's Fruit Logistica were more than satisfied too. According to the preliminary findings of an exhibitor and trade visitor survey, over 40 per cent of exhibitors polled had already concluded business deals during the event. Moreover, nine out of ten respondents expected follow-up business to be 'satisfactory' to 'very good'.

Accordingly, the overall view of exhibitors was very positive: around 90 per cent would recommend Fruit Logistica to others in their business circle, and the same percentage planned to take part in Fruit Logistica 2024.

Among trade visitors business activity was high too. Over 80 per cent were able to secure new business leads, while about one in three were already able to conclude business during the fair. All in all, the view among trade visitors was positive. 9 out of 10 respondents said their overall impression was good, would recommend the event to colleagues or business partners and would travel to Berlin again for Fruit Logistica 2024.

This year, Fruit Logistica again positioned itself as an international meeting place for the industry – four out of five trade visitors came from abroad. Fruit Logistica again made a good impression with its wide-ranging programme, and from feedback received from exhibitors and visitors, all are looking forward to the 2024 event.

By: Susanne Tschenisch of Messe Berlin

Multiple Effects of Greenhouse Ventilation

During the harsh summer most of South Africa experiences, ventilation matters for greenhouse producers come to the fore. First of all, the greenhouse producer should realize the reasons for wanting to ventilate his greenhouses. The most obvious reason is to remove heat and humidity, but also it is to stimulate transpiration and refresh the CO^2 to the benefit of the plants.

In South Africa we tend to focus on removing heat, though ventilation has multiple effects, which must be considered when making a management decision. During the course of the day, and depending on climatic conditions, a grower will have different objectives they are trying accomplish with ventilation. Ventilation is an important factor to apply during different periods of the day, i.e.: morning, a warm day, a cool day and during night time.

Morning

When the sun rises the sunlight stimulates transpiration. This will cause the humidity in the greenhouse to rise – the rate of the rise will be determined by canopy leaf area. The crop and its fruit are still relatively cool in temperature coming from the night. As the moisture content of the air rises (increasing humidity) the risk of condensation forming on the relatively cool crop increases, particularly the fruit, which heat up slowly in the morning because of their mass. When the greenhouse is closed, the air is still and humid, thus crop transpiration is at a minimum. This can result in leaf edge "burning" as the crop is not prepared for the rapid increase in transpiration with the increasing light intensity.

It is therefore important to open the greenhouse before sunrise to remove humidity and create air movement. This will stimulate transpiration and prepare the crop for the increasing transpiration. After sunrise, even on cool mornings, it is necessary to ventilate to remove humidity to prevent the risk of condensation on the crop. This can assist dramatically in disease prevention. Ventilation also assists in refreshing CO2 in the greenhouse, which can be rapidly depleted by a crop with a large leaf area on a sunny day.

Warm Day

During hot, high light intensity days heat builds up in the greenhouse. On these days it is necessary to ventilate to remove the heat. But when you open vents you also remove humidity and promote air movement, these actions increase transpiration and increase water loss from the crop.

When crops transpire they cool and humidify the air, so be careful about ventilating too aggressively on warm days. It is actually possible to increase greenhouse temperature if you ventilate too much! Why? Consider the crop does have the ability to cool the air around it, if you are ventilating too much (replacing air too often) you are not giving the crop sufficient opportunity to humidify and cool the air. This applies if you are also using fogging systems.

Your fogging system and crop work hard to add humidity so don't waste it! Also keep in mind, aggressive air movement and removal of humidity creates a high water loss environment for the crop, which can result in wilting or promote physiological disorders such as blossom end rot. Do not chase temperature only. Crops can tolerate significantly higher growing temperatures if humidity is preserved within reason.

Cool Day

On cool, cloudy days it is tempting to keep your greenhouse closed to accumulate heat. But remember if the house is closed humidity is going to increase. This increases the risk of condensation on your plants and disease. Also it can lead to depressed transpiration, which in turn limits nutrient uptake possibly resulting in nutrient disorders.

Therefore, even during cool times of the year it is better to ventilate during the day to stimulate transpiration, keep the crop dry and also to refresh CO2. Admittedly, you will lose some heat and crop development may slow. But a disease free crop is generally more productive than a diseased crop. Rather have a cooler, dry crop than a warm, wet crop.

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Evening and Night

During the evening it really is one of the most important times of day to manage ventilation. During the day the crop is transpiring adding a lot of moisture to the air, increasing the humidity.

As the sun set, the crop starts to cool and the risk of condensation on the crop increases. With increase of humid air at sunset, the risk of condensation on the crop increases. For this reason it is advised to open up the greenhouse an hour or two before sunset and flush out that humid air. This will dramatically reduce the risk of disease by reducing air humidity and risk of condensation on the crop.

In areas with mild conditions the producer may consider leaving the greenhouse vents open during night – depending on factors such as wind and rain. This will ensure good air movement, limit high humidity pockets and reduce the risk of condensation.

In colder areas where heating is being used, the crop can still release significant humidity over the night. If the greenhouse is closed the whole night the humidity will accumulate and increase the risk of condensation and high air humidity, both conditions bring about disease development.

It is therefore necessary to ventilate over the night period, even on cold nights to push the warm humid air out the house and replace it with cool drier air. However, in these instances the vents only need be slightly opened or in the case of pad and fan, use only the small gable fans for a short period of time to remove humidity without losing too much heat energy.

Heavily diseased tomato crop due to condensation on crop

Ventilation strategy

The ventilation strategy will be influenced by greenhouse type, design, climate control technology and crop leaf area. Even in low technology greenhouse systems these principles can be applied to improve crop performance and reduce disease pressure, but the best results will be achieved when combined with automation and monitoring the climate. Once a grower starts to monitor climate: light intensity, wind, temperature, plant temperature and humidity, they can refine and optimize their ventilation strategy. It is imperative though, not to chase a single climatic variable, keeping in mind that when taking action, there is normally more than one climatic factor influenced, which in turn influences the crop.

Always think about what you want to achieve crop or climate wise; how will different ventilation actions influence the climate and crop; and then finally make a decision. **By C. Fulton**

APAC: The regulator that looks after the interests of the farmer

The Registrar of the Agricultural Produce Agents Council (APAC), Francois Knowles explains that "APAC, established in 1993 is a statutory body with the mandate to regulate the activities of fresh produce agents, export agents and livestock agents. We also ensure maintenance and enhancement of the status and dignity of those occupations and the integrity of the people who practise those occupations".

The goal of APAC is to protect the interests of the farmer. Registered agents (that act on behalf of the farmer and who must be registered with APAC) who are involved in any fraudulent activities or theft will be subjected to a disciplinary process defined in terms of the Act (Act 12 of 1992). If an agent is found guilty and if all other options are exhausted, farmers can register a claim for monies lost against the Fresh Produce Agent's Fidelity Fund.

This fund is managed and administered by APAC to ensure that legitimate and substantiated claims by farmers are compensated. In short, protecting the farmer against any unscrupulous agents and to ensure monies if the farmer acted in good faith.

Knowles confirmed the importance of regulation by saying; "Farmers require protection and this even more so in a regulated environment. It is of much importance to remember; "No farmer no Industry". It is therefore crucial that APAC look after agriculture, especially our country's amazing farmers and also the agents that operate within this environment.

"As for the future, the APAC vision is clear: 'To be an innovative, supportive, pro-active and responsive regulatory body.' However, there is always room for change – as a regulator APAC will engage the process to request changes to the Act to be more relevant and aligned to changes within the industry. Proposed enhancements to the Act are currently being investigated, and to be submitted to the Department of Agriculture who in consultation with the Minister will decide if changes are necessary, required and warranted. A lot of work needs to be done to enhance the Act to be relevant to a changing and dynamic agricultural environment.

"During the past years much has been said about changes that are needed at local market level. Fresh produce markets remain one of the most important distribution channels in the industry. The commission system currently in place at markets where price is discovered through supply and demand remains one of the best systems in the world.

"This should be cherished and looked after, but markets are no longer the beautiful and majestic trading platforms of the past – market authorities should revitalise markets and allow them their rightful place in the agricultural value chain. Markets must be restored to their

MARITIMO BY RIJK ZWAAN EXCEEDS ALL EXPECTATIONS

One of Rijk Zwaans' (RZ) main goals is to share a healthy future in developing seed for high quality products for its world-wide clientele. The South African Medium and High Tech English cucumber production industry plays a great role in this and the Maritimo variety of RZ has been helping them accomplish this goal.

Maritimo RZ combines high-quality fruits with endurance. This variety was one of the first varieties of RZ with high resistance to CGMMV (BonDefense). However, that is not all Maritimo RZ has to offer as it also displays high resistance to Cca/ Ccu and Px (ex Sf) combined with intermediate resistance to CMV and CVYV.

Maritimo RZ has proven to have the genetic potential to perform year-round, in heated Autumn/ Winter protected cultivation and Spring/ Summer protected cultivation, in the South African climate. This outstanding variety produces attractively ribbed, dark green, high-quality English cucumbers throughout its production season.

Maritimo RZ is a fast-growing, well-balanced variety with good vigour and steady generative behaviour to ensure continuous stamina and high yield. Maritimo RZ has shown to have great fruit succession, comes in a strong disease resistance package, and the ability to adapt to the heat and cold experienced in the South African climate.

This variety also has the added benefit of carrying the Blueleaf trait that aids the grower in maintaining a healthier cucumber crop. This trait allows for the formation of large dark-green leaves, which aids in increasing photosynthetic activity. Increased photosynthesis results in a healthier plant that is consequently slower to succumb to diseases such as Fusarium and Downy Mildew.

The Blueleaf trait also allows for increased adaptability to environmental changes and increased root uptake power. In addition, the formation of dark-green leaves is less attractive to pests such as whitefly and thrips. All of these qualities associated with Blueleaf help the grower to ensure a good and prolonged production season.

Maritimo RZ is not the only high-performing cucumber cultivar that Rijk Zwaan has to offer.

For the Autumn/Winter segment, Litoral RZ remains the go-to variety for many heated Medium and High Tech tunnel cucumber growers in South Africa. Litoral RZ is a productive, vigorous, fast-growing, Blueleaf variety with high resistance to Cca/ Ccu/ Px (ex Sf) accompanied by intermediate resistance to CVYV. This variety is very well-balanced and fast-growing with plenty of stamina to ensure high yield throughout the colder seasons.

For the Spring/Summer segment, Durance RZ is a Blueleaf variety with high resistance to Powdery Mildew making it a leading summer variety in South Africa. It also offers high resistance to Cca and Ccu with intermediate resistance to CVYV. Durance RZ produces well-filled long cucumbers with an attractive dark green colour and good ribbing. Durance RZ is strong against tip burn and can withstand extreme summer conditions.

Greenhouse clients around the globe strongly believe in Rijk Zwaans' range of superb quality and well-researched seed ranges. The Maritimo cucumber variety by RZ is therefore another jewel in their crown.

Marilyn McDermott | Crop Specialist Cucumbers | m.mcdermott@rijkzwaan.co.za

RIJK ZWAAN

Sharing a healthy future

FIND YOUR VARIETY

Rijk Zwaan offers a wide range of high-quality vegetable varieties. We select and test them thoroughly to ensure their suitability for growing in South African conditions. In addition to the seeds themselves, we also provide reliable information about the performance of our varieties and expert cultivation advice from our crop specialists. This ensures the grower has the best start to a successful harvest.

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El Niño: Vegetable, Fruit producer's Outlook

As the deepening energy crisis continues to present problems for different parts of the agricultural sector, another major challenge that could confront South Africa's agricultural sector in a few months is a change in weather conditions; from favourable rains to drier and hot conditions.

This would be a switch from a prolonged period of La Niña to El Niño. South Africa has had a good four seasons of La Niña induced heavy rains from 2019/20 to 2022/23. These above-normal rains supported agriculture leading to higher yields across various field crops, fruits and vegetables. The livestock industry also benefitted from improved grazing pasture. Importantly, having four consecutive La Niña seasons was an unusual occurrence.

The typical cycles are two seasons of higher rainfall followed by normal-drier seasons. Excluding the current trend, the only other period in the recent past with three successive years of conducive weather conditions and a large crop harvest ran through 2007/08, 2008/09, and 2009/10 production seasons. This period brought a sizeable agricultural yield to the country.

But the scientists at the International Research Institute for Climate and Society at Columbia University see a potential occurrence of an El Niño later in the year. In its recent update of January 19, the International Research Institute for Climate and Society stated, "The likelihood of El Niño remains low through May-Jul 2023 (44% chance), but becomes the dominant category after that with probabilities in the 53-57% range."

Such a weather phenomenon would bring below-normal rainfall and hotter temperatures in South Africa. If it is intense, this could resemble the bleak agricultural conditions we witnessed during the last El Niño drought in the 2015/16 season, where staple crops such as maize dropped to 8,2 million tonnes, well below South Africa's consumption levels of 11,8 million tonnes. This shortfall necessitated imports of maize to supplement domestic needs.

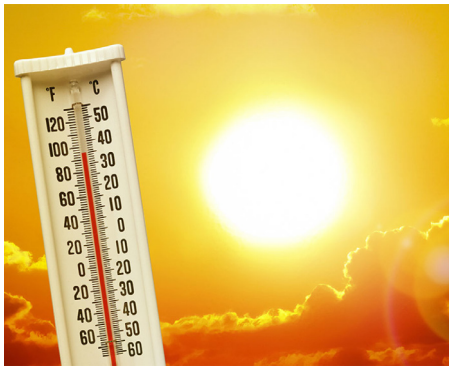
Even more worrying now is that the agricultural regions and greenhouse farmers who lean heavily on irrigation, face continuous interruptions because of load-shedding. The organized agriculture groups, the department of agriculture, land reform and rural development are working on near-term and long-term interventions to assist the sector. The one option that should receive serious consideration is incentives for self-generation, even if covering a few critical parts of each business.

The window for this option is limited, about eight months before we see the potential intensification of El Niño. But for regions that already irrigate, reducing load-shedding is the only option as farmers see losses by the day.

This is a challenge that policymakers in the region should be aware of and plan accordingly to support communities that heavily rely on agriculture.

The period of higher rainfall, which has supported agriculture in South Africa, and the broader Southern Africa region in the past four seasons, could soon be over. At a time when there are rolling blackouts in South Africa, this presents an even bigger challenge as irrigation regions also face water shortages while damns, at least for now, are overflowing.

The long-term planning of the agribusiness should factor this change in climatic conditions as a possible risk for the next season. **Source: Stats SA and Agbiz Research**



Blueberry farmers in survival mode?


Blueberry prices fell much.

In the Western Cape, blueberry producers in Rawsonville and Lamberts Bay are commencing the harvest while prices are slightly improving. This, following a poor season in which growers have been marketing their blueberries at much below cost price, just to keep their programmes going.

Europe, South East Asia and South Africa were "smothered" by Peru this season, according to Tiaan Rossouw, COO at Rainbow Superfoods. Rossuw said in South East Asia buyers seem to be predominantly price-driven and prefer lower-priced blueberries from Peru to South African berries.

On the positive side; Peru is finishing and according to reports, Chile might not be sending blueberries as much to Europe.

Western Cape quality

There are quality problems on Western Cape blueberries, like soft arrivals from previously sound quality blueberry blocks that puzzle the blueberry industry. "From what I understand, pack-outs were very poor, even though the Western Cape had good growing conditions, and did not experience a heat wave like the farmers in the north during September," Rossouw said.

Deliveries for the frozen sector were stopped recently when Euroberry announced they had received 3,000 tonnes of blueberries and would accept no more.

According to Rossouw they have been fortunate, as they had really good quality thus far, but the price (at the time) is just not there. The price is about 1.50 Euro a carton lower than last year, which was already a low price. On air freight, the price is US$3 lower than the lowest it has ever been.

He says that airfreight to the East and also to Middle East killed them the past season. "It's probably around 20% up on last year. We see container rates are rising again though rates are around US$10,000 currently."

Zimbabwe campaign

The season already derailed early on this year when Zimbabwean blueberry growers decided to extend their season after disappointing early returns. Rainbow Superfood supplies blueberries sourced in Zimbabwe around week 15 but this year, by weeks 38 to 40 buyers indicated their preference for South African berries.

This year early returns were disappointing and they extended their blueberry campaign, to the detriment of the early South African season.

In hindsight the intense expansion into blueberries in South Africa, still continuing apace last year, was probably not the wisest decision, Rossouw observed.

"In two years there will be even more blueberries on the market, and blueberry farmers already are in survival mode. When I make the sums it's just not viable. The price will probably never go lower than it is now," Rossouw remarked.

Growers are selling just to cover the cost of sales, and they're barely covering the costs of production. On a carton, sales prices are R50 (2.8 euros) below break-even point.

The price will eventually recover, he thinks, but next year will be a repeat of this one.

Rossouw maintains that fundamental change will have to come from logistics providers and consumers, and across all crops, not only blueberries, "otherwise there aren't good times ahead".

Purely price-driven buyers and consumers are speeding the demise of the growers. As it is, farms will probably start laying off workers.

He estimates a fair price back in the packhouse should be R70 (3.9 euros) per kilogram for punnets before transport costs (it would be a bit less for bulk) in order for a farmer not to be paying off a loan. Loan repayments would factor in another R10 to Rossouw's suggestion for a fair price.

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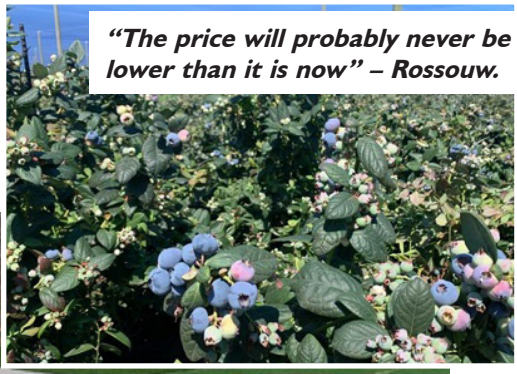
"The price will probably never be lower than it is now" – Rossouw.


Rainbow Superfood's farm in Rawsonville, Western Cape (photos supplied)

Note the spacing and trellising of the peppers.

SO YOU WANT TO PRODUCE PEPPERS?

Peppers have become a popular ingredient in salads, baked filled with meats or other condiments to adorn the plate. Apart from tomatoes, cucumbers, peppers are very much part of this major three-option product that is grown in greenhouses in South Africa.

Ripe bell peppers are one of the most popular greenhouse crops because the yield and quality can be higher than field-grown crops. It is a slower-growing, more generative crop than other popular greenhouse fruiting crops, like tomatoes, cucumbers, and eggplants. It is important to match a plant's growth habit, vegetative or generative, to the type of structure in which it will be grown.

Greenhouses fitted with highly technological equipment use a lot of heat and extensive climate control to optimize the growing environment. This type of environment grows peppers as fast as possible for the highest yield and promotes vegetative growth - therefore more generative varieties are used to keep the plants balanced and setting fruit over a very long season. Peppers are pruned to two or four stems and grown up a string trellis to make the best use of vertical space.

Growing peppers on a two-stemmed plant will result in larger peppers than those grown on a four-stemmed plant. Two-stemmed plants will be more resilient under hotter-than-ideal conditions. In simpler greenhouses with less extensive climate control, conditions cannot be optimized as much, and plants are likely to experience heat, cold, and other stresses more often. Stressful conditions tend to reduce a plant's vigour, but peppers bred for simpler greenhouses are more vigorous.

All peppers are green when they start to grow. Only just before harvesting they discolour to red or yellow, if their strain is not green only.

Good advice is to use field varieties and production techniques, such as a basket-weave trellis or other simple trellis, for production in low-tech greenhouses in short-season areas.

PROPAGATION

Sow pepper seeds in a desired grow medium 6–8 weeks prior to transplanting. Maintain a constant, 27–32°C soil temperature to achieve an ideal germination percentage and uniformity. When the first true leaves show, transplant the seedlings into cell-type containers or blocks. Containers 5cm or larger will produce larger, stronger root systems; 10cm grow blocks are the standard for hydroponics. Grow plants at daytime temperatures of 21–23°C and during night time at 20°C.

Fertilize with a complete nutrient solution (EC 1.5–2, pH 5.2) or equivalent as needed to keep plants dark green and healthy. When transplanting the pepper seedlings into the greenhouse, maintain temperatures of 23°C during the day and 21°C at

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night during the first week to ensure rapid vegetative growth and root establishment.

FERTILIZING

When growing directly in soil, perform a soil test using the saturated media extract test designed specifically for greenhouse growing, and amend to the recommendations provided. If you are growing a long-term crop that will be in the ground for four months or more you will not be able to provide all the necessary nutrients from pre-planting fertility. Side dressing or fertigation with extra nutrients will be necessary. Use plant tissue testing to monitor the health of the plants and add extra nutrients when necessary. If growing hydroponically, consult the manufacturer of your nutrients on an appropriate fertility plan for peppers.

TRANSPLANTING or SPACING

To grow two-stemmed plants, use a plant density of 3–3.5 plants (6–7 stems) per square metre. For four-stemmed plants, maintain the same 6–7 stems/ square metre spacing, but with half as many plants. One common row spacing to achieve this density is to use a double row of plants, trellised to two parallel overhead wires 60cm apart with walkways 90cm wide. Each stem is anchored 15cm or so from the next one. Some pepper growers prefer to use four wires with a second set of two more wires 20cm in from the first set of wires because this allows spacing the pepper stems out 30cm from each other on each wire.

CLIMATE

Sweet Peppers are naturally slow-growing and need high temperatures for fast growth. Therefore 7–10 days after transplanting in the greenhouse, lower night temperatures to 17–18°C and maintain a daytime temperature of 23–24°C. Night time temperatures may be increased as high as 19°C if more vegetative growth is required. Lower night time temperatures promote generative, fruiting growth whereas higher night time temperatures with a flatter temperature profile encourage vegetative, leafy growth. Do not go below 16°C. Peppers have difficulty setting fruit at night time temperatures above 20°C - hence in warm summer nights it is important to get the temperature below that level.

TRELLISING

Onto the overhead wire tie strong twine at the desired spacing and anchor the other end to the base of the plant with a loose knot. Twine made of natural materials tends to degrade and break under greenhouse conditions. If the knot is tight it will cut into the plant as it grows and girdle or even kill the plant, and may form a wound where pathogens can enter. Twist the stem of the plant around the twine or clip with trellis clips every two weeks to keep it supported and growing up the twine. Make the twine from the wire to the base of the plant fairly taught; peppers will not perform well with a lot of slack in the twine.

PRUNING

Remember; peppers grow as a one-stemmed plant until the first fruit is set, when the plant branches for the first time. Remove the initial pepper that is set in the first split before it develops. This will give the plant time to develop adequate leaf cover to support a fruit load. It is also recommended to remove the flowers at the second and third nodes, but if all conditions are optimized some growers allow fruit to set after removing just the first one. Every node after the initial split will result in one leaf, one pepper, and two branches. Field peppers may sometimes form multiple branches per node, but greenhouse peppers are bred to form two even branches. At each node after the initial split, choose the stronger of the two branches to continue forming the stem.

Cut the other branch after it has formed one leaf. This involves cutting off the flower and two other branches at the first node of each lateral branch. This leaves one leaf to develop, called the flag leaf. This leaf will protect the peppers from sunscald and help prevent blossom end rot. Do not prune within 20cm of the tip of the plant. Prune every two weeks, or after about 15cm of growth since the last pruning. Pepper plants will set 4–5 fruit before aborting the next few flowers. This is normal, for the plant to set fruit in "flushes" and not set every single fruit. Remove fruit if they are deformed or unmarketable to allow the plant to put the energy into setting another fruit further up the plant.

DISEASES AND PESTS

Use crop rotation or change the media to reduce incidence of soil-borne disease. Regularly schedule releases of beneficial insects to control pests. Companies can advise you on the appropriate beneficial organisms based on the timing and square footage of your crops. Minimizing the amount of time with temperatures below 18°C will reduce the amount of botrytis. It is important to have a footbath at the entry and exit to the greenhouse where peppers are grown. Good hygiene practices in any greenhouse should be a stern rule to follow.

HARVEST

Harvest peppers when they are 80% or more final ripe colour. They will reach full coloration in storage. Using hygienic pruners or a knife cut the fruit off flush with the main stem of the plant. Make sure not to leave a stub on the plant, as this can be an entry point for pathogens. Harvesters should also be dressed and capped with hygienic clothing to avoid any pathogen transferred from another greenhouse or plant.

STORAGE

Peppers can be stored at 7– 8°C in the cold room. Do not store them with ethylene-producing vegetables like tomatoes.

Transferring the boxes with peppers to a market or the cold rooms of a chain store should take place with the least loss of temperature. The more evenly the product is transported in terms of handling and temperature, the longer shelf life it will offer the consumer.

Johan Swiegers

Trellising a pepper plant.

FEED GREENHOUSE PLANTS ONLY THE NUTRIENTS THEY REQUIRE – AND SAVE

Growers, who allowed nutrient rich water to run from their farms In the Netherlands, were contributing to chemical pollution and the increased incidence of water weeds in their canals and rivers. Strict laws were introduced to decrease this environmental pollution, by restricting the release of nutrient-rich water from production units. In South Africa, water pollution is already a massive problem, and there are sounds from different nature conservationists that our farmers need to pay close attention to their run-off in order to refrain from being prosecuted.

Due to intensive research projects on recycling, they succeeded to reach this goal in the year 2000. Two problems were solved in this process: The first was to monitor and adjust ions in the nutrient solution, and the second to sterilize the recycled solution. Sterilization options will be discussed in the next edition, allowing a few more words on the issue of plant nutrition here.

Prevent the accumulation of sodium (Na) and chloride (Cl)

Feeding water with low Na and Cl levels must be used when nutrient solutions are recycled (closed system) in order to prevent the accumulation of these ions. The Dutch overcame this problem by building plastic lined reservoirs, filling it with rain water from their glasshouse roofs.

By mixing Na- and Cl-rich water with rainwater, the Na and Cl concentrations were lowered to safe levels. Since low EC crops such as roses can only absorb 5 ppm Na and 11 ppm Cl, these are the highest levels that may be allowed in the feeding water for roses in a 100% closed system.

A saline tolerant crop such as tomatoes can remove 16 ppm Na and 32 ppm Cl, allowing tomatoes to be recycled with feeding water containing these, or lower, Na and Cl levels.

Should water with higher Na and Cl levels be used for a limited recycling period (until the red lights start flashing) saline sensitive crops should be flushed as soon as root zone levels reach 69 ppm Na or 107 ppm Cl.

Most greenhouse crops will be unaffected with Na levels below 115 and Cl below 178 ppm. Saline tolerant crops such as tomatoes will be able to withstand levels of up to 184 and 284 ppm Na and Cl respectively.

Should these levels be exceeded, yield and quality losses will occur.

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Adjusting nutrient levels

As a crop develops from the vegetative to reproductive stage, or with a change in climatic conditions, its nutritional needs change. The use of leaf deficiency or toxicity symptoms to identify nutritional problems is ineffective. It is impossible to avoid yield and quality losses with this approach, even by using quick petiole sap measurements as aid. The use of nutrient foliar sprays should not be necessary.

Root zone analyses, developed in the Netherlands can help growers to identify nutritional imbalances before it is reflected in the leaves and before damage can be done to the yield potential. This procedure is used by the Dutch and the Belgians, serving areas with high densities of growers. The laboratories send technicians to take root zone samples every week or two.

The results and suggested changes to nutrient mixes are E-mailed to the growers the following day. The duplication of such a system under South African conditions may be impractical at this stage, but the same principles may be adapted to improve our nutrient managerial effectiveness.

A Root zone analysis is a must for recycling, but it can also be useful to optimise nutrition in a free-draining system. The procedure starts with a chemical analysis of the root zone solution. One fresh sample from the drainage tank in a closed system, or a mix of 20 fresh sub samples, taken from growing bags in a drain-to-waste system, should be analysed at least monthly.

Since changes in the ammonium: nitrate ratio may occur during storage, these samples should be analysed as soon as possible. Apart from regular pH and EC checks, root zone analyses are used to detect deviations from pre-set root zone norms, thus, allowing the plants to communicate with their growers. Before this can be done, the EC and nutrient levels of the sampled solution should be adjusted to match the EC of the norm solution.

This procedure is described in a book: 'Nutrient solutions and Greenhouse management' directly available from the author, Dr. Nic Combrink: Mobile: 082 6038264 or e-mail: njjc@sun.ac.za

Profitable Hydroponics – New Handbook for the novice hydroponics farmer

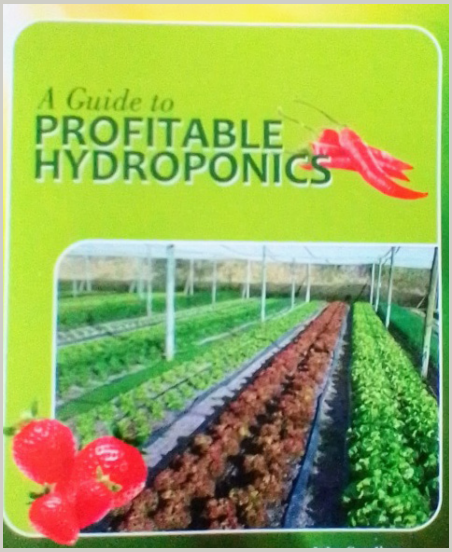
A new book on hydroponics has seen the light by author John Sandison, a former industries manager that took early retirement and started a 220 000 strawberry plant production site. He was also a lecturer at Nelson Mandela University, George, where he had a farm next to Redberry Farm. He did trials on improving production on strawberry farms and also trained students on the crop. John amassed much experience in both the practical and technical fields of hydroponics farming and recently retired at Warwick, UK.

A Guide to Profitable Hydroponics simplifies what many newcomers to hydroponics may deem 'over the top', but John Sandison planned this handbook so well that the subject and the easy to read technical chapters is a must for all and sundry interested in hydroponics production.

This way of producing food needs not take place on a massive area, with the latest electronic means available today. Instead, the author explains the subject and functioning of a hydroponics food plant production system in the most basic manner.

A layman with a heart for plants, fresh vegetables or fruit production would be able to comprehend the contents of the book without having to attend expensive courses, purchasing thick highly sophisticated written books and spending months pondering over so much information, that in the end, he or she feels inadequate to just start their own hydroponics production system, albeit in a relatively small format.

A Guide to Profitable Hydroponics can be obtained from rob@crocetta.co.za



Root system of a plant in an Aquaponics unit.

From the roots upwards

With the exception of growers that produce root crops (potato, beetroot, carrots, onions and the like), 99% of Greenhouse farmers grow crops that produce an income from the leaves, flowers or fruit. Understandably, one therefore spends all or most energy looking at the above ground portion of the plants, since this is where the income is.

The greenhouse producer has to start thinking of plants as organisms that have a limited amount of energy available for use (growth) due to various growth factors such as climate, health, nutrition, plant age etc. This energy is then partitioned off to various parts of the plant, again depending on factors like where the plant "needs" it.

Fruit farmers want much of the energy to be proportioned of to the reproductive parts of the plant, or if the saleable parts are leaves, to that, and not pushed into flowers and fruit. This is the plant balance that is often referred to. The roots play a pivotal role in the expression of this factor, and one can to a large degree control this by understanding and by 'manipulation'.

Often, the roots are neglected and not fully understood what important role it plays in a plant. In basic terms, it can be explained as root mass = potential rate of absorption and storage (water and nutrients) while leaf mass and leaf area = potential rate of photosynthesis. Growth or poor production, resistance or susceptibility, reproduction or abortion rate, could all therefore in a way be linked to the root system. This is where it starts!

Roots are, with the exception of infinitely small amounts of nutrient intake through leaves, the plants pathway for nutrient and water intake, similar to its leaves with photosynthesis — a system of converting sunlight into energy rich carbohydrates. The two are inexorably connected. The one cannot function without the other. While it is the leaves that bind energy for growth, the roots harvest nutrients and also store metabolic building blocks for use in growth.

Functions of the root system

Even casual consideration of the roots' functions indicates that physiologically vigorous root systems are as essential as vigorous shoots for successful plant growth.

It must be obvious that root and shoot growth is so interdependent that one cannot succeed without the other. Management of the roots is important because it affects the pathway and resistance to water and solute movement, while the extent of root systems affects the volume of soil available as a source of water and mineral nutrients.

The functions of roots include anchorage, the absorption of water and mineral nutrients and synthesis of various essential compounds such as growth regulators.

A well-rooted plant produces much better.

Anchorage
The role of roots in anchorage often is taken for granted, but it actually is very important because the success of most land plants depends on their ability to stand upright and "stay put". The strong anchor roots keep the root system stable so that movement (e.g. in the wind) will not damage the very fine hair roots.

Absorption
The obvious importance of healthy effective, deep, wide spreading root systems for absorption of water and minerals cannot be overemphasized.

Synthesizing Functions
Root cells possess many of the functions of shoot cells and some aerial roots even produce functional chloroplasts. Essential compounds such as growth regulators (e.g. cytokines) are produced in the roots and sent upwards to shoots for critical processes like cell division.

Storage:
The root is the "Pantry" of the plant, storing water, carbohydrates and other minerals and nutrients, required by the stems and foliage at a later stage. It stands to reason that if this reserve is depleted, growth will not be able to be sustained.

Strong root system necessary
A producer needs his plants to have strong root systems for the roots to take up as much nutrients, minerals and water as it requires for the foliage and fruit to grow optimally. Furthermore, a strong healthy root system is necessary for the plant to grow in size; the stronger the roots, the stronger the plant and the more production capacity the plant exhibits.

A few recommendations: Give the plant a good, well aerated anchorage with sufficient consistent soil moisture as well as a balanced diet of nutrients. The seedling must be carefully planted into the root-zone. We want this to be the growing place, not the final resting place of the plant. Incorrect and harsh transplanting causes poor soil contact or damaged roots (e.g. J-rooting), resulting in poor growth and the strong potential for disease infection.

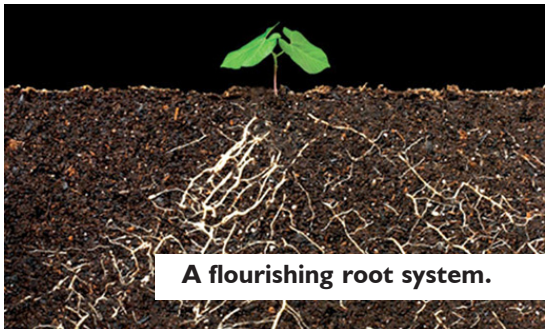
First build the roots, then the plant. Do not expect sustained production from an early over utilized root system. A stressed plant (roots) may give an early flush of production (e.g. flowers and fruit), but hereafter the plant will be weak; production will be of poor quality and low volume.

An example is the early and regular harvest of "baby" Swiss chard leaves. This results in a shortened plant lifespan and low total production since the roots were never allowed to fully develop and sustain a longer crop.

Ensure that the root zone is healthy: Prevent pathogens and Nematode attack by preventative treatment (including then use of genetic resistance) as well as the use of beneficial organisms and the feeding of the soil itself as a living breathing organism. If there are production problems, investigate all root limiting factors. Often the foliar disease is but a symptom of an unhappy root system!

A seedling with a healthy root system.

Bear the roots in mind as a primary production and management objective. If they are healthy and properly cared for, they will bear an excellent crop. **By P de Vries**



A flourishing root system.

The worst case scenario: a clogged and poor root system.

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