March - April 2022

THE LEADING FLORICULTURAL JOURNAL IN THE REGION

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Sea Shipment of Roses from Kenya

BAYER

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Infinito® is exclusively distributed by Amiran Kenya.

For more information please contact: Maurice Koome: 0704 411 325
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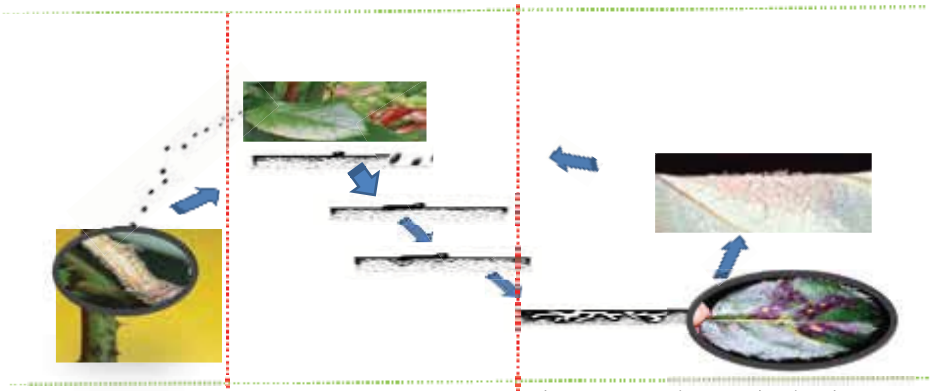
Be Prepared. Beat Downy Mildew

At Bayer East Africa, we understand the impact Downy Mildew on the production of flowers and have a robust portfolio to have in management of the same.

Understanding Downy Mildew

The pathogen is an obligate parasite An obligate parasite, or holoparasite, is a parasitic organism that cannot complete its life-cycle without exploiting a suitable host. If an obligate parasite cannot obtain a host it will fail to reproduce. This is opposed to a facultative parasite, which can act as a parasite but does not rely on its host to continue its life-cycle. For this reason the parasite can only survive in living tissue and overwinters inside the plant.

Downy Mildew infection cycle



Overwintering downy mildew germinates from dormant points and sporulate to produce initial spores

Spores germinate, their sporangia elongate and germ tube penetration into uninfected leave and soft green stems.

The penetrated germtube develops to intra- cellular infection level. (by this time symptoms are visible to the eye) where a network develops in the tissues and when nutrients are exhausted produces spores on the underside of the leaf

PREVICUR ENERGY

Previcur Energy stimulates roots, growth and production through;

- Root diseases control (Pythium and Phytophthora) Increase production of healthy roots and root hairs.
- Enhanced plant vigor as observed in the absence of the disease.

The root and growth stimulant effect, well known for many years in Previcur N, is now boosted by Fosetylate in Previcur Energy

Melody® Duo

Melody Duo offers a tool to control Downy Mildew and help manage the development of resistance by the disease. Of the two active ingredients, iprovalicarb is a systemic fungicide with protectant, curative and anti-sporulant properties active against downy mildew. It comes from a group of active substances and has a unique mode of action. Importantly, there is no resistance or cross-resistance to iprovalicarb, making Melody Duo a superb resistance management tool.

INFINITO

Infinito activity is systemic, protectant and translaminar which enables it to confer consistent high-level protection for leaves and stems against downy mildew. Its long-lasting residual activity ensures an outstanding anti-sporulant activity with lasting protection during the risk weather period. Infinito does not harm predatory mites and is compatible with IPM programs.

Predisposing factors for disease development:

Favorable conditions:

- High humidity (RH:85-100%) or free water during the day
- Low temperatures (160-220C) during the night
- Wide diurnal range

Pathogens

Susceptible varieties

Benefits of Previcur energy drench

1. Overwintering Downy mildew will be cured.
2. There will be continued uptake of the product from the growing media which improves on product coverage plus offering protection to the newly forming shoots.
3. Control of the fungal pathogens that are present in the growing media that causes root rot diseases .
4. Fosetyl Al will induce systemic aquired immunity.

Product	Active Ingredient	Chemical Group (Frac Code)	Biological Mode of Action	Effect on disease cycle	Biological Moa	Rate of Application/Ha	Mode of Application
PREVICUR ENERGY	Propamocarb hydrochloride 530g/lt + Fosytyl Aluminium 310g/lt	Carbamates (28)	lipid synthesis or transport	Inhibit mycelial growth, reduces sporangia production and sporulation, Stimulate natural defence reaction.	Systemic	2.5lt per Ha	Drench
	Fosetyl Aluminium 310 g/l	ethyl phosphonates (P 07)	host plant defence induction		Systemic		
INFINITO	Fluopicolide 62.5g/L	pyridinylmethyl-benzamides(43)	Cytoskeleton and motor protein	Spore germination, Mycelium growth, Spore production	Translaminar	1.0-1.6l per Ha	Foliar spray
	Propamocarb Hydrochloride 625 g/l	carbamates (28)	lipid synthesis or transport		Systemic		
Melody® Duo	Propineb 600 g/kg	dithio-carbamates (M 03)	multi-site activity	Spore germination, Haustoria formation, Mycelial growth, Inhibit spore formation.	Contact	2.25 kg per Ha	Foliar spray
	Iprovalicarb 90 g/kg	valinamide carbamates (40)	cell wall biosynthesis		Systemic		

For more information contact: Maurice Koome: 0704 411 325 / **Simon Ngucugua:** 0704 411 301 / **Victoria Ndung'u:** 0791 379 125 / **Phillip Kung'u:** 0715 407 215

Contents

Courtesy Netherlands Embassy

The Leading Floriculture Magazine

Floriculture is published six times a year and circulated to personnel in the Horticulture Industry, foreign missions and Kenyan Embassies abroad, Flower Growers, Exporters and Consumers, extension officers in the Ministry of Agriculture and counties, research offices and suppliers of agricultural inputs in Kenya.

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The ideal choice against Powdery Mildew and Rust!

- **STAND OUT:** Spirox Keeps the disease levels down
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Editorial

Time is precious

At a time when we're still working to sustain the global economic recovery and put people back to work. Helping each other to manage our businesses to manouvre the crisis and spur growth. At a time that we're facing challenges that no country can meet by itself.

Time management is one of the most important skills to have, but it is often a concept that many businesses, and people, struggle with. We in the flower sector, in particular, cannot afford to waste time with bad time management and inefficiency. Flowers must get to the market fresh, we must maximize on valentine, women's day, mother's day etc.

I believe in the power of time management -- the basic notion that if you've got an idea and if you really work hard and you're able to pick yourself up if you stumble a couple of times, you can eventually turn that idea into a reality.

This is why in this issue we ask, Is Sea shipment of roses from Kenya practical? What of the plant nutrition basics? or is my crop protection sustainable? Am I aware of my enemies within soils?

This is the time to renegotiate our terms with both buyers and suppliers. It is time to advertise our products and services even more. It is time to exhibit both locally and internationally. This is the time for our government to give full support to the sector including favourable tax regime.

Good time management also means that we will be able to solve problems that arise without it significantly impacting day-to-day operations. This is essential for businesses. A planned, structured schedule provides extra time for problem-solving or unforeseen circumstances.

Have a timely reading.

Masila Kanyingi
Editor

FLORINEWS

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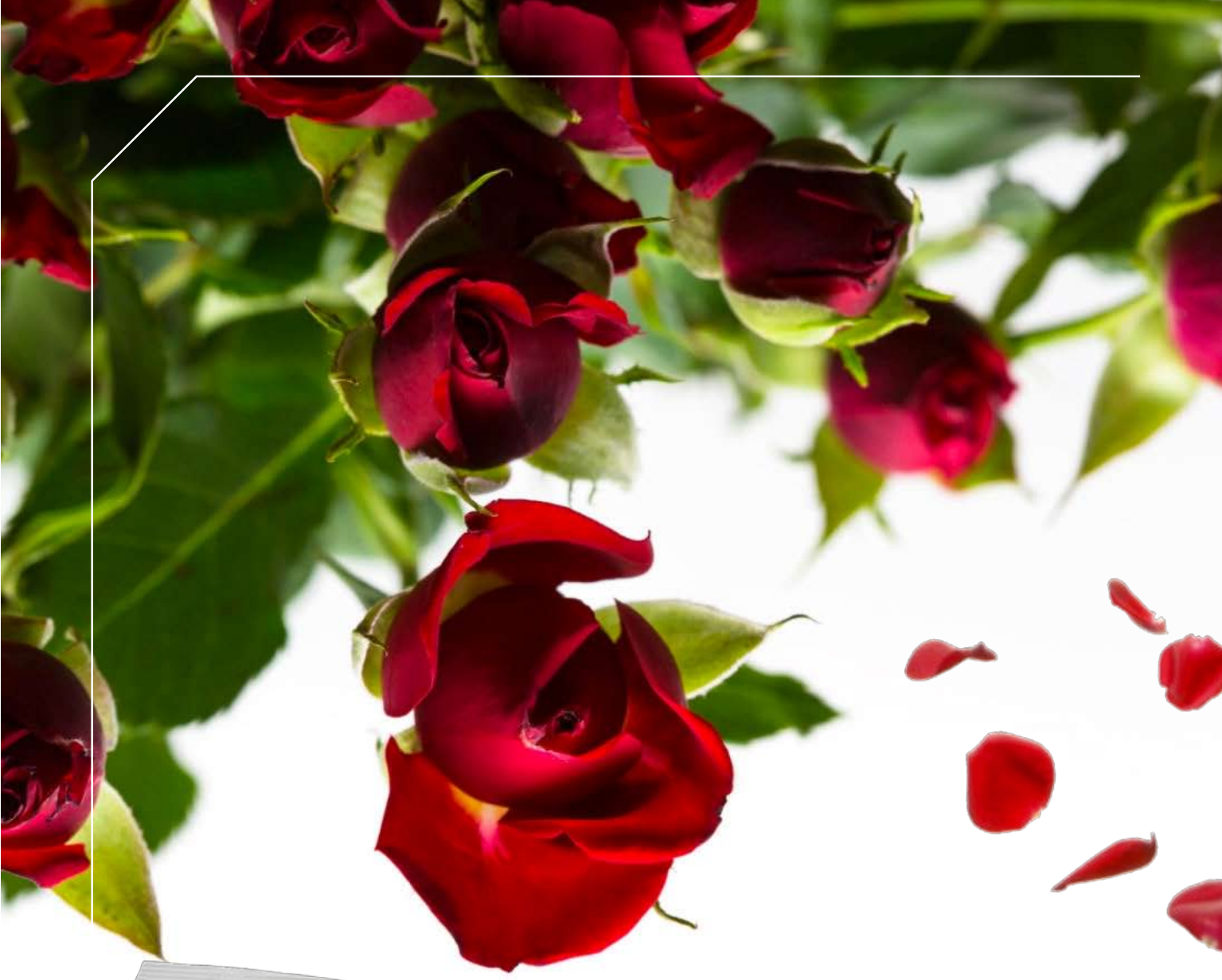

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Sea Shipment of Roses from Kenya

Intercontinental ocean shipping of agricultural products is considered more carbon and cost efficient and may provide more flexibility compared to air freight. The Kenyan government is actively supporting sea freight so that Kenya remains competitive in the global market. Although sea transport is already common practice for some Kenyan fruit (avocado, pineapple), for flower export, this option is still poorly explored.

Kenya exports a significant amount of products to the Netherlands, most of which are related to agriculture. Globally the main mode of transport for trade is ocean shipping, this is however not the case for Kenya. Most of it is transported by air as this is a quicker form of transportation. For agricultural products with a short shelf life such as flowers, fruits and vegetables this is especially important. In 2020 however, COVID-19 exposed the limitations of airfreight in Kenya. Passenger flights carry freight in the belly of the plane and due to a high number of flights being cancelled there was a huge shortfall of airfreight capacity. By increasing maritime shipping, Kenya can provide an alternative way of transporting goods, decrease costs and reduce its environmental footprint.

There are several arguments to choose for sea transportation over air transportation. Sea shipments considerably reduce transportation cost (to about 50% compared to air transportation) and provide much more flexibility and satisfy the need for increased transportation capacity especially during holidays (Valentine's day, mother's day). It has been shown in several recent investigations that the transportation of roses in refrigerated (reefer) containers is possible.

However, sea transportation has not yet become common practice in the transport of roses from Kenya to The Netherlands. A major challenge in sea transport are the long transport times (30-35 days) to reach the major destinations in Europe. Without proper treatments, roses may not survive the trip in good quality.

Good results for sea freight shipment are seen for avocados, pineapples and flowers. The primary fresh product shipped by sea from Kenya is avocados, representing around 3,000 containers per year.

"The shipment of flowers by sea is steadily increasing, but was still only around 100 containers in 2020. If 20% of airfreight was transferred by sea this would result in over 100+ containers a week. To achieve this potential it was suggested by several interviewees that the Kenyan industry sets objectives, for instance to ship 50% by 2030 of the

There are several arguments to choose for sea transportation over air transportation. Sea shipments considerably reduce transportation cost (to about 50% compared to air transportation) and provide much more flexibility and satisfy the need for increased transportation capacity especially during holidays (Valentine's day, mother's day).

2020 export volumes."

Sea freight opens up the opportunity of new markets for Kenya. Bigger capacity and more competitive freight costs would increase sales to the Middle East or Far East, i.e. Singapore and China. Future national investments in sea freight would safeguard and potentially increase existing employment in the fresh produce and cut flower sector in Kenya. Furthermore, sea freight compared to airfreight could cut emissions by 85%.

Bottlenecks in the chain

The outcome of rose shipments over sea is, therefore, variable and often disappointing. After arrival in Europe, roses should be able to withstand a 3-4 day period in the retail channel and should have a remaining vase life at the consumer of at least 7 days of acceptable quality. Main problems that are invoked by the long transport time are failure of flower opening, leaf desiccation and fungal infections.

The elucidation of the reasons for the variability in flower quality at arrival is complicated by a multitude of factors. There are many different rose cultivars used in the shipments and they come from a variety of growers. On top of this, different postharvest treatments and protocols are applied. Together this makes it hard to pin point the main bottlenecks in the chain.

In 2021 a pilot experiment was executed with financial support from the Netherlands Ministry of Agriculture, Nature and Food Quality. The experiment involved a number of Dutch flower traders and technical and logistical service providers to get more insight in failure and success factors for sea freight.

Treatment of the rose during pilot

After harvest, flowers received treatments at the farm, including a pre-treatment to block effects of ethylene.

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The flower buds were dipped in a solution to suppress fungal (botrytis) development. They were packed in boxes and transported by truck to Nairobi, where they were vacuum cooled and loaded into a reefer that was trucked to Mombasa. Thereafter, the container was shipped to Rotterdam. Conditions in the reefer were set to 0.5°C, 4% CO2 and 4% O2. Loggers were inserted in boxes to monitor conditions. Including a slight delay at the customs at arrival the total trip took 35 days. At arrival flowers were rehydrated and received a retail and vase life simulation.

Factors that contribute to the sea freight variability

As for the issue of flower failure and leaf desiccation, the consortium organized a pilot shipment consisting of different rose cultivars sourced from different growers in the Naivasha region. As much as possible all postharvest factors (pre-treatments, anti-fungal dip, temperature management, vacuum cooling and conditions in the reefer) were held similar for all the flowers. This set-up allowed for comparison of the performance of different cultivars and to investigate the contribution of "grower" to the outcome.

One of the main focus points was Leaf Quality and vase life. There was a big variability between different cultivars in relation to vase life. Independent of the grower, some always performed better than other cultivars. The same was true for flower opening and the vase life.

This shows that both cultivar and grower have a significant impact on the final quality of the roses after the shipment.

Future national investments in sea freight would safeguard and potentially increase existing employment in the fresh produce and cut flower sector in Kenya. Furthermore, sea freight compared to airfreight could cut emissions by 85%.

Recommendations

To achieve the full potential of Kenyan agriculture and for it to remain competitive, the sea freight industry requires a boost.

Sea freight of agricultural exports has to become more efficient with more reliable and direct shipments to Western Europe and costs need to be brought down. The industry, together with the government of Kenya, will have to set an ambition for a certain proportion of products to be sent by sea by 2030. To achieve this, an enabling environment will need to be created by the government of Kenya and the other parties involved. This not only asks for a complete overhaul of Mombasa port with sufficient berths, good management and practices suitable for perishable goods, but also an optimal network of consolidation centers to support the further growth of avocado and other exports.

Courtesy: Netherlands Embassy.

An Interview with Fairtrade's Gender Coordinator Susan Limisi

On Valentine's Day, Fairtrade Flowers Mean Gender Equality

Valentine's Day is a day for love, romance, and fragrant floral bouquets. But we can also make it a day for gender equality. That's because when it comes to Fairtrade flowers, more than half of the 73,000 workers on Fairtrade certified farms around the world are women.

Fairtrade flower plantations offer a lifeline to rural women, providing essential income, enabling their families to thrive, and increasing their independence. According to a recent report, female flower workers also have more control over money. A third jointly manage household finances and 38 percent are solely responsible for them.

Above all, specific Fairtrade programmes enable women flower workers to take part in leadership training, helping them achieve the futures they dream for themselves.

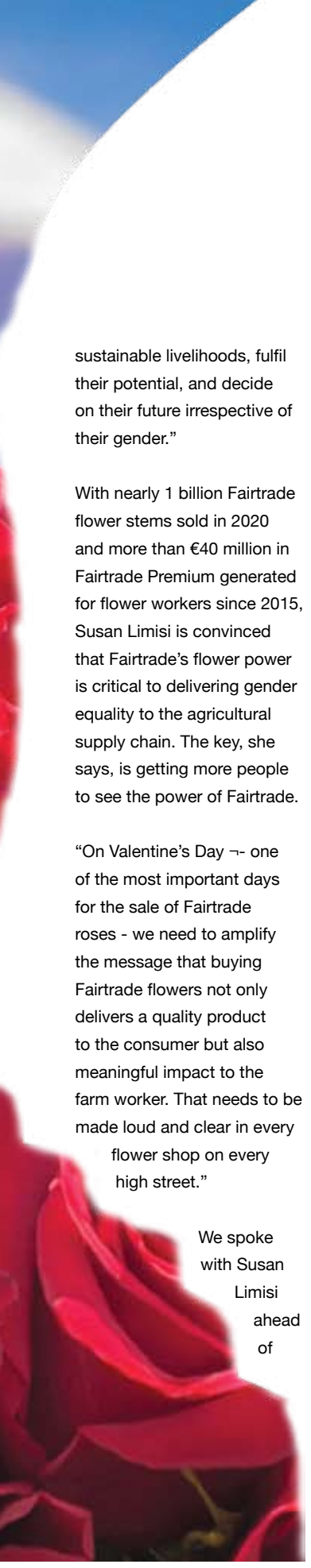
It's Fairtrade's role as the connective tissue between social justice and on-the-ground action that inspired Susan Limisi, Fairtrade Africa's Gender Coordinator, to lead the organization's gender portfolio across 33 countries in Africa and the Middle East. An experienced gender specialist with a background in gender programming, monitoring and evaluation and psychological counselling, Susan saw in Fairtrade's mission the opportunity to advance gender equality across the agriculture value chain by working directly with Fairtrade certified producer organizations.

"For Fairtrade, gender equality is not a theoretical concept but a living principle and value," explains Susan. "We are working towards a world where all producers can enjoy secure and

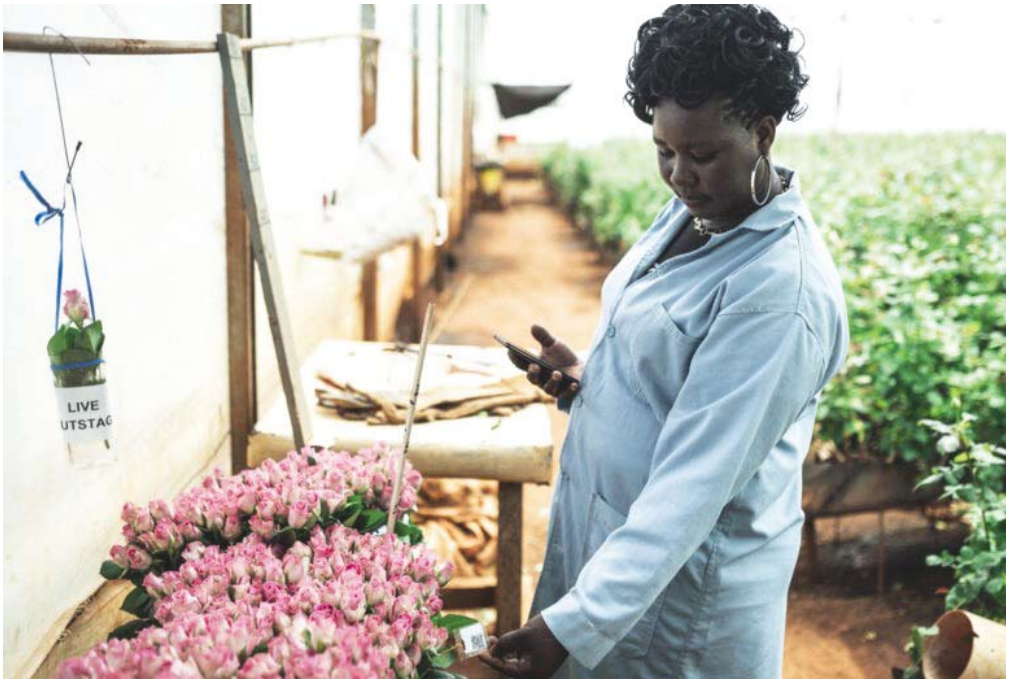
sustainable livelihoods, fulfil their potential, and decide on their future irrespective of their gender."

With nearly 1 billion Fairtrade flower stems sold in 2020 and more than €40 million in Fairtrade Premium generated for flower workers since 2015, Susan Limisi is convinced that Fairtrade's flower power is critical to delivering gender equality to the agricultural supply chain. The key, she says, is getting more people to see the power of Fairtrade.

"On Valentine's Day ¬- one of the most important days for the sale of Fairtrade roses - we need to amplify the message that buying Fairtrade flowers not only delivers a quality product to the consumer but also meaningful impact to the farm worker. That needs to be made loud and clear in every flower shop on every high street."



We spoke with Susan Limisi ahead of Valentine's Day to get her take on how the small act of buying Fairtrade flowers can have a big impact on building a better world for women farmers.



Susan Limisi,
Fairtrade's Gender Coordinator

Thank you for speaking with us, Susan. First of all –

W**hat does gender equality mean to you and why are you committed to achieving it?** I view gender equality as a state where all persons can have the space to exist, be heard, contribute, meaningfully, participate without barriers of any form, real or imagined, such as biases, retrogressive norms, stereotypes and discrimination.

I firmly believe that inclusive representation throughout our operations is fundamental to us achieving meaningful progress and sustainable development. My previous work in contexts where marginalization is rife and inclusive decision-making is absent gave me the impetus to collaborate with those often left behind to eliminate the barriers that hinder gender equality.

According to the Food and Agriculture Organization (FAO), women comprise on average 43% of the agricultural labour force in producer nations. Yet women have less access to resources such as land, information, credit and training, and are often overlooked for leadership roles. That's why Fairtrade is dedicated to working with producer organizations to achieve gender equality.

How is Fairtrade working towards a more gender equal society?

Fairtrade promotes gender equality throughout our work with producer organizations, in alignment with our 2021-2025 strategy and in support of our contributions to the Sustainable Development Goals.

We are being deliberate and strategic in crafting interventions aimed at promoting women's active engagement in the producer organizations, which historically have often been male dominated. We are working towards a world

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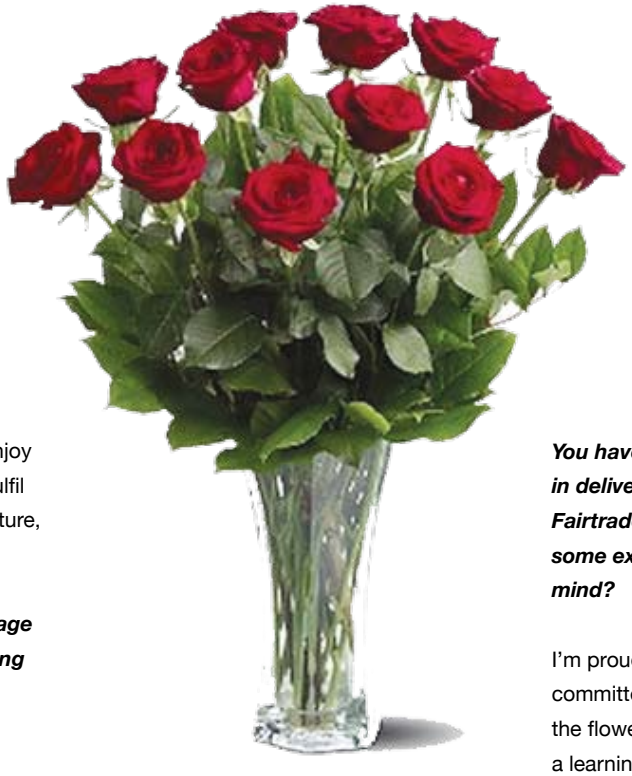

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where all farmers and workers can enjoy secure and sustainable livelihoods, fulfil their potential, and decide on their future, irrespective of their gender.

What activities does Fairtrade engage in to promote gender equality among producer organizations?

Fairtrade works with the producer organizations on diverse activities and programmes to progress their gender equality efforts. One such programme is the Women's School of Leadership, run by Fairtrade Africa to build women's leadership and entrepreneurship skills. The programme first ran in Cote D'Ivoire, where it reached more than 34,000 farmers in 2019 alone! We recently piloted it with flower workers in Ethiopia and are now scaling it up to flower farms in Kenya.

Through this programme, more women are taking up leadership positions across the agriculture value chain. One such example is Addis Petros, who worked as a harvester at Sher flower farm in Ethiopia until 2019. As a result of the skills acquired from the leadership school, she now works as an accountant with the local municipality in her hometown and runs a successful poultry business.

Apart from the schools of leadership, the establishment and training of inclusive gender committees in the flower farms has provided a mechanism of addressing key gender issues, such as gender-based violence, amongst the workers. Fairtrade Africa has also supported flower farms to develop and implement gender policies. As well as being a Fairtrade Standards requirement, such a policy ensures that gender equality, inclusion, and mainstreaming is upheld and zero tolerance for discrimination at the flower farms is implemented.

You work across a broad swathe of territory, from South Africa to the Middle East. What are some of the challenges that you encounter in your work?

Working across such an expansive scope comes with some challenges. One challenge is the diverse cultural practices within the different contexts. Understanding these cultures is critical to the success of our gender equality programmes, as is having buy-in from the duty bearers. This helps ensure that they maintain ownership of the process and that no harm is caused. Another challenge is the diverse range of gender issues that different producer organizations face. Hence, the need to tailor programmes that speak to the needs of specific producer organizations.

You have obtained some key successes in delivering gender equality efforts to Fairtrade flower producers. What are some examples that stick out in your mind?

I'm proud of the inclusive gender committees we have helped to establish on the flower farms. The committees provide a learning platform for the workers on gender issues and an avenue to address gender challenges before escalating them to management.

We've also seen many producer organizations increase the maternity leave available to mothers, and establish childcare opportunities within the farms for nursing mothers. The women have time to breastfeed their babies and can return to work without having to lose their jobs.

What would you like to say to consumers about some of their most favourite Fairtrade products?

Purchasing Fairtrade is a direct way consumers can contribute to the gender empowerment of women farmers and agricultural workers around the world. Fairtrade Flowers not only bring joy, love, and warmth to your homes and loved ones, but also support flower workers to put food on the table, send a child to school, and improve their livelihoods. On Valentine's Day, Fairtrade flowers mean gender equality.

Courtesy: Faitrade.

Sustainable Crop Protection

It is not possible to directly combat viruses, viroids, and bacteria in a plant. Therefore it is necessary to prevent infection from arising in a crop in the first place. It is important to use clean propagation material and to take the appropriate hygiene measures. A hygiene protocol can offer excellent assistance in this regard.

Experts in the fields of plant pathology, entomology, cultivation, climate, and technology work together with entrepreneurs and scientists from a range of fields. This collaborative approach combines innovations with the latest scientific knowledge and important and relevant questions from the professional field.

Healthy substrate and soil

A healthy substrate or soil is an important starting point for any healthy horticultural crop. Therefore, sustainable adaptations and cultivation techniques are important to create resilient cultivation systems. In resilient cultivation systems, more emphasis is put on preventing diseases as opposed to treating outbreaks. To achieve better disease prevention, a multi-disciplinary approach is needed. This requires optimal physical, chemical and biological characteristics in the rhizosphere and rooting environment so that better growth and higher resilience of the plant, as well as the control of pathogens, can be achieved.

Both physical and biological measures are adapted to growing plants on substrates and soils. These adjustments increase stability, drainage and carrying capacity for fungi and bacteria that improve growth and increase resilience of the soil or substrate. Higher biomass and diversity of soil organisms (such as useful microorganisms, nematodes and mites) means there is less niche space available for pests and diseases in the soil or substrate. Applications can range from solutions within existing cultivation systems such as selecting better soil and propagation material, potting mixes, growth substrates (e.g., rock wool, coconut, perlite), organic substrates to new cultivation systems such as those that seek to grow bulbs, vegetables and ornamental plants without soil.

Viruses and viroids

Viral diseases have an important influence on the cultivation of various greenhouse crops. In both vegetable and ornamental cultivation, viruses can result in loss of yields, even if no symptoms have been detected.

A mechanically transmittable virus can be introduced via infected plant material and seeds. The virus can spread rapidly through mechanical transmission, contact, and crop handling. An example of a mechanically transmissible virus is cucumber green mottle mosaic virus in cucumbers. As well as through mechanical transmission,

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plant viruses can also be spread by vectors (insects, fungi, nematodes).

Like viruses, viroids can cause symptoms such as malformation, reduced growth, and deviations in colour in their host plants, and the transmission methods are also similar. Many viroids can be transmitted through contact such as crop handling. A research is being carried out with the aim of making it possible to take adequate prevention measures at a sufficiently early stage. This research is designed to increase knowledge regarding the behaviour of viruses and viroids and the interaction between the virus, the plant, the plant's environment, the host plant, and the vectors. The research is being carried out for and in collaboration with the professional field.

Business hygiene and disinfection

It is not possible to directly combat viruses, viroids, and bacteria in a plant. Therefore it is necessary to prevent infection from arising in a crop in the first place. It is important to use clean propagation material and to take the appropriate hygiene measures. A hygiene protocol can offer excellent assistance in this regard.

It is recommended that thorough cleaning and disinfection be carried out when crops are rotated. Knowledge about the pathogens present in the crop is essential to ensure the use of the appropriate measures and disinfectants.

A number of plant pathogens are transmitted via water. It is therefore important that nutrient solution be disinfected before reuse. Research is being carried out to determine the equipment effective against various pathogens, and in particular which dose is most effective.

Insects and mites

Nearly all greenhouse crops are subject to damaging pests. These may be insects such as aphids, mealy bugs, whitefly, or thrips; or mites such as spider mites, thread-footed mites, and russet mites.

Research focuses on new natural enemies, methods to support natural enemies, interactions between natural enemies, biological and chemical agents, side effects of agents on natural enemies, odours for pests and natural enemies, and the development of total concepts for integrated crop protection.

Plant diseases

Greenhouse horticulture is often confronted with yield and production losses caused by fungal and/ or bacterial plant pathogens. Some of these microorganisms, such as the fungi e.g. Fusarium, Rhizoctonia or oomycetes Pythium and Phytophthora and bacteria e.g. Agrobacterium, Pectobacterium and Ralstonia, cause damage to the root system, which results in damping-off or wilting of plants. Infection by other plant pathogens manifest itself above ground e.g. powdery mildew, oomycete

Phytophthora infestans or bacteria such as Acidovorax, Xanthomonas and Clavibacter.

Retail and the public are increasingly demanding crops and ornamental plants which are free of residues from chemical plant protection products. Additionally, the effectiveness of available chemical control agents is under pressure due to the development of resistance in various plant pathogens.

Bacterial diseases are difficult to control because there are currently not many plant protection products available on the market which can be used specifically against bacterial plant diseases. Prevention of infection, application of biological control

and priming of plant resistance against these pathogens are therefore the preferred solutions for fungal and bacterial diseases.

To achieve this new cultivation management strategies have to be introduced in greenhouses, in which the resilience of the system have a central position. Research at Wageningen UR Business Unit Greenhouse Horticulture and Flower Bulbs therefore focuses on alternative, sustainable options and applications for plant diseases control which include:

a) prevention (hygiene),
b) development of new biological control strategies and agents (BCA),
c) (induced) plant resistance,
d) climate control (e.g. ventilation) or
e) physical solutions, such as application of UV light and different LED spectra.

Resilient crops

Plant resilience is the natural potential of plants to defend themselves against pests and diseases. While plant resistance is constitutive, it's based genetically and is always present, plant resilience is induced, i.e. it is activated the moment the plant is attacked.

Resilience is based on morphological traits such as trichomes, leaf wax layers... etc. Next to these, plants are rich in chemical compounds, especially secondary metabolites, which are used for plant defence against pests and diseases.

Especially wild species are rich in chemical compounds. Comparing these traits between susceptible and less susceptible plants within a crop we are able to identify morphological as well as chemical traits related to plant resilience against pests and diseases.

We, subsequently, apply this knowledge in three areas: ***development of resilience markers, development of green plant protection products and targeted steering of resilience traits by light, microorganisms and elicitors to make susceptible plants less susceptible.*** In this way we contribute to a sustainable and integrated manner of pest and disease control in protected crops.

Pollination

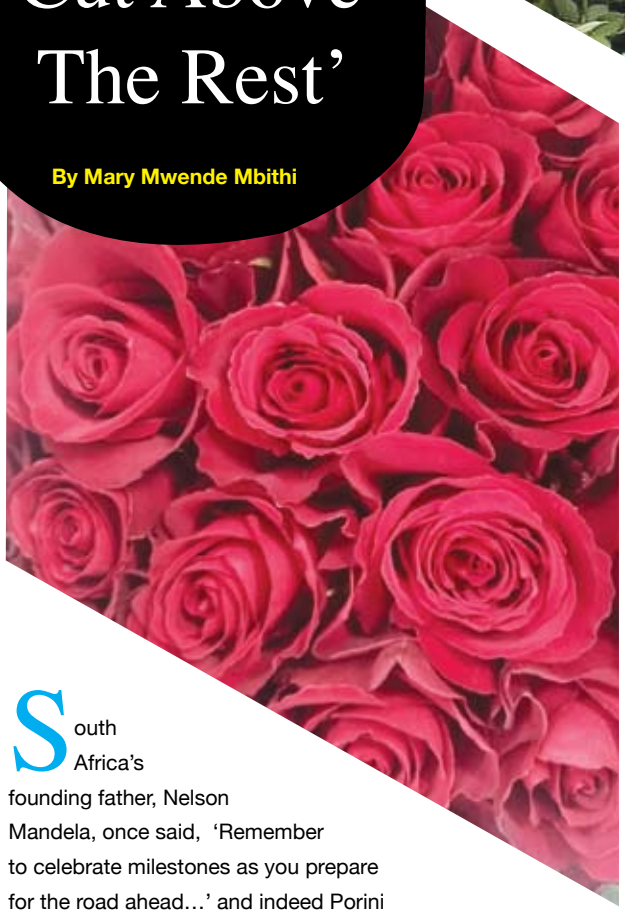
Pollination plays a crucial role in the production of vegetables and soft fruit crops. Good pollination ensures higher production and higher fruit quality. Bumblebees are successfully used in tomato cultivation.

Pollination is not yet optimized in soft fruit cultivation. Also bees are used there in addition to bumblebees. Both perform erratically on dark days and at low temperatures in the winter period. With changing cultivation conditions, such as fossil free cultivation, the use of LED lighting, energy screens and colder greenhouse climate, the currently used pollinators are struggling. That is why it is very important to introduce pollinators that are better adapted to changing conditions in greenhouses. By using multiple pollinating insect species that can complement, pollination can be optimized.

Courtesy: Wageningen University.

Porini Premium Flowers: 'A Cut Above The Rest'

By Mary Mwende Mbithi



Mr. Sakthivel - General Manager porini Premium Flowers

South Africa's founding father, Nelson Mandela, once said, 'Remember to celebrate milestones as you prepare for the road ahead…' and indeed Porini Premium Flowers has every reason to celebrate as they mark a Decade since the start of operations!

The Inception

Ten years ago, in the peripheral region of Olenguruone, Molo in Nakuru County, what began as a noble idea was ultimately propelled into a reality. The inception of Porini Premium Flowers was a beautiful milestone for the founders of Isinya Roses Ltd, which by then was ten years old having started in the year 2001.

Porini, a Swahili word that means 'wild,' became the little sister to Isinya roses. And just like the wild flowers, 'You must allow yourself to grow in all places people thought you never would;' Porini Premium Flowers has continued to bloom in all aspects, bringing a new face to the flower industry. Last year, Porini turned a decade old, her sister farm Isinya Roses turned two decades old.

Evidently, Porini Premium Flowers demystifies and countermands the axiom that, 'the youth are the leaders of tomorrow'. Presently, there is an apparent touch of youth in leadership right under the competent stewardship of Sakthivel who takes the helm of Porini Premium Flowers as the Farm Manager.

It is vivid that the farm is flourishing, a clear indication that the management is wholly top notch. Despite his youthful age, Sakthivel takes the mantle of this expansive farm depicting an intelligent, brilliant and an industrious servant leader. His astuteness is reflected in his ability to manage a vast flower farm with such unwavering boldness.

As Sakthivel explicates, Porini Premium Flowers has been a blossom of grandeur. It is a prime flower farm in Kenya which was founded with an aim of growing top-tier, consistent and premium quality roses.

Initially the farm spanned to about 26.5 hectares rose farm and a 2 hectares carnations farm that stands at an altitude of 2,865 meters above sea level, thus making it the only farm in Kenya at such a high altitude. Porini is renowned for long stems and large blooms.

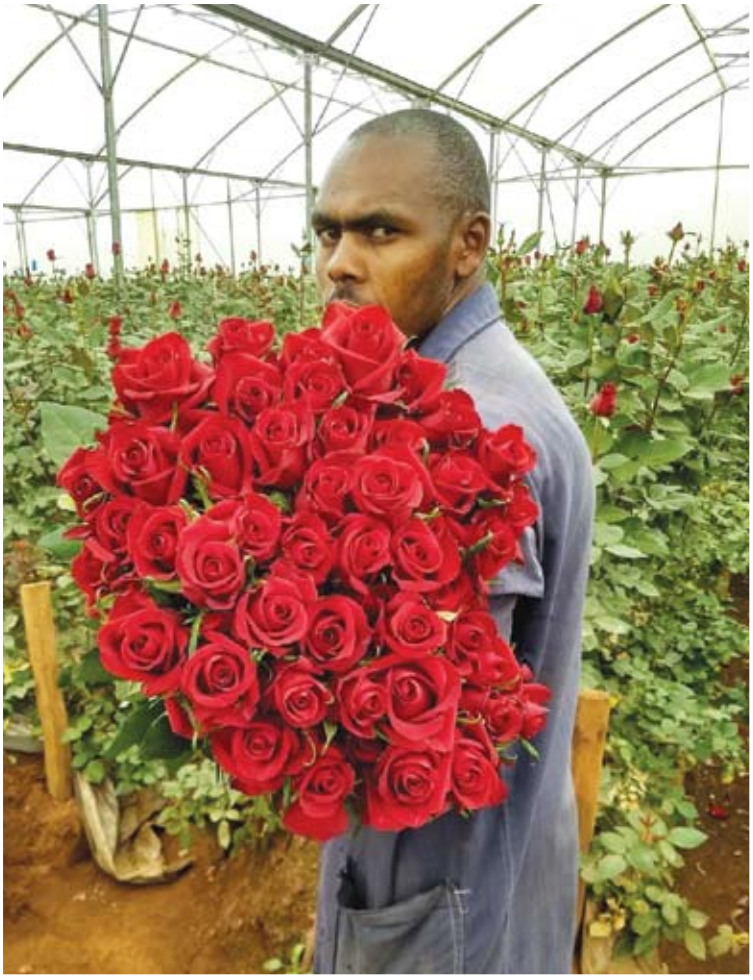
As of now, the farm covers 40 hectares; with 60% of it under Red Roses and 40% under rainbow coloured Roses. Plans of expansion in the coming years are still underway which will include diversification to fruit farming i.e. (blueberries-4ha and Avocado- 45 ha).

Why Molo was Ideal to Set-Up Porini Farm?

According to Mr. Sakthivel, Molo was an ideal place for the flower farm because the land was easily available and cheap. It was also a virgin land with vegetative soils as well as natural light all year round.

The land was also located near a perennial river thus availability of enough water. With an altitude of 2,865 meters above sea level, it was ascertained that Roses grown at high altitudes had a much longer growing cycle than those cultivated at lower altitude, up to 15 weeks as opposed to eight, so it was ideal for the long-stemmed varieties with big heads.

Again, the cold nights meant that you get a lot of bicolours, with contrasting hues on the edges and the insides of petals, which are very sought after in certain markets.



Porini Premium Flowers has been a blossom of grandeur. It is a prime flower farm in Kenya which was founded with an aim of growing top-tier, consistent and premium quality roses.

Operations

Porini Premium Flowers has laid out universal responsibility including management, guidelines on GAPS, minimal use of pesticides and fertilizers, environmental policy, social responsibility as well as staff welfare.

The farm undertakes regular in-house audits in order to identify and assess any risk on constant basis and arrange a time bound action plan.

Spraying

Porini Premium Flowers adheres to the overall objective of reduction of pesticide usage and responsible usage. This is done through the predetermined guidelines in the company's policy and statutory regulations. Application of pesticides is determined by scouting and identification.

Spot spraying with the environmentally-friendly pesticides unlike blanket spraying is observed. There is practice of remedial measures accurately and timely in crop protection to reduce the effects to the environment. Scouts are taken through an in house training to keep them in the know-how of all the diseases and pests found in cut flowers.

For safety, spray application and implements are well taken care of through

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sustainably. This is achieved through, installing water meters, rotors, sprays, valves and central control systems, to offer a range of technical enhancements for improved water management. Spray heads and valves have water saving regulators. Moreover, Porini Premium Flowers collects all rain water in a dam.

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correct calibration to ensure that chemicals are applied at recommended rates. During spraying, it's mandatory for sprayers to dress in pertinent protective gear such as goggles, respirators, impermeable gloves, overalls, gumboots and headgear.

Nutrition

Porini Premium Flowers is geared towards chemical and fertilizer cutback as well as better flower quality through water conservation techniques Feeding is done as per requirement.

Chemical Storage

Porini uses a number of chemicals and fertilizers. Handling these fertilizers determines their quality and effective usage. The operational policy is "First in First out" to ascertain that expired chemicals are excluded for use.

Water Usage

Water is the heartbeat of the flower sector. Production of quality flowers requires one to use water

Grading

This is a very fundamental part of the quality control of the flower production. In this stage, flowers are graded according to their quality before being packed for export. Poor quality flowers are discarded as part of waste.

Waste separation and Re-use

There are five major sources of Flower waste grouped as follows;

- The crop residue that are composted and used as manure on the farm.
- The polythene material that makes the greenhouses that are sold to a NEMA approved contractor for recycling.
- The drip irrigation tubing, which are also sold to contractors for re-use.
- The chemical containers, which are hazardous in nature, they are sold to Environmental and Combustion Consultants Ltd.
- The waste papers from office are sent to recycling companies.

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QUALITY GUARANTEE

Switch® is a combination of two active ingredients with contact and systemic properties for the control of Botrytis (Grey Mold) in ornamentals, which guarantees the health and quality of your flowers.

- *Highly effective against Botrytis resulting in reduced number of spray applications and saves money.*
- *Attacks Botrytis at four different stages in the pathogen life cycle, providing long-lasting control.*
- *Safe to beneficials and a perfect fit in IPM programs.*
- *Convenient pre-mix with Inbuilt anti-resistance strategy due to two different modes of action.*

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www.syngentaornamentals.co.ke
Twitter: @SyngentaOCKE
Youtube: Syngenta Ornamentals East Africa

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Environment

Porini Premium Flowers ensures the safety of their operations to the environment. They ensure continuous improvement on the impact of environment by operations and processes.

Therefore they have developed innovative products and processes that have less impact on environment. This is accomplished through, reducing waste, conserving water and energy and exploring opportunities for recycling, in order to reduce and prevent pollution.

To attain these, the farm evaluates the environmental effects from the new and modified processes at design stage. The estimations cover wholly the life cycle. They ensure that environmental incidents are reported, investigated and remedial measures put in place.

The farm monitors and operates within legislative requirements and standards by ensuring their environmental objectives, targets and performances are periodically reviewed. They also encourage their suppliers to develop environmentally superior Processes and cooperate with other members of the supply chain to improve overall environmental performance. Porini has also planted a forest as a way of environmental.

Marketing Strategy

Porini grows 16 varieties of T-Hybrid Roses (60% Red Roses and 40% Rainbow colours Roses). They grow Premium Roses of about 6.5+ cm -7cm with stems of about 50cm – 100cm. Porini is at 60% direct market and 40% auction market. According to Mr. Sakthivel, Porini Premium Flowers main market is in Australia, but also exports to Russia and the Gulf.

Human Resource

Porini Premium Flowers values their staff and is committed to continuous training and investment in their development. They are well packaged with incentives, housing allowance, medical care and other welfare facilities.

Porini has created jobs both directly and indirectly as they purpose to offer a safe, hygienic and healthy working environment. They also provide adequate and appropriate protective gear.

Those among the staff who work in the cold rooms and spraying have their heavy jackets. Upon engagement all sprayers undergo a cholesterol level test and regular others after hire. Sprayers are interspersed regularly for health purposes. They also undergo regular internal and external trainings.

Corporate Social Responsibility (CSR)

Just as the maxim that, 'Businesses cannot be successful when the society around them fails,' Porini Premium Flowers is actively involved in CSR. The community is reaping from the services rendered by Porini Premium Flowers. According to Sakthivel, the farm has so far planted numerous trees (about 50%) around the farm which have become home to varieties of birdlife, adding a natural life to the farm. The locals

Flower Day At the Dubai Expo

Kenya prides herself of a blooming flower sector and partnered with fourteen (14) pavilions at Expo 2020 Dubai to distribute one million branded red roses this Valentine's Day as the world celebrated love the Kenyan way: "From Kenya with love."

The pavilions distributing Kenyan flowers included Sudan, Chile, Nigeria, Luxembourg, Madagascar, Philippines, Dubai Cares, San Marino, Marshall Islands, Malaysia, Lesotho, Mexico, Bhutan and Malta.

Top world flower exporter

Kenya is Africa's lead exporter of flowers and ranks as the fourth largest exporter of flowers globally behind Netherlands, Colombia and Ecuador.

The most significant markets for Kenyan flowers are the European Union, United States of America, United Kingdom, Russia, Australia, Asia and Africa.

Kenya is the lead exporter of cut flowers to the European Union (EU) with a market share of about 38%. Approximately 50% of exported flowers are sold through the Dutch auctions, although direct sales are growing. Kenyan flowers are sold in more than 60 countries.

The main flowers grown in Kenya are roses, carnations, alstromeria, gypsophilla, lilies, eryngiums, arabicum, hypericum, statice, and a range of other summer flowers.

According to the Kenya Flower Council, Kenya's flower exports have grown in volume and value over the years with roses having the most demand worldwide.

The demand for flowers has especially grown rapidly in United Arab Emirates, Germany, Saudi Arabia, China, Oman and Kuwait. These are new markets that Kenyan exporters are considering for enhanced export trade.

In the United Kingdom, supermarkets are the main flower outlets. Over 25% of exported flowers are delivered directly to these multiples, providing an opportunity for value addition at source through sleeving, labelling and bouquet production.

Showcasing Kenya's Trade, Investment and Tourism opportunities at Dubai Expo 2020

Kenya is among the 192 countries which participated at the Expo 2020 Dubai, which has so far attracted 7 million visitors since its opening on 1st October 2021. Kenya is leveraging on this global event to showcase its Trade, Investment and Tourism opportunities to the world, including visitors to the Kenya Pavilion and the UAE business community.

In a bid to position the country as home to the best cut flowers exporters in the world, Kenya ran a campaign dubbed, From Kenya with Love, during Valentine's Day at the Expo 2020 Dubai.

Flower distribution using carts at the Dubai Expo 2020

Kenya distributed about 250,000 or 9.5 tonnes of fresh cut flowers from local growers, as a way of giving consumers from all over the world a chance of experiencing their special fragrances. The participating growers include; Fleur Africa, Tambuzi Farm, Molo Greens, Panocal, Wildfire, Penta flowers, Sian Roses, Nini Limited, Marginpar Group, United Selections, Bliss Flora and Mega Pack (K) Ltd who have donated various varieties of roses and summer flowers, popular varieties in the UAE market.

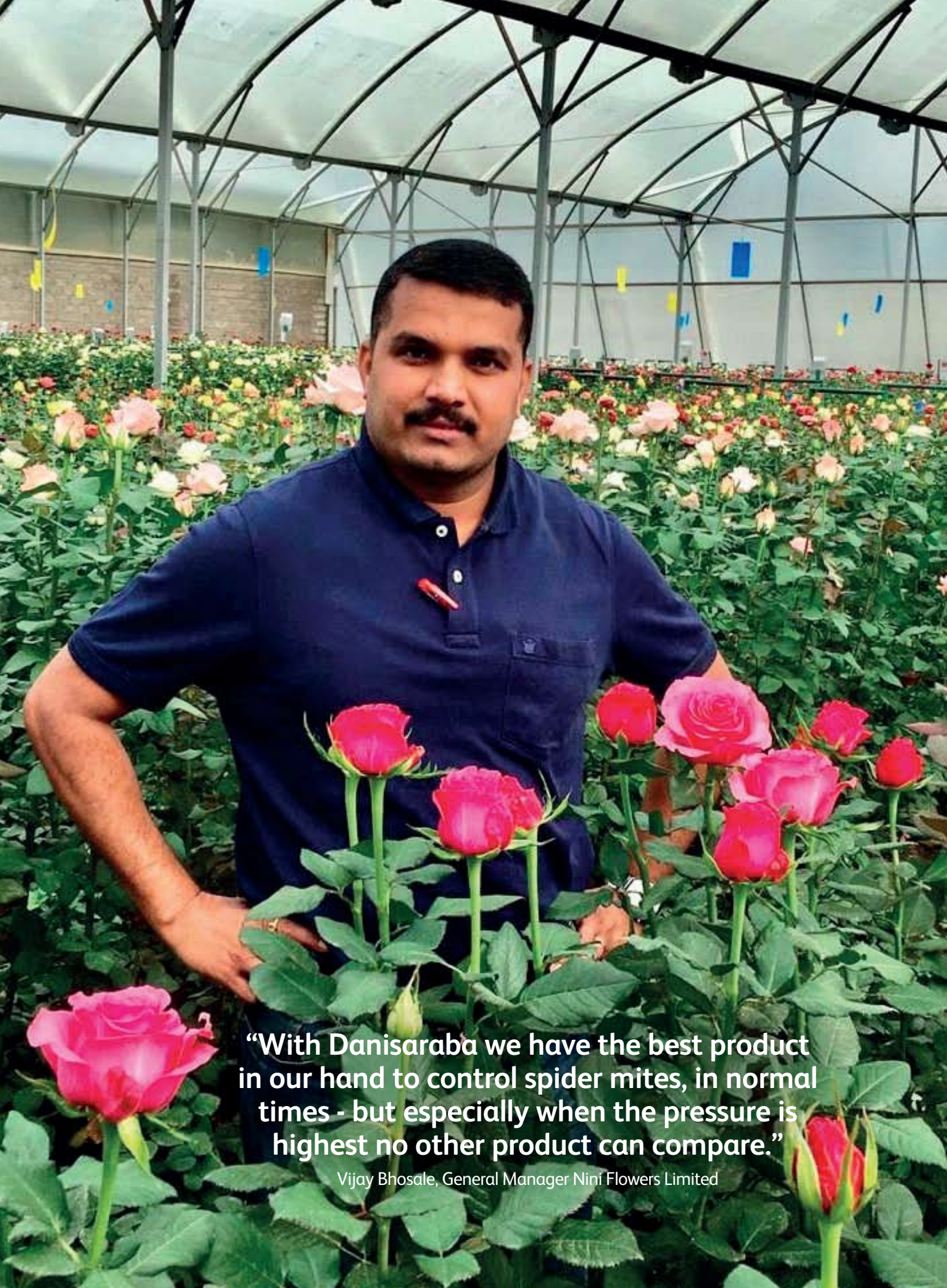
Kenya's flower industry affects over 2 million people

The flower industry has a significant impact on Kenya's earnings and contributes about 2% to the GDP. It is estimated that over 500,000 people depend on the floriculture industry impacting over 2 million livelihoods.

The main flower growing areas are around Lake Naivasha, Mt. Kenya, Nairobi, Thika, Kiambu, Athi River, Kitale, Nakuru, Kericho, Nyandarua, Trans Nzoia, Uasin Gishu and Eastern Kenya.

In August 2021, Kenya exported flowers worth about Ksh.10 billion about 90 million U.S. dollars, a significant increase in comparison to the previous month. The export value of flowers has been fluctuating amidst the Covid 19 pandemic, peaking at approximately 14 billion KSh (129 million U.S. dollars) in January 2021.

SOURCE: http://brand.ke



“With Danisaraba we have the best product in our hand to control spider mites, in normal times - but especially when the pressure is highest no other product can compare.”

Vijay Bhosale, General Manager Nini Flowers Limited

SAY 'GOODBYE' TO MITES WITH DANISARABA® 20 SC.

Spider mites are an economically important plant feeding pest in the horticulture industry. They cause damage by sucking sap from the leaves and severe infestation may render the crops unsellable.

Spider mites are members of the Acari (Mites) family Tetranychidae that are mostly found living on the undersides of plant leaves. They are small pest of less than 1mm in size with one female capable of laying up to 20 eggs a day and can live for 2-4 weeks laying hundreds of eggs. There are about 1200 species of Spider mites with the two spotted red spider mite (Tetranychus urticae) being the most common in ornamental plants.

Life cycle

The life cycle of Spider mites is influenced by climate with hot and dry conditions being favourable for reproduction and development. The rate of Mites production accelerates at optimum temperatures and as a result allows them to become quickly resistant to pesticides.

Temperature	No. of days to complete life cycle
20°C	17 days
25°C	14 days
30°C	7 days

Table 1: Effects of temperature on life cycle of Spider Mites.

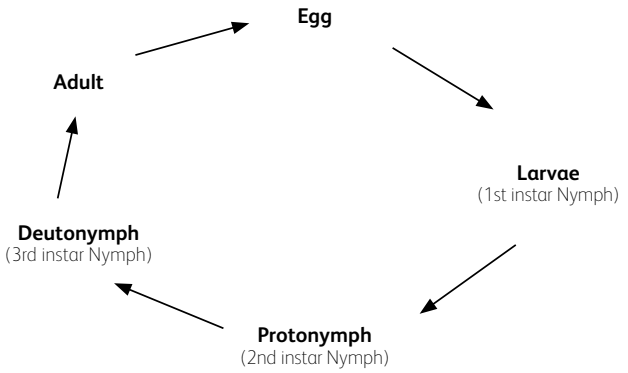


Figure 1: Life cycle of a mite.

Scan to see our DANISARABA® 20 SC movie.

Several methods of managing the pest are available to the grower. Cultural, Biological and Chemical control are the methods used to manage the pest. Use of predatory mites such as Phytoseiulus persimilis and Neoseiulus californicus has become common with many growers. As such, when choosing a Miticide to spray, it is always important to consider compatibility. Cyflumetofen, the active ingredient in DANISARABA® 20 SC is a novel acaricide developed by OAT agrio Co ltd. The mode of action of Cyflumetofen is by inhibiting mitochondria complex II electron transport.

Why DANISARABA® 20 SC?

- Effective on all life stages of mites.
- Effective solution against Tetranychus spp, Panonychus spp and Oligonychus spp.
- Important tool for IPM program - *It is highly compatible with beneficial insects, natural enemies and predatory mites* - which are important tools in IPM programs.
- New mode of action - Useful as a resistance management tool.
- Quick knock down with long residue effect.
- Environmental friendly.

Usage

- 1 Litre per Ha (1ml/L).
- Allow for 14 - 21 days between applications.

Please order DANISARABA® 20 SC via your sales managers from Elgon or Chrysal. For more info on our services and products, please contact us at: info@chrysal.co.ke

ELGON KENYA
TRANSFORMING FARMS & LIVES THROUGH TECHNOLOGY

CHRYSAL

Ruth Vaughan

Plant Nutrition Basics in Floriculture

Plant nutrition is the study of the chemical elements and compounds necessary for plant growth, plant metabolism and their external supply. Without proper plant nutrition, plants tend to die off or produce little or no yield.

In my line of work I visit hundreds of flower farms a year; the flourishing, the ticking over, and the ones in dire straits. A lot of my more demanding work is dealing with farms that suddenly run into problems. “Ruth, please come and visit our farm as soon as possible, our production has suddenly dropped to half” is a common call. My advice to flower farmers on the critical issues in plant nutrition in floriculture would be as follows:-

Start with the Basics

Start with the basics, understand your soil and water and know what you are dealing with. A solid ‘risk’ assessment before you even buy the farm is recommended.

- Dig soil pits to look for soil layers, compaction zones, soil depth, underground water or solid rock.
- What is your soil texture? Is it very sandy or a heavy clay? Is the soil type even across the farm? (Look at the existing plants / soil colour / soil texture)
- Where does the water go when it rains? Will it flood your farm or the neighbours’ farms?
- Does it hail in this area? Do you need to take special precautions with plastic / hail net / gutters?
- What are the day/night temperatures and what is the annual rainfall? Are your crops suitable for the climate? Will you have enough water?
- Look at the aspect and slope of the farm, will you need special drip lines, non-return valves, air release valves?

Do a complete soil analysis, soil texture analysis, nematode count, pathology screen and irrigation water analysis. Now you know what you are dealing with and can work out the economics. It’s better to get a shock now than after your investment has already been sunk in land & greenhouse infrastructure.

Know Your Soil

Before planting in the soil, balance the cations, pH, organic matter and phosphorous levels by adding scientifically calculated soil corrections from the complete soil analysis. Deep rip the soil to break up compaction zones and mix the soil correction in well. Do not turn the luscious topsoil over and bury your existing organic matter and microbes.

Good land preparation and soil correction will hold you in good stead further on down the line, when your beginner’s luck is over. Put in place an annual SOIL HEALTH PROGRAM – to analyze and adjust cations, pH and organic matter for maximum soil & plant health and fertiliser efficiency.

Buy a fertigation system that is suitable for your water quality and can handle your gradients and can deliver the maximum water requirement on the hottest day. Plan a proper fertigation program based on the plant size, plant type, production, water quality and soil type. Take quarterly soil samples for a 1:2 SGF analysis so that you know what’s happening in the soil and can deal with it before it becomes a problem.

Back this up with leaf analysis to

make sure there is no 'hidden hunger' in the crop limiting your production. Identify problems early before they hit your bank balance.

It's better to get a shock early enough than after your investment has already been sunk in land & greenhouse infrastructure

Media, Nematode & Pathogen Analysis

Before planting in media, do a media analysis, nematode count and pathogen screen. The certificate of testing that comes with your coco-peat does not account for the conditions the coco-peat has traveled or been stored in. The fine pumice or gravel from the nearby quarry could have sodium, toxic metals, silt and nematodes.

Do bi-annual nematode counts. You can't see nematodes with the naked eye, and by the time your plants go yellow, you will have lost much of your production and quality. It is also easier, cheaper and more environmentally friendly to treat low nematode levels with biological products. Once levels get out of control you may have to resort to more toxic and persistent chemicals. Nematodes severely affect plant nutrition and disease pressure.

Know Your Water

Water testing is crucial. Borehole water tends to have a more constant quality and tests are advised twice a year. Surface water quality can vary dramatically depending on rainfall and evaporation. Rain water is best – plan to catch as much of this as possible. Water quality has a major impact on your plant production and health and the way you manage your irrigation. Common problems in Kenya are high sodium and high bicarbonates.

High Sodium in Water

If your water has high sodium reverse osmosis can reduce the sodium, this is expensive to install and maintain. Water can also be mixed with rainwater to bring the sodium down. If you use high sodium water you should monitor the sodium levels in the soil. Plants can grow along happily with a small amount of sodium in the soil but when it reaches a critical level you will get a rapid decline in production and plants will become very susceptible to diseases. As the sodium levels build up the soil structure deteriorates which becomes very difficult to fix.

Work with humic acids and calcium products in conjunction with leaching to flush the sodium out. This is where a good soil survey and land preparation hold you in good stead. Water saturated soil, bedrock, compaction layers and unbalanced cations will all impede successful leaching of saline soils.

High Bicarbonates in Water

Water can have high bicarbonates these bind with calcium and magnesium to create a free lime deposit in the soil that raises the soil pH and locks up phosphorous and micronutrients Once the free lime has built up in the soil, it can be very hard to deal with. Much better to treat the problem at source and acidify the water.

Acidification can result in an increase in nitrates from nitric acid or phosphates from phosphoric acid and the fertigation program should be adjusted to balance these. Quarterly drip analysis will check the Electrical Conductivity (EC), pH, nutrient, and bicarbonate levels of your drip water

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and ensure that everything is going to plan. On-farm daily EC and pH measurement are advised.

Sample irrigation water analysis report indicating irrigation water sample with high sodium & bi-carbonate levels

Many farms have tripped up due to water quality and fertigation system faults that were not picked up soon enough.

A very common cause of yield and quality collapse is water. Some farms very admirably collect rainwater, which has low salts and is fairly neutral. When the rainwater runs out the farm then changes to borehole water which may have a high EC, high sodium and high bicarbonates. As soon as the water source changes the fertigation recipe should change. By the time your plant shave gone yellow – you are already on a down hill production curve.

Irrigate Sensibly

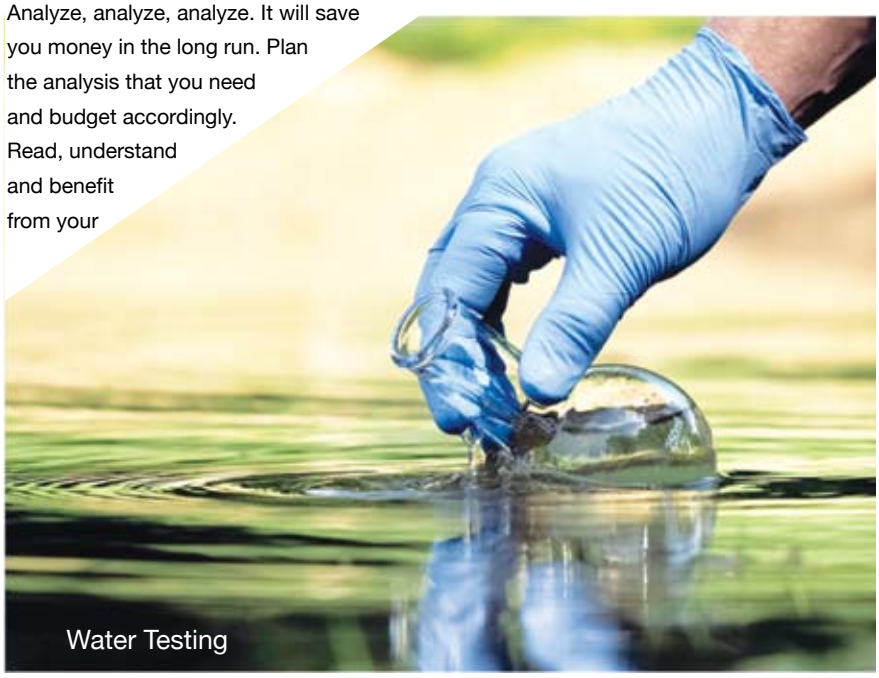
Get a soil water meter, or go around the farm often with an auger to check soil moisture levels. Water you see on the surface is not what the roots see underground. Over and under watering affect nutrient uptake and production.

Over-watering kills your plant roots, microbes and soils and causes leaching and loss of fertilisers. It can cost you unnecessary money and pollute the environment. Anaerobic cold wet soils really increase disease pressure on your plants. Sitting water on the soil surface (even for a few minutes) can spread diseases very fast through your crops.

Underwatering, which is very uncommon, causes plants to wilt, which causes tissue damage and secondary infections (botrytis and downy mildew).
Be especially vigilant on soil moisture when the weather changes. We are on the equator and can have a very hot day in the middle of the cold season, where the water demand of the crops shoots up for a few hours and plants wilt. Like wise we can have a few rainy days in the middle of the hottest season, the plants water requirement shoots down and the soils get waterlogged.

Take the Guesswork Out of Farming

Analyze, analyze, analyze. It will save you money in the long run. Plan the analysis that you need and budget accordingly. Read, understand and benefit from your analysis results. Don't file them in the drawer until the next audit. Audits are meant to guide you and there is a reason they recommend you do these analysis! If you don't understand anything, just ask! Or get a professional consultant in.



Water Testing

Seek Independent Analysis and Advice

The iron chelate salesman will most probably find an iron problem in your crop. The person selling nematicides will always find a few nematodes that need treating. That's their job.

Read and Follow Dosing Instructions

The suppliers have done extensive tests on their products before they write the labels and take their products to the market. A little bit of product used properly can have a brilliant result. Don't be tempted to over-use or over apply products. I have seen some catastrophic results from product over use. Ditto underuse!

If all goes well – analyze so that you know what you are doing right and can do it again (and again and again….) If all goes wrong – don't over complicate things, go back to the basics, call in the professionals, analyze, and recover faster!

About Ruth

Ruth Vaughan is the Technical Director at Crop Nutrition Laboratory Services Ltd. (CROPNUTS). Ruth is also a contributing author to Kenya's leading horticulture magazines such as the HortFresh Journal, HortiNews and Floriculture. Ruth is a great believer in soil health, organic matter, biochar and carbon sequestration as a way to alleviate climate change and increase food security. Loves visiting farmers and seeing all the different farming methods.

The Struggles of the Kenya Cut Flower Sector


Fertilizer

By Mary Mwende Mbithi

Though a happy day painted Red in colour, with overwhelmingly high expectations, this year's Valentine's Day might not have been so rosy for flower farms in Kenya. Like it has always been the norm, most flower farms have always looked forward to cash in on the day, but this year there was nothing to smile about.

Having experienced the biting jaws of the pandemic and almost shaken to its roots, the flower industry is struggling to resuscitate amid prevailing challenges. The Kenya Flower Council (KFC) in a statement said that the adverse effects of the pandemic saw the country's export of flowers go down by 10% in the year 2021. As of now, the industry is almost on its feet despite hitches here and there.

Besides the lockdowns and curfews that almost crippled the industry during the onset of the pandemic, new setbacks have continued to add salt to the injury. According to the Kenya Flower Council (KFC), Kenya recorded a decline in flower production with the country producing 160,000 tonnes of flowers last year (2021) compared to 173,000 tonnes in 2020.

All in all, the government is yet to release the promised Kshs. 1.5 billion stimulus package designated to cushion the farmers from the eventualities of the harsh economic times. The cost of farm inputs has also shot up, making the cost of production a thorn in the eye of the flower industry.

Fertilizer prices too have continued to sky rocket whereas the European Market flower prices have remained stagnant for a couple of years. This leaves the farmer with high production costs thus affecting the profit margins immensely.

The soaring freight costs as well as shortage of cargo planes and space is another drawback in the cut flower sector. According to KFC there is a rising new demand for flowers though farmers cannot clinch the daily targets due to freight issues. Growers can only manage to export 60% of the market weekly demands. KFC CEO, Clement Tulezi said that the sector is engulfed by a myriad of challenges in export of flowers to their destination markets. "We are facing a major challenge in exports of flowers due to lack of cargo planes and this has pushed the freight cost from 1.9 dollars to 5.8 dollars per kilo," he said.

Similarly, double taxation and introduction of new levies have also impacted the flower industry. Taxation by the national as well the county governments has actually ripped off the profits of the industry with new taxes being introduced day in day out, Farmers have had to pay through the nose as 45 different levies to national and county governments such as the offloading fee in Nairobi have been stipulated.

Lest we forget, the flower industry is a key employer with around 500,000 employees and over a million suppliers as well as a vast market share that spans around the globe. Therefore it is better to arrest the situation before things get out of hand for this promising sector.

Effects of Russian–Ukraine War to the Flower Sector

By Mary Mwende Mbithi

With the industry just recuperating from the ravages of covid-19 pandemic, another setback has just hit the global flower industry. The war in Ukraine is threatening further disruption to an already overstretched global supply chain. The two countries may not only account for a small proportion of the imports of major growing nations but also account for a great percentage of supply of agricultural input such as fertilizers.

Flowers-Expo-Moscow, Russia

Fertilizer is majorly produced in both Ukraine and Russia. More disruptions are likely to set in and further strain an already struggling sector, where the cost of production has been greatly high due to existing cost of fertilizers in Kenya. This will in turn decrease the growers' profit margins.

The international Women's Day is just around the corner and the flower industry is overly filled with high expectations to cash in on this remarkable day created in the 1920s. Women's Day originally was an opportunity to praise Soviet women and their role in the state.

The national holiday is not only a celebration of Russian women but also big business for suppliers and sellers of flowers. Last year, Russia imported thousands of tons of flowers in all shades and colours ahead of the holiday, according to the country's customs office. The top four countries of origin of the flowers were the Netherlands, Ecuador, Kenya and Columbia.

However, the flower industry is uncertain about the export of flowers to the conflict zones bearing in mind that the flower market spans across Russia, Ukraine and the neighbouring countries like Latvia, Belarus, Estonia and Lithuania.

The suspension of air traffic in both Ukraine and Russia simply means no exportation of flowers to markets in both countries. Though most flowers for this specific day had already been sent before, the issue of payment is also of concern to flower growers with the exclusion of Russian banks from the swift payment network.

Adverse economic effects of the war have also seen the stocks tumble in recent days mounting pressure on inflation already squeezing the stumbling global economy.

In Kenya, a number of growers export to Russia with one grower almost exclusive. Speaking to Floriculture Magazine, growers confirmed this will not only affect the already exported but also all year round market. The Russian market is famous for the large stem and big headed premium roses which may force those growing in high altitude to sell them at throw away prices in the other markets.

Again, if most Kenyan flowers miss their target markets in Russia and Ukraine they will eventually end up in the EU market which is also a flower destination for Kenyan grown flowers thus causing a market saturation which in turn causes decrease in prices hence losses to the growers.

Effects of Russia and Ukraine conflict will be greatly felt by suppliers and supermarkets across Europe in the coming weeks. On the other hand, Russia and Ukraine supermarkets as well as retailers that supply flowers to the end consumer have also been affected as fears of a protracted armed conflict escalate. This means that the bouquets will not reach the end consumer.

If this conflict persists, effects will be felt on the entire supply chain because there will be need to optimize their results through adjusting the purchasing price from their suppliers who are feeling the heat due to high costs of production and transportation resulting from soaring energy and fuel prices.

Consequently, growers are calling for an amicable solution to enable them continue with business as usual.

Managing Pesticide Resistance

Pesticide resistance can become a problem when the same chemicals are used over and over to control a particular pest. After a period, the pest may develop resistance to a chemical so that the chemical no longer effectively controls the pest at the same rate, and higher rates and more frequent applications become necessary until eventually the chemical provides little or no control.

The best way to manage pesticide resistance is to focus on **three strategies: avoid, delay, and reversal**. Avoid the development of pesticide resistance problems with the use of Integrated Pest Management (IPM) programs, which reduce reliance on chemical control. Delay resistance by using pesticides only when needed, as indicated by monitoring, and when pests are at a susceptible stage.

Delay can also be achieved by using pesticides from different chemical classes (e.g., organophosphates, carbamates, pyrethroids, biologicals, etc.) and rotating their use. Reversal of some resistance can occur by allowing time between applications of a class of pesticide to permit resistant populations to become diluted by pesticide-susceptible individuals. Key elements of resistance management include minimizing pesticide use, avoiding tank mixes, avoiding persistent chemicals,

and using long-term rotations of pesticide from different chemical classes.

Minimize Pesticide Use

Minimizing pesticide use is fundamental to pesticide resistance management. IPM programs incorporating pest monitoring have demonstrated 25 to 50% reduction in pesticide use with an increase in crop quality. Ask your IPM Consultant for information on setting up and maintaining an IPM monitoring program. Such a program will help determine the best application timing for pesticides (when they will do the most good), thus helping to reduce the number of applications.

The use of nonchemical strategies, such as pest exclusion (e.g., screening), host-free periods, crop rotation, biological control, and weed control may reduce the need to use chemicals and consequently slow the development of pesticide resistance.

Avoid Tank Mixes

Avoid combinations (mixes) of two insecticides or miticides in a single application. Especially avoid mixing two insecticides with the same mode of action, such as the organophosphates, acephate and malathion; this increases selection for resistant pests. Such a 'super dose' often increases the chances of selection for resistant individuals.

In some cases, mixing pesticides from two different classes provides superior control. However, long-term use of these two-class pesticide mixes can also give rise to pesticide resistance, if resistance mechanisms to both pesticides arise together in some individuals. Continued use of the mixture will select for these multiple-pesticide-resistant pests.

In specific situations the simultaneous application of two different types of chemicals may be necessary, but even in these cases tank mixes should be avoided. For

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example, insect growth regulators (IGRs) only control the immature stages of insects. If the adult stage must also be controlled, it will be necessary to apply another insecticide. Rather than applying an adulticide in the same manner as the IGR, however, choose a formulation that requires a different type of application. For instance, if the IGR is applied as a spray, it would be preferable for the adulticide to be applied as an aerosol or smoke with rapid kill of the adults and little residual that might select for resistance buildup in surviving immatures.

Avoid Persistent Chemicals.

Insects with resistant genes will be selected over susceptible ones whenever insecticide concentrations kill only the susceptible pests. An ideal pesticide quickly disappears from the environment so that persistence of a 'selecting dose' does not occur. When persistent chemicals must be used, consider where they can be used in a rotation scheme to provide the control needed and with a minimum length of exposure. One example of a persistent material that must be carefully timed to avoid prolonged exposure is the use of imidacloprid for control of whiteflies.

Application of this material early in the crop prolongs the exposure of the whitefly population to this material. It may be best to use natural enemies and/or insect growth regulators early in the crop followed by imidacloprid, if needed. Applications that are too late do not allow the plant to absorb the material to provide effective control. The best time to apply this material is not later than 3 weeks before poinsettia color initiation.

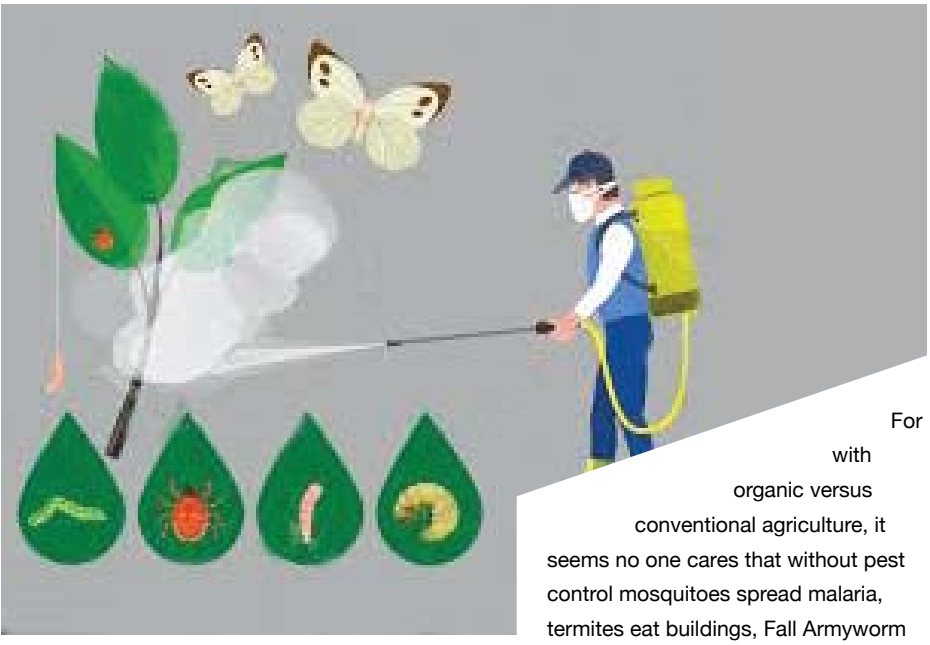
Use Long-term Rotations.

Resistance management strategies for insects, weeds, and fungal pathogens all include rotating classes of pesticides (e.g., pesticides with the same mode of action such as pyrethroids, organophosphates, carbamates, etc.). Pesticides with the same modes of action have been assigned the same group number by their respective pesticide resistance action committees (IRAC [Insecticide Resistance Action Committee], FRAC [Fungicide Resistance Action Committee], and HRAC [Herbicide Resistance Action Committee].

These group numbers have been included in the treatment tables of this guideline to help clarify when rotating pesticides, which ones can be rotated. However, the strategies used in rotations differ. For example, with fungicides, it is suggested that classes be rotated every application. With insecticides, a single chemical class should be used for a single generation of the target pest followed by a rotation to a new class of insecticide that will affect the next generation and any survivors from the first generation. Longer use of a single chemical class will enhance the chance of resistance since the survivors of the first generation and the next will most likely be tolerant to that class. Rotating through many chemical classes in successive generations will help maintain efficacy.

If there is only one chemical that is effective against a pest and other available products are only marginally effective, a good strategy to follow is to use the marginally effective materials at times when pest pressure is less severe and to reserve the effective material for those periods of time when control must be most effective.

Is the Pesticides Ban Bill Well Thought?



If it is possible to learn from the mistakes of others, a moment has come for our parliamentary committees and the Ministry of Agriculture to take a good look at Sri Lanka. For, what better way to implement great policies than by seeing their impact beforehand?

And, as the Kenyan establishment continues to flirt with the idea of banning most of the country's pesticides, it now has a full example of a country that did it. For, in April last year, Sri Lanka became the world's first organic-only nation, by banning all agrochemicals.

So no one needs to argue anymore about what it does to agriculture stopping the medicines, the dips, the weed control, or the insecticides. Now, we can see it, as Sri Lanka handles a consequent and colossal food crisis. This is particularly important, as it clearly cuts no ice pointing out the obvious outcomes of slashing our agricultural production by an estimated 40%.

For with organic versus conventional agriculture, it seems no one cares that without pest control mosquitoes spread malaria, termites eat buildings, Fall Armyworm and locusts eat crops, aphids spread viruses that kill plants, and weeds choke 50% of yields.

It matters not that keeping one hectare of land weed-free by hand takes an estimated 126 hours a year. It doesn't matter that rigorous studies across the entire globe have never found any organic model that can produce as much food as conventional farming.

In the US, Department of Agriculture data shows that organic farms produce 67 percent of the yield of conventional farms. Worse, German organisations have been funding the anti-pesticide campaign in Kenya, yet organic farmers in Germany harvested an average of 48 percent of the produce their conventional peers did, from 2012 to 2019.

So, is that our best future, to cut our yields to 48 percent? Putting Kenya on that path will deliver food not here for eating, extra imports needed pushing down the value of the shilling and making every import more expensive and smallholder incomes lost, destroying school fees and personal consumption across 70 % of the population, thereby firmly ensuring it affects everyone else too.

See what pesticide ban did to Sri Lanka,which is exactly what is now playing out in Sri Lanka. Indeed, by last month, the New York Times headline was "Sri Lanka's Plunge into Organic Farming Brings Disaster".

Yet, still, we have no impact analysis on banning pesticides which have, additionally, never been proven harmful: and I say that fully aware of the foreign-funded slogans saying they are killing people. The missing pieces are only scientific evidence and an information regime that penalises NGOs for publishing completely baseless claims.

Do we really want to get into the same kind of learning as that, to go ahead regardless, and to pay the price over and over? Or could we study what it is about organic farming that means it produces so much less, and weigh up genuine science-based health risks, versus the health risk of starvation and newly extreme poverty?

Interestingly, as the use of chemicals is being lauded to have helped in the containment of desert locusts, Tuta Absoluta, etc in many counties, Gladys Shollei, the Uasin Gishu County Women Rep, has petitioned the National.

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Dr. Esther Kimani,
CEO PCBP

Assembly, seeking a total ban on agrochemicals that have been banned in the European Union (EU).

In the petition, the lawmaker argues that the volume of imported pesticides, herbicides and fungicides have more than doubled in four years, posing a risk to health and the environment.

Sources from the Kenya Plant Health Inspectorate Service (Kephis) and Route to Food Initiative confirmed that the volume of imported insecticides, herbicides and fungicides has more than doubled from 6,400 tonnes in 2015 to 15,600 tonnes in 2018.

Intensive agricultural production And, the demand for pesticides has grown because of increased, more intensive agricultural production and the emergence of new pests and diseases.

“The world is struggling to feed the growing population and here we are pushing for the ban on agrochemicals which are technologies being used to prevent pests and diseases. If we withdraw all the products, you will not manage to produce food crops and control pests among them desert locusts,” Eric Kimunguyi, CEO Agrichemicals Association of Kenya says.

“The issue of whether to withdraw pesticides use is eliciting varied reactions but will have a very negative impact on the economy. If we banned those products, Kenya will not afford to feed the population.”

According to him, organic food production alone cannot feed the world. Kimunguyi says it takes 9-15 years for one to have a pesticide product, therefore is not something one wakes up and declares a ban on without scientific backing.

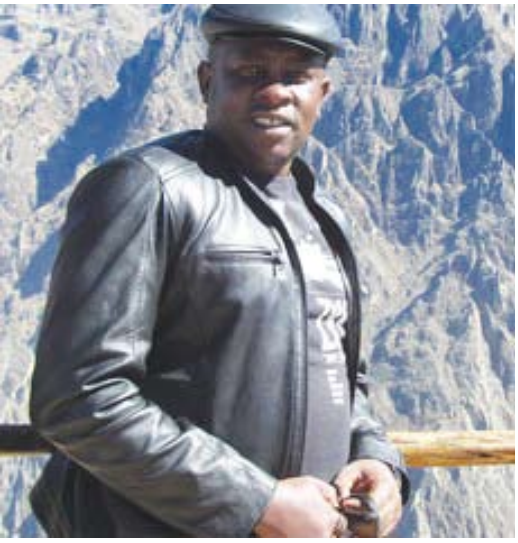
Dr Esther Kimani, the CEO Pests Control Products Board (PCPB), says Kenya cannot do without pesticides. “We are in the tropical climate where pests are in plenty and they can damage crops to a point where you can’t harvest anything,” she explains.

Dr Kimani says when there was outbreak of locusts, it is the chemicals that managed to contain them. She explains that as much as others would want to use biological control products in the management, their mode of control is slow.

Dr Kimani says pesticides will never get out of the market, adding that even European Union farmers still use pesticides. She says: “When the issue of banning pesticides products came up, we informed the industry that we want to start risk assessment processes, because, whatever decisions we make need scientific backing.”

As the pesticides board, she says before any pesticides are registered in Kenya they do a lot of evaluation, including their harm to humans, animals and environment. “That way, we recommend how it should be handled and the information is normally on the label of the pesticides,” she shares.

But what do the farmers say? Onesmus Malinda, says he cannot do without agrochemicals. Malinda, who lives along Kangundo Road,



Dr. Timothy Njagi,
Researcher Tegemeo Institute

Nairobi, says for many years he has planted tomatoes, they are always attacked by among other diseases, Tuta Absoluta.

"Every time I plant tomatoes, I have to buy pesticides to help control diseases and pests in my farm. Without these chemicals, I will not harvest anything," he says.

Gladys Shollei,
Sponsor of the bill

Safe use of pesticides

Dr Kimani says one of the challenges is that farmers don't read instructions when they use pesticides, despite labels clearly stating and guiding how one is supposed to handle them.

And, in case of poisoning what one is required to do. Her advice is, if a farmer gets pesticides that are not labelled, or the label is not legible, they should report. She says the government is collaborating with the industry and others to create awareness on safe use of pesticides.

Dr Kimani says dealing with porous borders is tricky because some agrochemicals that are sneaked into the country can be poisonous or are counterfeits.

"What we do is create awareness amongst farmers at the border. We also collaborate a lot with border management committee consisting of different organisations such as Kephis, public health, customs that can report such cases," she explains.

Ian Shaw, the Managing Director KAPI Ltd, agrees that pesticides have a role in food production. However, the issue is the type of pesticides and level of harm to human and environment that can be permitted. Shaw explains each pesticide is different - some are extremely harmful, others medium and others low level. The focus is to remove the harmful ones and not all.

"There are thousands of pesticides using hundreds of Active Ingredients. If the most harmful Active Ingredients were to be banned, say 5-10 per cent there would still be adequate choice for farmers in terms of alternative pesticides to control pests," said Shaw.

An independent study by Egerton-based Tegemeo Institute of Agricultural Policy and Development shows farmers will suffer losses of crops with the ban on the proposed agrochemicals.

Mr. Eric Kimunguyi,
CEO AAK

"The ban on agrichemicals would reduce crop production, increasing reliance on import. Further, an increase in post-harvest losses are expected due to potential ban, with adverse effects on poor households," says Dr Timothy Njagi, a researcher at the institute.

Dr Njagi advises that instead of a ban, the country needs to consider other options for the safe use of agrochemicals. Kimunguyi says Kenya or even Africa is using five per cent of the total pesticides manufactured across the world.

Beware of your Enemy within your Soils – Soil Nematodes

By Jack Wekesa

Jack Wekesa is the Commercial Agronomist, Nairobi Metropolis Area, Amiran Kenya Limited You can reach him on Cell Contact: +254724350218, Email:jack.wekesa@amirankenya.com

Nematodes which are typically most abundant in upper soil layers where organic matter, plant roots and other resources are most abundant can be very devastating to the farmer. Some species can damage plant roots, stems, foliage and flowers by puncturing the cell walls using their sharply pointed mouths. It is estimated in flowers that 5 % of the Pesticides budget is for nematodes control.

There are over 4,100 species of plant-parasitic nematodes. However, the most economically important nematodes are root-knot nematodes (***Meloidogyne spp***.), cyst nematodes (***Heterodera*** and ***Globodera spp***.), root lesion nematodes (***Pratylenchus spp.***) and the burrowing nematode Radopholus similis. Nematodes are structurally simple organisms, covered by a protein cuticle which acts as a sturdy support and protects them from toxic compounds. It also allows them to increase or decrease in body size. They have cuticle forms that act as sensory organs or participate in the locomotion of nematodes. They are elongated, slender, filiform circular sections, with complete absence of epithelium. The root knot and cyst nematodes are biotrophic and induce complex feeding structures in the roots of their hosts which supply the nematode with a rich and long-lasting food source.

1. Root-knot Nematodes (*Meloidogyne spp.*)

Root-knot nematodes are obligate plant parasites. The genus contains 98 species and they parasitize almost every species of vascular plants.

2. Cyst Nematodes

The cyst nematodes are obligate biotrophs and are of great economic importance throughout the world. The most damaging species include soybean cyst nematodes (SCNs) (***Heterodera glycines***), potato cyst nematodes (PCNs) (***Globodera pallida*** and ***G. rostochiensis***) and cereal cyst nematodes (CCNs) (including ***Heterodera avenae*** and ***H. filipjev***i).

3. Root Lesion Nematodes

There are over 60 named species of root lesion nematodes (***Pratylenchus spp.***) which are distributed worldwide. ***Pratylenchus*** species rank third only to root-knot and cyst nematodes as having the greatest impact on crops worldwide.

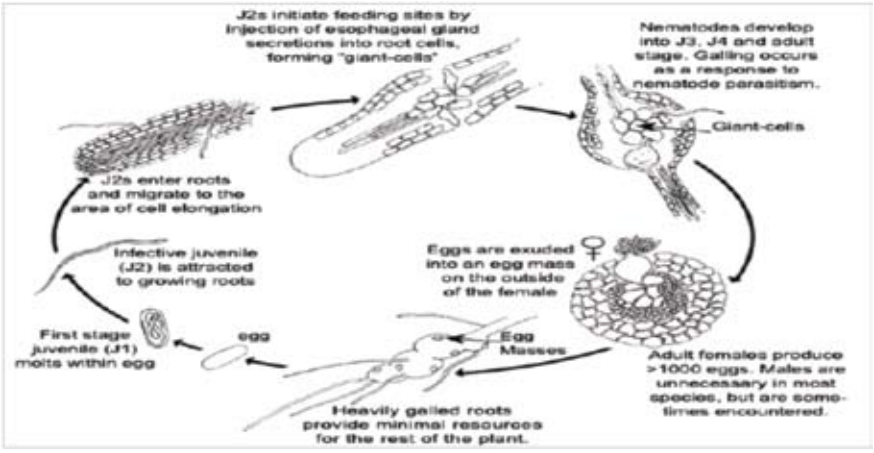
Life Cycle

The life cycle of most plant-parasitic nematodes are similar and start with an egg. The egg undergoes embryonic development resulting in a first-stage (J1) juvenile nematode. Depending on the nematode species, the J1 may hatch from the egg or molt within the egg, forming a second-stage juvenile (J2). The majority of plant-parasitic nematode species will hatch at the J2 stage.

There are four juvenile developmental life stages (J1, J2, J3 and J4) that are separated by molting and conclude with an adult nematode. The complete life cycle from egg to egg requires 3-4weeks depending on the nematode species, the soil temperatures and soil moisture. The reproductive potential of plant-parasitic nematodes in field crops is exponential, with multiple generations during the long growing season. Depending on the species, each nematode female can lay dozens to hundreds of eggs in her life span.

The root-knot and cyst nematodes infect crops at the J2 stage while the female reniform nematode does so at the young adult stage. The J2 hatches from the egg and swim in the moisture layer surrounding soil particles in search of a root. No juveniles or adult males of the reniform nematode have been observed feeding on a plant's root system. The root-knot nematode enters roots

just behind the root cap while the reniform and cyst nematodes enter at any point on the root system. After entering the root, all three species migrate through the root system to the vascular tissue. There, the nematode becomes sedentary and forms specialized feeding sites referred to as giant cells. The giant cells are created by the feeding activity of the nematodes, and they act as a nutrient sink and feed the nematode throughout its life cycle.



Damages of Nematodes

Nematode symptoms can be difficult to detect and may be confused with symptoms of nutrient deficiency. ***Meloidogyne sp***. - a type of root- knot nematode - is a serious pest on roses. The galls it induces on the roots constrict the vascular system blocking the transport of water and nutrients through the plant to the extent that heavily infested plants are often dwarfed with smaller leaves and appear paler than normal. They may wilt and die when exposed to water and nutrient stresses.

Growers are advised to inspect the roots of planting material, even though they originate from a reputable breeder. By doing this, a grower will prevent further infestation since successive growth of plants that host the nematodes will lead to an increase in their population.

Low production, poor quality of stems and reduced stem length are realized due to the damage caused by nematodes if not eradicated early enough.

Management of Nematodes

A proactive and holistic approach should be considered in sustainable management of this economic significant pest.

- ***Monitoring***

  This is key to the management of plant parasitic nematodes by carrying out soil/media and water analysis on a regular basis. Population pressure and crop damage will guide growers on the most sustainable measure to be taken at any given situation.

- ***Cultural Controls***

  Sites with histories of root knot nematode problems should be kept nematode free. Non-host crops should be grown to reduce population densities. Weed control is also important because many weeds serve as hosts for the root knot nematode. In addition, the source of water should be treated to avoid re-introduction of new populations once you treat the area.

Chemical Controls

Different Greenhouse and Sites should be routinely sampled for plant-parasitic nematodes, at least every month.

Nematodes management programs are developed based on;

- Threshold levels
- Development stage and lifecycle of the Nematodes
- Natural enemies including the Saprofagic nematodes
- Three Mode of action program

Below is a table of our Nematicides in Amiran Kenya.

Description	Target	A.I	Source	Rate	Remarks
Velum Prime	Nematicide	Fluopyram 400g/L	Bayer Crop Science	0.5l/Ha	Two consecutive application at 1 month interval
Cropguard	Bionematicide	Furfural 800g/L	Illova SA	15l/Ha	Two consecutive application at 21 days interval
Aminem	Bionematicide	Carvacrol + Chitinase enzymes	Arvensis Agro Spain	15l/Ha	Two consecutive application at 21 days interval
Konzano 50 OD	Nematicide	Abamectin 50g/L	Sineria Netherlands	4l/Ha	Two consecutive application at 1 month interval

A ‘blossoming Partnership’ – Digital Corridor Drives Kenyan Flower Exports to UK this Valentine’s

This Valentine’s Day many people bought flowers for their significant other without a lot of thought as to where those flowers came from. International trade, however, has a huge part to play in keeping the UK’s florists stocked with fresh cut flowers.

Where the UK imports flowers from

A little-known fact is the second top import market to the UK for flowers is Kenya, which supplies just over 8 percent of British-sold flowers, or 10,000 tonnes, worth not far off £67 million. Cut flowers account for 25% of all Kenyan imports to the UK.

Alongside the domestic UK trade in flower cultivation, the biggest import market to Britain is the Netherlands, which supplies more than 80 percent of cut flowers, worth £500 million, according to Trade Maps.

Digital trade corridor

The Institute of Export & International Trade has been working with donor organisation TradeMark East Africa (TMEA) to implement a ‘digital trade corridor’ between the UK and Kenya to help simplify trade between the two nations.

The initiative, called the ‘UK-Kenya Trade Logistics Information Pipeline’ (TLIP), aims to eliminate documentation and introduce better visibility in the supply chains flowing between the UK and Kenya. This initiative builds upon the Kenya-UK Economic Partnership Agreement, which was signed in December 2020.

Block chain

TLIP’s system uses block chain technology to link

all those in a supply chain together, enabling faster logistics and easier trading.

For example, take flowers grown in Kenya which end up being supplied in supermarkets and florists in the UK. The TLIP system will track the origins of those flowers from the grower to the retailers' shelves.

'Blossoming partnership'

Marco Forgione, director general of the IOE&IT, said: "This Valentine's Day when you were giving your loved one a beautiful bouquet of flowers, consider the journey they have taken to put that smile on their face.

"Around nine different organizations are involved with the transportation of flowers from Kenya before they enter your home and all of these actions in the supply chain require documentation to move the goods along on their journey.

"The trade corridor we are creating will provide more transparency and enable all actors to view the documentation along its journey. This is so important because with full traceability in a supply chain you will gain access to customs easements, effectively reducing your time to export by 30% and the cost by about 40%.

"Even more importantly TLIP will bring UK and Kenyan trade closer together to continue this blossoming partnership."

Cutting red tape

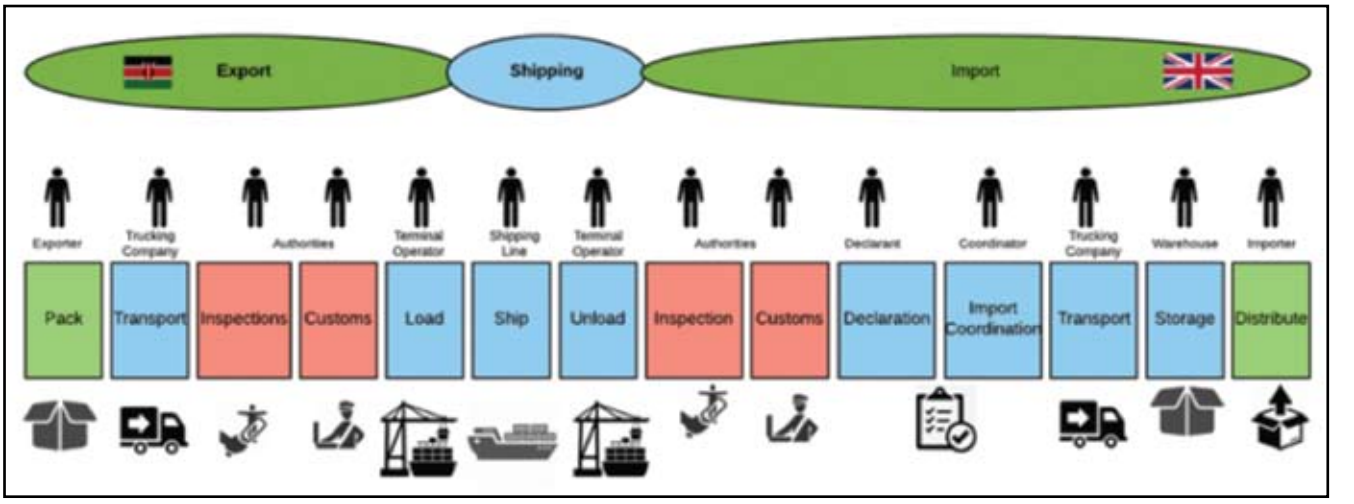
Simon Cromey, Co-Owner of All Seasons Flowers, a UK flower importer and distributor said: "Anything that can help speed up the flow of flowers into the UK can only be a positive thing. We have been importing from Kenya for many years and TLIP will help cut red tape around documentation and leave us more time distribute flowers to UK retailers."

UK-Kenya trade

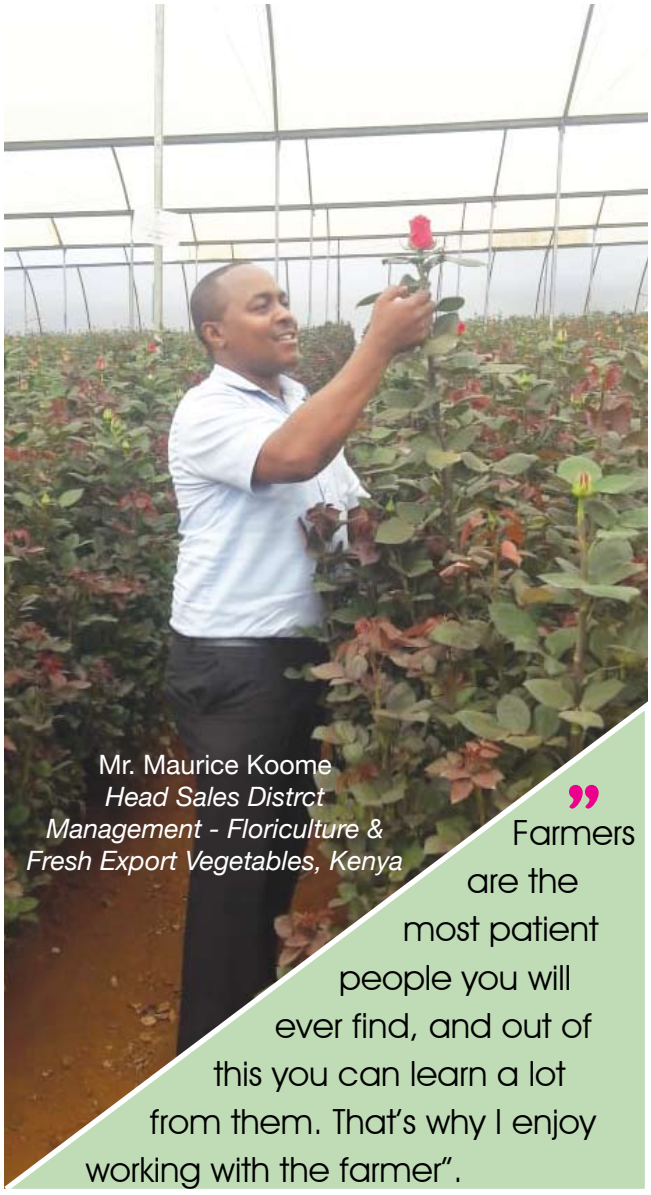
UK exports to Kenya in 2021 were worth £530 million and imports from Kenya totalled £579 million.

The TLIP project aims to increase trade for both countries and will help create greater visibility within supply chains and simplify the facilitation of trade between the UK and Kenya.

The overall aim of the TLIP initiative is to reduce logistical time constraints for businesses by around 40%, reduce the cost of compliance by 20% - potentially worth an initial saving of up to £36m to UK exporters.



Six *Questions with* Maurice Koome



1. *What experiences led you into agronomy, take us through the journey and your current role with Bayer East Africa, What do you enjoy most about working with farmers?*

Agronomy started in my childhood since farming was the only way of living in our society where I was growing up. This led up me to pursuing a bachelor's degree in Horticulture at JKUAT and started my career at Technoserve impacting growers with GAP knowledge. One thing led to the other and I found myself in Bayer as a technical assistant in horticulture sector and later joined the floriculture industry where I have grown through for 10 year to my current role of leading Floriculture and Export vegetables sector in Kenya.

Farmers are the most patient people you will ever find, and out of this you can learn a lot from them. That's why I enjoy working with the farmer.

2. *We have seen a more aggressive Bayer EA Ltd in the flower sector, discuss your economic importance to the Sector. (Brands, Products Portfolio, and service). How does Bayer make farming better for them?*

Bayer EA Ltd has been leading in offering solutions to flower growers over the years. Sustainability is our key driver and that way we keep on offering a cutting edge Solution to the ever-increasing challenges in flower growing. Some of these well-known brands include; Impulse, Luna Tranquility and serenade (biological) for Powderly mildew management, Previcur energy, Infinito, Aliette and Melody duo for management of downy mildew. For botrytis we have products like; Teldor, Scala and Luna Tranquility. Nematodes have remained unseen enemy to plants over a period of time and reduce yields by over 30%. Bayer offers to the growers, one of the safest nematicide in the market and that is Velum Prime. Movento is the 2017 award-winning innovation in insect pest management and now Sivanto Prime inspired by nature offers a perfect resistance management tool in the control of sucking pest. Belt one of the best in the control of caterpillars.

3. *Are you seeing any new trends emerging, if so, what are they and what are your thoughts on them? (Climate change, Exotic/ migratory pests and new diseases) what should growers expect from Bayer?*

Climate has really changed over past years and currently one cannot predict as before. So proper planning and preparedness is the key in order to keep a continuous growth curve in the industry. Bayer will continuously work with flower growers in addressing the challenges that will be as a result of weather change. Caterpillars and more specific FCM is becoming an important pest in flower

grower growing and Bayer is partnering with growers to offer not just the products but a wholistic approach in management of this pest.

4. *Caterpillars are turning into a nightmare to growers. How can Bayer help growers manage and control it?*

It's true that caterpillars are becoming a huge threat in today's flower growing and we at Bayer, keep on educating our growers on the integrated approach in managing this menace. Truth be told that there is no one simple way of doing this but rather a combination of both physical, mechanical, biological and chemical means of control in short (IPM). Bayer is continuously training farmers on different species of caterpillar's identification and most importantly, use of Belt in controlling the Larva stages of caterpillars.

5. *Describe the challenges growers face when buying pesticides for their operation. What are some things farmers need to consider and how can Bayer help.*

They always say that information is power and the first key thing a grower need is technical information on the challenge he/she is facing and then the solution and how best to use it. Therefore, we as Bayer believe in empowering our growers with information which really help growers in making the right decisions.

Another challenge is restricting of AI's by the market leaving growers with limited choices. Bayer is introducing biologicals that will be able to assist growers deal with this.

6. *Bayer has a rich incoming pipeline, what can you promise the flower sector?*

Bayer invests over 20% of its income back to research and innovation. This tells you that we are working around the clock to bring to the farmers new innovations which are effective and safe to both the users and environment, that's sustainability.

We have a very rich pipeline ranging from fungicides, insecticides and nutritional products and most importantly safer and greener products having recently acquired a Biological company in Germany.

To our growers, we are grateful for the opportunity of serving you with our technologies.

CIOPORA Rose Breeders Ask Propagators and Growers to Observe Intellectual Property Rights.

Thirteen leading cut rose breeders, organized in CIOPORA and its Crop Section Cut Rose IRBA, have called upon players of the rose business to observe and respect breeders' Intellectual Property rights worldwide. The open letter distributed among cut rose propagators, growers, and their associations raised awareness towards Plant Breeders' Rights (PBR) on the eve of Valentine's Day 2022, the year's peak in the global rose consumption.

Increasingly, rose breeders are facing unauthorized propagation of their protected rose varieties in different countries. This illegal practice not only violates the exclusive rights of breeders but also undermines the progress in horticulture and has a negative impact on the trade. By investing in the development of new and improved rose cultivars, breeders lay a foundation for the development of global horticulture. The new and improved rose varieties with a higher yield, resistance to abiotic stresses, longer shelf and vase life, and trendy colors provide competitive advantage and income premiums to the authorized growers and propagators.

The open letter stresses the importance of prior authorization by a title-holder for any use or sale of a protected variety, including cut flowers or any other part of plants. Plant material obtained from an unauthorized source constitutes a PBR infringement, both in the country where it is produced and the countries where it is sold.

While the plants propagated or planted without authorization are illegal and can be uprooted, the harvested cut flowers are illegal as well and can be seized either at the borders by customs, or at points of storage and sale, in territories where PBR is in force. Breeders, therefore, invite all persons and companies to first always contact the PBR title-holder, seeking a written approval and a corresponding license.

CIOPORA Secretary General Dr. Edgar Krieger says: "Bringing excellent new varieties to the market, breeders should be able to rely on their partners upholding their end of the bargain. What the cut rose breeders are asking for is the sector's commitment to fair business practices, where breeders can receive a sufficient return on their high investments in breeding."

The Chairman of CIOPORA Crop Section Cut Rose IRBA Bruno Etavard comments: "Giving roses on Valentine's Day has become an ultimate expression of love. The open letter is the breeders' appeal for more transparency, fairness and mutual respect in the rose production and trade."

IFTEX 2022

The event industry is one of the industries that has been hit hardest by COVID-19. When looking at the international trade shows for example, since the pandemic, their turnover has been zero, all looking forward to the solution that may allow physical exhibitions to take off again, namely a vaccine. We had a talk with Dick van Raamsdonk of HPP exhibitions, who has been organizing horticultural trade fairs all over the world for 35 years now.

Apart from the year after the 9/11 attacks in 2001, the sector has never had such a huge financial setback. However, over the last months, they haven't sat still, and just finalized their 2022 exhibition calendar. "We are ready to kick off again as soon as a vaccine is available on the market."

Increased importance of physical exhibitions
- Mon. May 30, 2022
- Tue. May 31, &
- Wed. June 1, 2022

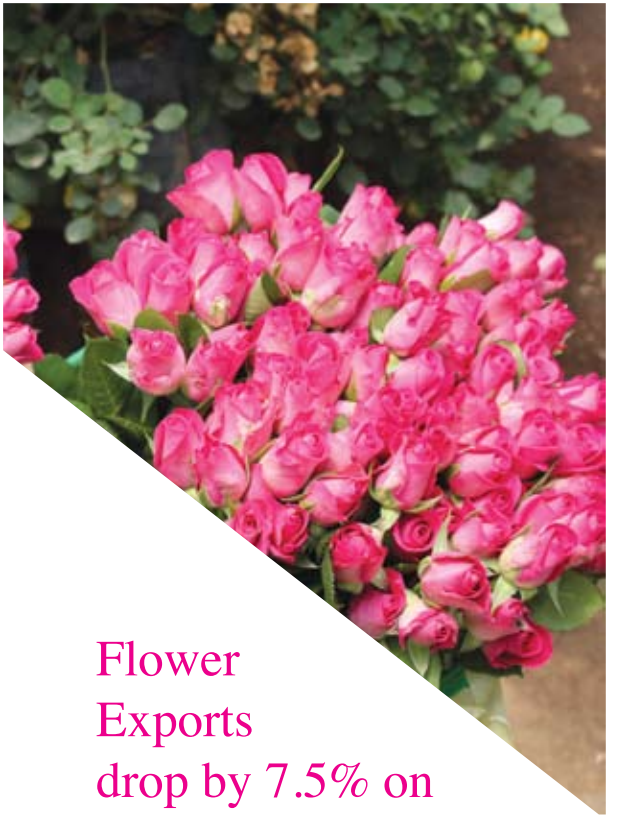
Opening Ceremony
09:00 hrs. - 10:00 hrs.

Show Hours
10:00 hrs. - 18:00 hrs.

Flower Growers Pavillion at Naivaisha Horticultural Fair

One of the largest Horticultural Fairs in Africa (Naivasha Horticultural Fair) has consistently grown over the years; and this year, they will also have a Flower Growers Pavillion. The fair will take place outdoors, on the same grounds as usual, on September 16th and 17th.

"On Friday, the Pavillion is open by invitation only, so that guests can talk with each other without having too much chaos around. Then on Saturday, it will be open to all attendees of the fair", explains Richard McGonnell, Chairman of the fair. "We hope some buyers will visit and see their clients or look for new growers to supply."



Flower Exports drop by 7.5% on Market Lockdown

Kenya's flower exports dropped by about 7.5 percent in the last year due to the Covid-19 pandemic, high freight charges, and soaring cost of farm inputs. Kenya Flower Council (KFC) is projecting growth in the floriculture sector if the government moves in to support farmers.

KFC Chief Executive Clement Tulezi said farmers exported 160,000 tonnes of flowers last year compared to 173,000 tonnes in 2020. He attributed the drop to the effects of the pandemic and the new health regulations that put several European countries in lockdown. "We recorded a slight decline in flower exports last year but we hope this will change once we get support from the government," the CEO said.

The council raised concerns over the rising cost of freight and failure by the government to release an Sh1.5 billion stimulus fund promised in May last year. Mr. Tulezi said President Uhuru Kenyatta promised the farmers Sh1.5 billion to deal with the high shipping costs in an address to the nation last year.

"Months after the promise, we are yet to hear from the Treasury, and high freight and fertilizer charges continue to be the biggest challenges for the sector," he said. Demand for flowers is up as Valentine's Day nears but Tulezi said farmers could not hit their targets due to lack of capacity and high charges.

Principal Secretary for Trade Calls on Kenyans to supply produce to the UK

Kenya's Principal Secretary for Trade, Johnson Weru, called on Kenyans to start supplying their produce to the United Kingdom and to ensure that their products comply with all the requirements of that market.

The Kenya-UK Economic Partnership Agreement, that was ratified last year, allows all companies operating in Kenya to benefit from duty-free access to the UK market.

Weru also noted that Kenya is looking forward to the expanded East African Community which will include the Democratic Republic of Congo – connecting the Indian Ocean with the Atlantic. "We are working on a predictable, legal framework, that allows trade and investment relations to cut across all our economic agents (traders, economists)," said Weru.

There are approximately 2,500 UK businesses exporting goods to Kenya each year, with last year's total exports valued at Sh30.8billion, according to the latest Kenya National Bureau of Statistics–Leading Economic Indicators.

The value of exports from Kenya to the UK totaled Sh41.7 billion, meaning the trade is currently in favor of Kenya. Kenya's top exports to the UK include tea, coffee and spices, vegetables, as well as live trees and plants, mostly flowers.

State mulls action as fertiliser price hits new record

Agriculture CS Peter Munya has prepared a cabinet memo to discuss and offer intervention on the high cost of fertiliser ahead of the planting season.

Mr Munya said the Cabinet will discuss possible interventions to bring down the price that hit a high of Sh6,000 for a 50-kilogramme bag, nearly double the price as at last year.

Mr Munya said the price of the input was beyond the control of the government, attributing its rice high costs of raw material and shortage in the world market.

"I am putting this matter before the Cabinet so that we discuss and come up with the measures that will address the high cost of fertiliser," said the Agriculture Cabinet secretary.
There has been an outcry from farmers over the high cost of fertiliser, warning that if the price is not addressed, then growers will not plant maize this year. The move is likely to compromise production this year adding pressure on food supply, given that Kenya is a maize deficit country and relies on cross-border imports to meet the annual demand.

Kipkorir Menjo, the director of Kenya Farmers Association said farmers will be forced to cut down on acreage and those who will plant will minimise the use of fertiliser. "We want to urge the government to address the issue of fertiliser, the cost is just unbearable for farmers who are already grappling with high cost of farm inputs," said Mr Menjo.

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
AAA- Flowers-Simba	Roses	Rumuruti	Anil	0758349471	anil@aaagrowers.co.ke
AAA- Flowers -Chui Farm	Roses	Timau	Phanuel Ochunga	07522506026	fanuel.ochunga@aaagrowers.co.ke
AAA-Simba Farm	Roses	Rumuruti	Anil	0758349471	anil@aaagrowers.co.ke
Across Agriculture Ltd	Herbs	-	Emily Chepkemoi	0729080186	chep28@gmail.com
Africalla Kenya Ltd	Cuttings	Eldoret	Meindert	-	meindert@africalla.com
Africa Blooms	Roses	Salgaa	Ramnath Sarbande	0798190511	ramnath.sarbande@xflora.net
Afriscan Kenya Ltd	Hypericum	Naivasha	Charles Mwangi	-	-
Agriflora (K) Ltd		Nakuru, Njoro	Charles Mulemba	0721311279	cmulemba@sianflowers.co.ke
Aquila Development Co	Roses	Naivasha	Prashant Takate	0799356002	gm@aquilaflowers.com
Baraka Roses/ Mumi Flora	Roses	Ngorika	Simon Blinco	0723234927	simon@barakaroses.com
Batian Flowers	Roses	Nanyuki	Rakesh	0724631299	
Beautyline	Flowers	Naivasha	Peter Gathiaka	0721392559	peter@beautyli.com
Big Flowers	Roses	Timau	Gideon Waweru	0721178974	gideon@fontana.co.ke
Bigot Flowers	Flowers	Naivasha	Kakasaheb Jagtap	0722205271	jagtap.kt@bigotflowers.co.ke
Bila Shaka Flowers	Roses	Naivasha	Joost Zuurbier	0722204489	bilashaka.flowers@zuurbier.com
Black Petals	Roses	Limuru	Nirzar Jundre	0722848560	nj@blackpetals.co.ke
Bliss Flora Ltd	Roses	Njoro	Appachu Sachin	0789101060	appachu7@yahoo.com
Bloom Valley	Roses	Salgaa	Ramnath Sarbande	0798190511	ramnath.sarbande@xflora.net
Blooming Dale Roses Kenya Ltd	Roses	Nanyuki	Sunil	0718991182	info@bloomingdaleroses.com
Blooming Africa	-	Gilgil	Bert	0722204309	bert@blooming-innovations.com
Buds and Blooms	Roses	Nakuru	Shivaji Wagh	0720895911	shivaniket@yahoo.com
Carzan (K) Ltd KS	Summer flowers	Salgaa	Stanley Rotich	0721931710	stanley.rotich@marginpar.biz
Carzan (K) Ltd ST	Hypericum, solidago	Sobea	Thaddeus Adung'o	0716019094	thaddeus.adung'o@marginpar.biz
Carzan - Molo	Carnations	Molo	Charles Chelule	0728784081	charles.chelule@marginpar.biz
Charm Flowers	Flowers	Athiriver	Ashok Patel	020 352583	ashki@charnflowers.com
Chestnut	Vegetables	Naromoru	Gabriel Kiai	-	gabriel.kiai@aaagrowers.co.ke
Colour Crops	Hypericum	Nanyuki	Kennedy Wanyama	0716389472	colourcrops@tmu.com
Colour crops	Summer Flowers-	Bahati	Patrick Kipkurui	0727806184	bahati@colourcrops.com
Colour crops	Flowers	Naivasha	Geoffrey Mwaura	0722200972	nva@colourcrops.com
Credible Blooms	Flowers	Rumuruti	Eliud Njenga	0722382859	eliud@pigeonblooms.com
Dale Flora	Roses	Mogotio	Ajay Sutar	0711102266	ajay.sutar24@gmail.com
Desire Flowers	Flowers	Isinya	Rajat Chaohan	0724264653	rajatchaohan@hotmail.com
De ruiters	Breeder Roses	Naivasha	Fred Okinda	0722579204	Fred.okinda@deruiter.com
Double Dutch	Cuttings	-	Pharis Wainaina	0728207661	
Dummen Orange	Flowers Breeders	Naivasha	Bart Engels	0759069896	b.engels@dummenorange.com
Eco Roses	Roses	Salgaa	Madhukar Bhalerao	0799555440	Mbhalerao.eco@btfgroup.com
Elbur flora- kimman	Roses	Nakuru	Daniel Moge	0721734104	kimmanexp@gmail.com
Enkasiti Thika	Flowers	Thika	Tambe Sabaji	0734740202	enkasiti@gmail.com
Equinox	Flowers	Nanyuki	Harry Kruger	0707266956	harry@equinoxflowers.com
Everest Flowers Ltd	Flowers	Mt. Kenya	Victor Kibore	0700416334	-
Everflora Ltd.	Flowers	Thika	Ghanshyam Dusang	0721638005	manager1@everflora.co.ke
Evergreen Crops		Nairobi	Arun Singh	0721941009	arun@evergreencrops.com
Exotic Peninah	Roses/ Carnations	Athiriver	Dan	0734626942	dan@exoticfields.com
Fairy Flowers	Flowers	Limuru	Sylivester	0753444237	sylvesterkahoro@yahoo.com
Fairy Flowers	cutings	Limuru	Kennedy Kamau	0712204894	kenreal07@gmail.com
Fides Kenya Ltd	Cuttings	Embu	Bernard Marindany	0726 366 752	B.Marindany@DummenOrange.com
Finlays- Lemotit	Flowers	Kericho	Japhet Langat	0722 863527	japhet.Langat@finlays.co.ke
Fontana Ltd - Akina farm	Roses	Njoro	Mahendra Patil	0798254199	mahendra@fontana.co.ke
Fontana Ltd - Ayana Farm	Roses	Mau Narok	Osman	0712933710	osman@fontana.co.ke
Flamingo Horticulture Farm	Flowers	Naivasha	Peter Mwangi	0722204505	peter.mwangi@flamingo.net
Flamingo -Kingfisher Farm	Flowers	Naivasha	Elijah Getiro	0722873539	elijah.getiro@dudutech.com
Flamingo - Osprey		Naivasha	Jacob Wanyonyi	0722773560	jacob.wanyonyi@flamingo.net
Flamingo -Siraji Farm	Carnations, Roses	Nanyuki	Peris Muturi	0729050116	Peris.Ndegwa@flamingo.net
Flamingo -Ibis	summer, vegetables	Nanyuki	Margaret Mumbi	-	-
Flamingo Flora	Roses	Njoro	Sam Nyoro	0721993857	s.ivor@flamingoflora.co.ke
Flora ola	Roses	Solai-Nakuru	Lucas Choi	0721832710	lucas.choi@floraola.co.ke
Flora Delight	Summer flowers	Kiambu/ Limuru	Marco	0710802065	marcovansandijk@yahoo.com
Florensis Ltd	Cuttings	Naivasha	Simon Mwangi	0721519470	simon.mwangi@florensis.com
Florenza Ltd	Roses	Solai	Yogeesh	0737453768	farm.florenza@megaspingroup.com

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
Fresh Gold Flowers Ltd	Flowers	Mt. Kenya	John Karimi	0721622294	karimi@freshgolgkenya.co.ke
Gatoka Roses	Roses	Thika	Herman Njuguna	0728 854 844	info@gatokaflowers.com
Golden Tulip	Roses	Olkalao	Umesh Choudhery	0739729658	umesh.gftl@btfgroup.com
Groove	Flowers	Naivasha	John Ngoni	0724448601	groovekenya@gmail.com
Hanna Roses Ltd	Roses	Thika	Kadlag Palaji	0723149968	kadlag.paraji@hannaroses.com
Harvest Ltd	Roses	Murungaru	Julius Oloo	0721465853	oloo@harvestflowers.com
Harvest Ltd	Roses	Athiriver	Julius Oloo	0721465853	oloo@harvestflowers.com
Harvest Ltd	Roses	Olkalou	Julius Oloo	0721465853	oloo@harvestflowers.com
Heritage Flowers Ltd	Roses	Rumuruti	Sailesh Kumar	0722203750	hfl.srk@gmail.com
Highland plantations	Cuttings & Herbs	Olkalau			production@highlandplants.co.ke
Imani Flowers	Summer Flowers	Kabarak, Nakuru	Raphael Otieno	0792302466	raphael@imaniflowers.co.ke
Interplant Roses	Roses	Naivasha	Gavin Mourittzen	0733220333	info@interplantea.co.ke
Isinya	Flowers	Isinya	Rajesh	-	pm@isinyaroses.com
Karen Roses	Flowers	Nairobi	Peter Mutinda	0723353414	pmutinda@karenroses.com
Kariki Ltd- Thika	Flowers	Thika	Miriam	0720674307	kariki.production@kariki.biz
Kariki Ltd - Nanyuki	Eryngiums	Nanyuki	Richard Fernandes	062-31023/6	bondet.production@karik.biz
Kariki Ltd - Naivasha	Summer	Naivasha	Esau Onyango	0728606878	hamwe.production@kariki.biz
Kariki Ltd - Molo	Fowers	Molo	James Oluoch	0716333717	jame.oluoch@kariki.biz
Kenflora Limited		Kiambu/ Limuru	Abdul Aleem	0722311468	info@kenfloraa.com
Kentalya	Cuttings	Naivasha	Lynette	0733549773	lynette@kentalya.com
Kikwetu Flowers	Roses	Mt. Kenya	Rathan	0787266007	
Kisima Farm Ltd	Roses	Timau	Craig Oulton	0722205828	craig@kisima.co.ke
Kreative	Roses- Breeders	Naivasha	Bas Smit	0733607755	info@kordes-ea.com
Kongoni River Farm - Gorge Farm	Roses	Naivasha	Anand Patil	0728608785	anand.patil@vegpro-group.com
Kongoni River Farm - Liki River	Flowers	Nanyuki	Madhav Lengare	0722202342	madhav@vegpro-group.com
Kongoni River Farm - Star Flowers	Roses	Naivasha	Jagtap Shahaji	0792547633	japtag@vegpro-group.com
Kongoni River Farm - Kongoni	Flowers	Timau	Kadam	0721274413	--
Kongoni River Farm -Bemack	Flowers	Timau	Balasaheb Ingwale	0717181102	balasaheb@vegpro-group.com
Kongoni River Farm - Galaxy	Roses	Naivasha	Chandrakant Bachche	0724639898	chandrakant.bachche@vegpro-group.com
Kongoni River Farm- Longonot	Roses	Naivasha	Ravi Sathe	0715173603	ravi.sathe@vegpro-group.com
Lamorna Ltd	Roses	Naivasha	Mureithi	0722238474	admin@lamornaflowers.com
Lathy Flora & Fairy	-	Kiambu	John Mbaoni	0753888126	info@lathyflora.com
Lauren International	Flowers	Thika	Dilip	0720796629	laurenflowers@accesskenya.co.ke
Laurel Investment	Roses	Olkalou	Ravindra Palshikar	0740569286	ravi.lil@btfgroup.com
Livewire	Hypericum	Naivasha	Esau Onyango	0728606878	management@livewire.co.ke
Lolomarik	Roses	Nanyuki	Topper Murry	0715 727991	topper@lolomarik.com
Lobelia	Roses	Timau	Ken Mwiti	0722475785	info@lobelia.co.ke
Maridadi Flowers	Flowers	Naivasha	Jack Kneppers	0733333289	jack@maridadiflowers.com
Maua Agritech	Flowers	Isinya	Kori	115355251	kori@mauaagritech.com
Mau Flora	Roses	Nakuru, Turi	Manju	0748254171	manju@mauflora.co.ke
Milenium Growers	Summer Flowers	-	Sushant Wankara	0731316000	sushant@marvelgreens.com
Molo Greens	Solidago, carnations	-			
Mt. Elgon Orchards	Roses	Tran Nzoia	Bob Anderson	0735329395,	bob@mtelgon.com
Mt. Kenya Alstromeria	Alstromeria	Meru	Miriam	0716162671	miriam@mountkenyaalstromerialtd
Mzuurie Group	Roses		Andrew Wambua	0724256592	awambua@moloriverroses.co.ke
Mzuurie Flowers - Maji Mazuri	Roses	Moi's Bridge, Eldoret	Mark Juma	0727471034	mjuma@majimazuri.co.ke
Mzuurie Flowers - Molo River Roses	Flowers	Kilelwa	Paula Koros	072241436	pkoross@moloriverroses.co.ke
Mzuurie Flowers - Winchester Farm	Roses	Karen		-	-
Mzuurie Flowers - Winchester Farm	Flowers	Bahati	Joseph Kasoso	0725696509	jkasoso@winchester.co.ke
Nini Farms	Roses	Naivasha	Vijay Bhosale	0702662297	vijay.bhosale@herburgroses.nl
Nirp East Africa	Roses	Naivasha	Danielle Spinks	0702685581	danielles@nirpinternational.com
Ol Njorowa	Roses	Naivasha	Charles Kinyanjui	0723986467	mbegu@olnjorowa.com
Oserian-Bohemian	Flowers	Nakuru	Chakravarthi Yashmith	0786143515	chakra.kuppusamy@oserian.com
Panda Flowers	Roses	Naivasha	-	-	gm@pandaflowers.co.ke
Panocol International	Roses	Eldoret	Mr. Paul Wekesa	0722748298	paul.wekesa@panocal.co.ke
Penta	Flowers	Thika	Tom Ochieng	0723904006	tom@pentaflowers.co.ke
Pendekeza	Roses	Nanyuki	James Kiiru	0708124381	tambuzi.sales@tambuzi.co.ke
PJ Dave Flowers	Flowers	Isinya	Pravin Yadav	0708920202	gm@pidave.com

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
Pj Dave	Roses	Timau	Ashok Everlyn Ladkat	0702000341	fmrisingsun@pjdave.com
PJ Flora	Roses	Isinya	Santos Kulkarni	0738990521	santosh@pjdaveflora.com
Plantech Kenya Ltd	Propagators	Naivasha	Idan Salvy	0702187105	idan@plantechkenya.com
Porini Flowers	Roses	Molo	Shakti Vanjimuthu	0739676998	shakti@poriniflowers.com
Primarosa Flowers Ltd	Roses	Ol njororok, Nyandarua	Peter G. Njagi	0723575461	opm@primarosaflowers.com
Rain Forest Farmlands Ltd	Roses	Naivasha	Boniface Kiama	0722780811	bkiama@fleurafrica.com
Ravine Roses Flowers	Flowers	Eldama Ravin	Peter Kamuren	0722205657	pkamuren@karenroses.com
Redland Roses	Flowers	Thika	Aldric Spindler	0733609795	aldric@redlandsroses.co.ke
Redwing Flowers	Flowers	Nakuru	Simon Sayer	0722227278	sayer@redwingltd.co.ke
Rift Valley Roses (K) Ltd	Flowers	Naivasha	Peterson Muchiri	0721216026	fm@riftvalleyroses.co.ke
Rimi Flora Ltd	Hypericum	Njoro	Richard Mutua	0722357678	richard@rimiflora.com
Riverdale Blooms Ltd	Flowers	Thika	Antony Mutugi	0202095901	rdale@swiftkenya.com
Roseto	Roses	Salgaa	Aravindra Hirario	07417791483	gm.roseto@megaspingroup.com
Sandpro Growers	Gypsophylla	Meru	Elly Okech	0727580266	elly.okech@sandprogrowers.com
Savannah international	Geranium	Naivasha	Ignatius lukulu	0728424902	i.lukulu@savanna-international.com
Selecta Kenya		Thika	Robert Khamala	0727 467 464	r.khamala@selectakenya.com
Sojanmi Spring Fields	Roses	Njoro	Senthil	0791184851	senthil.adhikesavan@bidcoafrica.com
Sunripe Farm		Naivasha	Antony	0711827785	naivasha@sunripe.co.ke
Schreus	Roses	Naivasha	Haiko Backer	-	-
Shades Horticulture	Flowers	Isinya	Ashutosh Mishra	0722972018	info@shadeshorticulture.com
Shalima Group (k) Ltd	Flowers	Nairobi	Natarajan	0738 999149	natarajan@eaga.co.ke
Shalimar Shalimar	Flowers	Naivasha	Dinkar Wandhekar	0702418174	dinkar@eaga.co.ke
Shalimar- Kabuku Farm	Flowers	Thika	Mohan Raj	0724265777	kabukufm@eaga.co.ke
shalimar- Mahee Farm	Roses	Olkalou	Natarajan	0738999149	natarajan@eaga.co.ke
Shalimar- Mwanzi Farm	Flowers	Rumuruti	Ram	0797185821	mwanziflowersfm@eaga.co.ke
Sian Flowers - Maasai Flowers	Flowers	Isinya	Nancy Kurgat	0720780322	nkurgat@sianflowers.co.ke
Sian Flowers - Agriflora (K) Ltd	Roses	Nakuru	Charles Mulemba	-	cmulemba@sianroses.co.ke
Sian Flowers - Equator Roses	Roses	Eldoret	Nehemiah Kangogo	0725848910	nkangogo@sianflowers.co.ke
Sierra flora	Roses	Njoro	Oppaso Bandgar	720070053	farm.sierra@megaspingroup.com
Simbi Roses	Roses	Thika	Karue Jefferson	0733771652	simbi@sansora.co.ke
Sirgoek Flowers	Flowers	Eldoret	Andrew Keittany	0725 946429	sirgoek@africaonline.co.ke
Solai Milmet/Tindress	Flowers	Solai, Nakuru	Vinoj J. Kumar	0737801646	solairoses@gmail.com
Sololo Agriculture	-	Eldoret	Andrew Tubei	0722728364	atubei@sianflowers.co.ke
Subati Flowers	Roses	Subukia	Naren Patel	0712 584124	naren@subatiflowers.com
Subati Flowers	Roses	Naivasha	Naren Patel	0712 584124	naren@subatiflowers.com
Subati Flowers (Suera)	Roses	Nyandarua	George Kimathi	0724622638	gkbuuri@gmail.com
Sunfloritech-Blue Sky	Gypsophilla	Naivasha	Patel Sushant	0725622333	info@blueskykenya.com
Sunfloritech -Tulaga	Roses	Naivasha	A Duzai Rajan	0794572232	farmmgr.tulaga@btfgroup.com
Stockman rozen	Roses	Naivasha	Julius Muchiri	0722200890	julius@srk.co.ke
Syngenta Flowers - Kenya Cuttings	Flowers	Thika	Kavosi Philip	0721225540	philip.munyoki@syngenta.com
Syngenta Flowers - Pollen	Flowers	Thika	Joseph Ayieko	0733552500	joseph.ayieko@syngenta.com
Tambuzi	Roses	Nanyuki	Benard Maina	0721860080	tambuzi.sales@tambuzi.co.ke
Terrasol	Cuttings	Limuru	Benard Adwarh	0753444230	adwarh@terrasolkenya.com
Timaflor Ltd	Flowers	Nanyuki	Simon van de Berg	0724443262	info@timaflor.com
Transebel	Flowers	Thika	David Muchiri	0724646810	davidmuchiri@transebel.co.ke
Uhuru Flowers	Flowers	Nanyuki	Ivan Freeman	0713889574	ivan@uhuruflowers.co.ke
Utee Estate	Chrysanthemums	Nairobi	Appaso Mane	0737 513 844	mane.uel@btfgroup.com
United Selections	Roses -Breeder	Ngata, Nakuru	Jeroen Van Marrewijk	700176556	jvanmarrewijk@united-selections.com
V.D.Berg Roses	Flowers	Naivasha	Johan Remeeus	0721868312	johan@roseskenya.com
Valentine Ltd	Roses	Kiambu/Limuru	Joseph Kariuki	0728 093 379	joseph.kariuki@valentinegrowers.com
Van Kleef Kenya Ltd	Roses	Njoro	Judith Zuurbier		roses@vankleef.nl
WAC International	Breeder	Naivasha	Richard Mc Gonnell	0722810968	richard@wac-international.com
Waridi Ltd	Roses	Athi River	-	-	farmmanager@waridi.com
Wildfire	Roses/summer	Naivasha	Patrick Mbugua	0721639306	patrickmbugua@wildfire-flowers.com
Wilfey	Gypsophila/hypericum	Subukia	Sammy Ndung'u	0720467551	-
Wilmar Agro Ltd	Summer Flowers	Thika	Alice Muiruri	0722 321203	alice.muiruri@wilmar.co.ke
Windsor	Roses	Thika	Pradeep Bodumalla	0736 586 059	farm@windsor-flowers.com
Xpressions Flora	Roses	Njoro	Brijesh Patel	0715469732	brijesh.patel@xflora.net
Zena - Asai Farm	Roses	Eldoret	Japhet Chelal	0721770597	japhet.zenaroses@gmail.com
Zena Roses - Sosiani Farm	Roses	Eldoret	Francis Kariuki	0725444515	fkariuki@zenaroses.com

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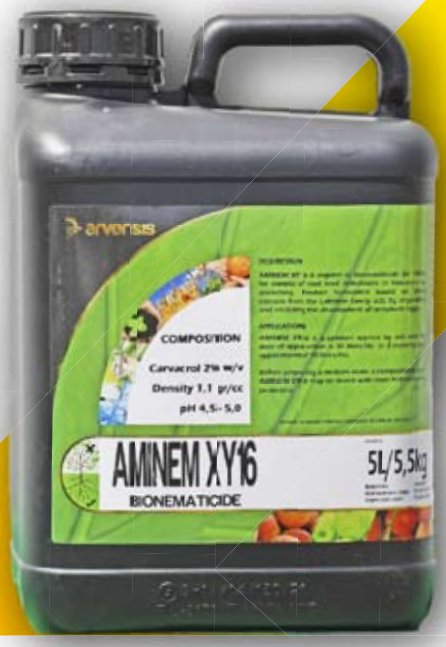

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