September - October 2021

THE LEADING FLORICULTURAL JOURNAL IN THE REGION

FLORICULTURE

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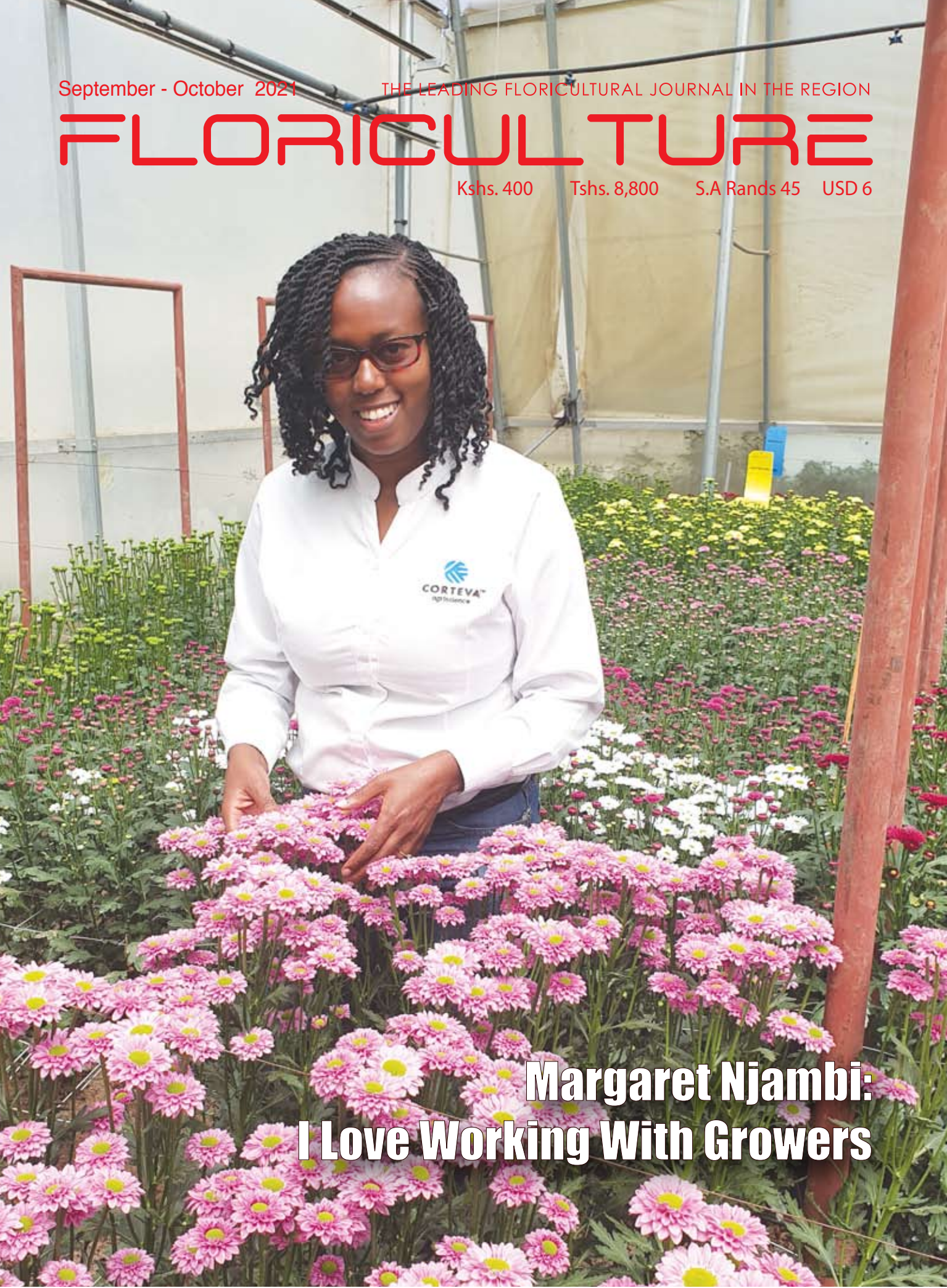

Margaret Njambi: I Love Working With Growers

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Contents

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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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Be a leader

Leaders have some distinguishing qualities that set them apart from others. They have the ability to influence people and carry them along on their journey. Such people lead from the front and have the courage of conviction. They are far-sighted and able to see the whole picture and take in each point of view and come up with their solution. They are innovators of thoughts and ideas and great orators.

Great leaders have unquestionable integrity and passionate belief in their abilities.

Leadership is not only about leading from the front, it is about creating a work culture of ethics, good organization and management.

Leadership styles affect all aspects of the organization. Right from the lowest intern to the highest executive are bound by that style of functioning.

A person or board at the helm of affairs can be authoritarian, dictatorial, or can believe in getting people involved in the decision-making process.

You have to be a great student to be a great leader and there's no phase or time limit of being a student. Great leaders are life-long learners.

That's specifically important in the backdrop of the on going climate change.

You need to keep yourself updated with new technologies and trends. One of the most remarkable leadership qualities is been an expert listener. You listen to your peers, your subordinates, and the company's customers. "There are always people with ideas for how we can do things differently – ideas we may not want to hear. And you will find that when you are willing to listen."

Masila Kanyingi
Editor

FLORINEWS

Publishers of Floriculture Magazine

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PEST ALERT

FALSE CODLING MOTH (FCM)

One of the pest challenges currently facing flower producers in Kenya is the false codling moth (FCM), *Thaumatotibia leucotreta*. Growers have suffered financial losses due to quarantine restrictions and detection of a single larva can result in rejection of an entire consignment.

For proper control of FCM, it is desirable to use the yellow delta traps baited with a pheromone lure to monitor the extent and densities of this invasive moth pest. Visual inspection of plants involves looking out for signs of poor growth or rot; holes in flowers; adults hidden in foliage; and crawling larvae. Once the flower is damaged, it becomes vulnerable to fungal organisms that causes rots. Infestations can be identified by the brown spots and dark brown frass.

Current control of FCM in ornamentals consists of chemical application with Karate Zeon and Match, mating disruption using pheromones and biological control methods.

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Diseases Management in Roses

POWDERY MILDEW

Powdery Mildew is caused by the fungus *Podosphaera pannosa syn. Sphaerotheca pannosa*. Powdery Mildew affects young leaves, causing them to curl and twist and develop a purple coloration. As the disease progresses, leaves become covered with white powdery fuzz. Whereas blackspot is usually most severe on the lower part of the plant, powdery affects the top part of the plant. Mature leaves are less likely to be affected. Powdery mildew is spread by wind and develops rapidly during periods of warm, dry days followed by cool and humid nights.

Infections of Powdery Mildew are discouraged by the presence of water on the leaves. However, keeping plants wet all night to avoid mildew provides an environment that allows other diseases to develop. Prune out all dead and diseased canes to reduce initial fungus infection.

DOWNY MILDEW

The fungus *Peronospora sparsa* causes Downy Mildew. Purplish-red or dark brown, irregular, and often angular, blotches develop on leaf surfaces, and during humid weather a blue-grey, downy growth of fungus may appear on the undersides. The leaves droop, turn yellow, and may drop. Stems and calyces develop purple or blackish spots, streaks, or blotches. Petals have brown, dead areas. Infected buds may produce deformed flowers. Spores are wind-borne but need free water on the leaf surface to germinate.

Downy Mildew can be prevented by improving ventilation and aeration.

BOTRYTIS

The fungus *Botrytis cinerea* affects most above ground plant parts. Botrytis generally attacks dying tissue and frequently found on older flowers and other plant parts. Under certain conditions it may also attack healthy tissue. Botrytis favors moist, wet conditions, often causing the disease to attack entire flowers and produce a gray fuzzy mold. Purple lesions occurring on canes are often caused by botrytis. Spores are wind-borne and can be spread on garden tools like secateurs.

Prevention is the best approach – use of resistant varieties, optimum irrigation, proper ventilation, pruning and destruction of infected canes, leaves and flowers, and proper sanitation should be practiced.

PHYTOPHTHORA AND PYTHIUM ROOT ROTS

The root ball may be water-soaked and brown and none or few new white roots may be seen. Phytophthora Root Rot may be caused by more than one species of the pathogen. Common sources of *Phytophthora cinnamomi* are infected soil or irrigation water that has been in contact with the soil, for example, dam water. There is no cure for infected plants, but the disease may be suppressed with the use of phosphonate products.

Pythium affects plants in a similar manner but is more often a sign that the plants are being stressed in some other way, for example, by high salinity, low pH, or waterlogging.

Fungicide solutions from United Agrochemicals Limited™

TRADE NAME	ACTIVE INGREDIENTS	FRAC	TARGET DISEASES	DOSAGE / Ha
CORUM 72WP™	Mancozeb 640g/Kg + Cymoxanil 80g/L	M 03 + 27	Botrytis & Downy Mildew	2 Kg
DOLPHIN 260WDG™	Diethofencarb 160g/Kg + Pyrimethanil 100g/Kg	10 + 9	Botrytis	1.5 Kg
NATURE GUARD 525WDG™	Famoxadone 225g/Kg + Cymoxanil 300g/Kg	11 + 27	Downy Mildew, Powdery Mildew & Rust	0.4 Kg - 0.5 Kg
PEGMAX 450SC™	Propamocarb Hydrochloride 400g/L + Cymoxanil 50g/L	27 + 28	Downy Mildew	1 L
SHAKTI ENSURE™	Pyrroquinoline Quinone (PQQ) + Vitamin B9 (Folate)	NC	Powdery Mildew	0.75 L - 1 L
SPIRO 25%EC™	Difenoconazole 250 g/L	3	Powdery Mildew & Rust	0.5 L - 0.7 L
UNIGO 50%SC™	Fluazinam 400g/L + Metalaxyl-M 100g/L	29 + 4	Downy Mildew, Powdery, Botrytis & Fusarium	0.4 L - 0.5 L
UNIPHOS™	Phosphorous 28% + Potassium 33% of Phosphorous Acid	P 07	Downey Mildew & Phytophthora Rot	4 L - 6.5 L

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DOWNY MILDEW

POWDERY MILDEW

BOTRYTIS

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Managing Caterpillars in Roses

It All Starts With Correct Identification

By Edwin Kiptarus

- **Identification**
- **Damage**
- **Monitoring**

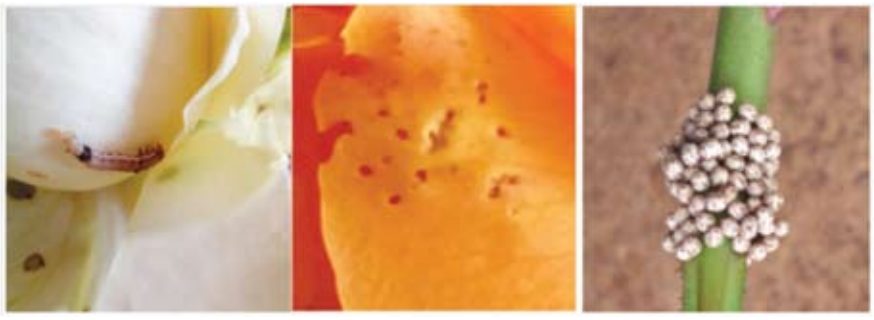
Caterpillars have in the recent past exposed growers to crop loses prompting the industry to share few highlights on proper identification of the key caterpillar species to enable you to take proactive action before it is too late.

Identification

Moths and butterflies have four stages in their lifecycle. Some species have only one or a small number of generations per year and may only be active during warmer months.

Eggs are laid either singly or in an egg batch that may have 50 to several hundred eggs, depending on the species. Egg batches are often covered in scales and are therefore the same colour as the adult moth that laid them, generally brown, grey, or whitish.

Whether laid singly or in a batch, moth and butterfly eggs are generally spherical to ovoid or may be somewhat flattened or cylindrical. For most species, eggs hatch within a few days to a week, depending on the species and environmental conditions. Caterpillars hatching from eggs are very small and often feed on their eggshell for their first meal. Caterpillars of moths often have 5 instars (stages), molting between each instar and increasing in size. Below is a description of Spodoptera, Helicoverpa and Thaumatotibia spp, lepidoptera species of economic importance to flower production.



A: Spodoptera spp

Going deeper in the spodptera spp, Beet armyworm, Tobacco cutworm, and Fall armyworm have been identified by flower growers to be most difficult to manage. Spodoptera litura (Tobacco armyworm) adult has distinct forewings which have a row of dark brown or black hour-glass markings along outer margins. The wings have a white fork in the middle area of the wing.

Spodoptera exigua (Beet armyworm) moth lacks contrasting transverse (black, brown, white) lines on the forewings. Males and females are similar, and neither shows much color variation. Black dashes at the base of the forewing are absent.

For Spodoptera frugiperda (Fall armyworm) the adult has some white and brown transverse lines and markings on the forewings, but they are not as contrasting as in other Spodoptera species.

Furthermore, males and females differ strongly in that females have indistinct wing markings.

Eggs: Spodoptera spp lays eggs in clusters on leaves and is mostly covered with hairy scales. The cover mimics the adult in many cases whitish to dark brown.

Caterpillars: The caterpillars have no hairs and are mainly found on the leaves. Most species have Y shaped mark on the forehead.

Damages: Spodeptera spp larvae mostly damage by chewing with window like opening on the leaves and affected parts.

B: Helicoverpa spp

Helicoverpa armigera is listed as an A2 quarantine pest by EPPO (OEPP/EPPO, 1981). Quarantine status arises because of the risk of introduction to Glasshouses in Europe. According to EPPO imported propagation material should be derived from an area where H. armigera does not occur or a production place where the pest has not been detected during the previous 3 months (CABI.org). Our export flowers face this risk thus we have spared time to discuss the caterpillar.

Eggs: The eggs are yellowish-white and glistening at first, changing to dark brown before hatching. The pest lays eggs within a period is 10-23 days, with an average of 730 eggs per female. The eggs are laid singly on hairy and soft surfaces, which is closely linked with the period of bud burst and flower production in most host plants. Eggs hatch in 3 days at 22.5°C, and in 9 days at 17.0°C.

Caterpillars: The 1st and 2nd larval instars are generally yellowish-white to reddish-brown in colour, without prominent markings with the body colour being very dark brown to black in later instars. They have spiracles and tuberculate bases which give the larva a spotted appearance. It has prolegs on the third to sixth, and tenth, abdominal segments.

Adult: The adult is a stout-bodied moth of typical noctuid appearance, has a broad thorax, and then tapering. Males are greenish grey, while females are orange brown. Forewings have a line of seven to eight blackish spots on the margin. The hindwings are pale-straw in colour with a broad dark-brown border, ending in yellowish margins with a comma-shaped marking in the middle. Antennae are full of fine hairs.

***Damages*:** Helicoverpa caterpillar are visible at the base of flower buds. Active caterpillar can be seen on the surface of plants, but mostly hidden within plant organs (flowers, fruits etc.). Bore holes and heaps of frass (excreta) may be visible, but otherwise it is necessary to cut open the plant organs to detect the pest. Round holes are visible on tender plants parts.

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Managing Caterpillars in Roses

Different caterpillar species cause huge damages to flower growers both directly and indirectly. They cause direct damages by rendering export crops to lose the desired quality hence go to waste, and increase the cost of pest control to the growers. Indirect losses result even after the crop is prepared and ready for export only to be intercepted, hence loss of revenue and brand reputation.

IDENTIFICATION

In Kenya and the East African region, many ***lepidoptera spp*** have been identified to be of economic impact in flower production, and top of the list are: ***spodoptera***, ***helicoverpa*** and ***thaumatotibia*** (FCM). Most pest caterpillars are immature-larvae stages of moths, or a few butterfly species.

Important Note: If caterpillars are a regular and damaging pest it may be worthwhile having them identified to gain information on

- How many generations do they have per year and over what seasons are they active?
- Where do adults lay eggs?
- Where are caterpillars during the day/night?
- Where do they pupate?
- What other host plant species do they feed on?
- How far do adults fly? Do they migrate and what season/s does it occur?
- Do they overwinter in your region and, if so, where do they do so (e.g. in the soil as pupae, on branches as eggs, etc.?

MANAGING CATERPILLARS

a) Cultural Practice

- Check incoming stock, new seedlings, and other new planting material to ensure it is free of all pests. Keep plants apart from the rest of your stock for a period, monitoring plants for all pests and diseases
- Prune out heavily damaged leaves or stems if necessary, this is particularly important for leaf mining and woodboring species
- Remove and destroy heavily infested, unsaleable stock. Leaving unbagged, infested plants or cuttings in the bin encourages pests to reinfest the property. Practice good crop hygiene to avoid contamination between greenhouses or production sites. Remove crop organic matter that may have eggs

b) Chemical control

- There are many pesticides that can be used to manage caterpillars in flower farms.
- Many contact products also are active when caterpillars ingest it on the leaf.
- Translaminar products move from the upper to the lower leaf surface (or vice versa) but not between leaves. **Belt® SC480** from Bayer Crop Science is one such product with translaminar action.
- For caterpillars present on leaves, contact products can be sufficient.
- However, translaminar, or systemic products will probably be required for species that roll leaves, feed within stems or leaf miners

Composition: Flubendiamide 480 g/l

Application rates: 75-100mls/ha in 1000 lts water

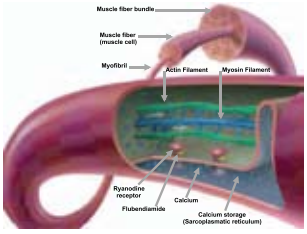
Mode of action (symptoms)
Following an application with **BELT® SC480**, larvae lose muscle control, become immobile and cease feeding immediately.

The most typical symptom of treatment occurs 1-2h after application. Due to the unique mode of action, the larvae contracts to half the size of an untreated larvae.

Ryanodine receptors are intracellular Ca^{2+} channels specialized for the rapid and massive but transient release of calcium. The released calcium then triggers muscle contraction.

Following an application of flubendiamide, the ryanodine receptor stays open allowing all available calcium to be released in an uncontrolled manner.

The result is an immediate cessation of feeding, followed by paralysis, then eventual death of the larvae shortly thereafter.



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VELUM® Prime is a novel solution for efficacious nematode control which is environmentally and operator friendly. It protects the crops against nematodes from in early growth cycle and allows for convenient and safe application during all growth stages in flowers.

The active ingredient of **VELUM® Prime**, selectively inhibits Complex II of the mitochondrial respiratory chain in the mitochondria of nematodes. The mitochondria being the essential power plants of nematodes, their inhibition causes fast and severe depletion of the nematode's cellular energy (ATP).

VELUM® Prime is the first nematicide that acts via Complex II inhibition and thus represents a new mode of action for controlling nematodes.

Male root knot nematodes

Female root knot nematodes

Nematode infect plant roots, causing the development of root-knot galls that drain the plant's photosynthate and nutrients there by affecting the net ability of the roots to assimilate the nutrients they need to in order to realize maximum growth. They also reduce the total root surface area compared to a healthy plant by over 60%. Infection of young plants may be lethal, while infection of mature plants causes decreased yield and stem length by approximately 20-40%.

Root health equation

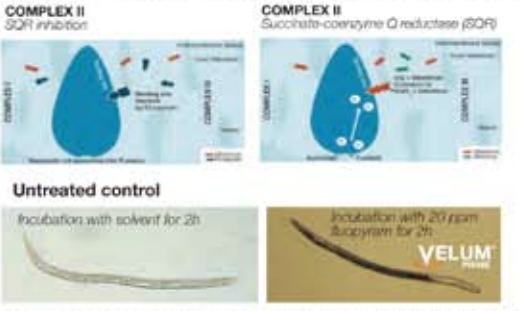
Root health = f (A + B + C + D + E + F + G+H+I.....)

A: Soil borne pathogens
B: Nematodes
C: insect damage
D: Soil physical (soil compaction, soil texture, water retention)
F: Soil chemical (Phosphate retention, Al toxicity, pH)
G: Microbiological properties (biodiversity)
G: Water availability
H: High temperature
I: Low or high radiation

Mode of Action – Symptoms of Rapid Immobilization

Following an application of **VELUM® Prime**, nematodes take on the shape of a needle and become immobile.

The first symptoms of treatment occur about 30 min after application. Nematodes start to move more slowly and finally become completely paralyzed after 1-2 h.



Composition: Fluopyram 500 g/l
Application rates: 1 liter per Ha in two splits of 500ml after 30 days.

Nematode Spectrum in Flowers

Root Lesion Nematodes *(Pratylenchus spp)*
Root lesion nematodes use the stylet to puncture roots and enter the cells , extracting cell content and leaving behind a trail of both cell- killing metabolites and eggs. Root cell death results in browning and lessoning of the roots. These lesions can rapidly coalesce to result in browning of the whole root.

Note the eggs of the lesion nematode on a root that has been browned by the nematode activity

Root Knot Nematodes – Meloidogyne spp

Root knot nematode symptoms on plants are dramatic. As a result of nematode feeding, large galls or "knots" can form through-out the root system of the infected plants. Severe infection result in reduced yields on the crop and stunted growth.

While most of the damage occurs below the ground, symptoms are also observed above the ground. Due to the galling the plant experiences limited ability for absoabtion and transport of nutrients and water to the rest of the plant. This may cause a plant to exhibit nutrient deficiency symptoms which even with additional fertilization will correspondingly not result in correction of nematode induced deficiency.

Microscopic photo of the root-knot nematodes Meloidogyne spp

For more information please contact: Maurice Koome: 0704 411 325, **Simon Ngucugua:** 0704 411 301, **Simon Kihungu:** 0704 411 315, **Philip Kung'u:** 0715 407 215

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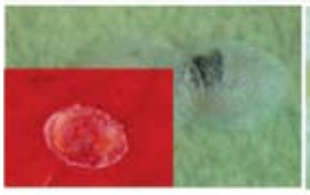
C) Thaumatotibia leucotreta (False Codling Moth)Life cycle



Eggs: Eggs are laid singly or sometimes in twos or threes together. An adult can lay between 100-800 over time. The eggs are translucent, flattened, oval, with a diameter of 0.9 mm, and almost invisible with a naked eye.

Larvae: After hatching, the larvae eat through the skin into the plant part (fruit or flower) and starts the larval stage. During 1st-3rd instar when the caterpillar is young, it is creamy-white with a brown to black head capsule. The full-grown larva is 15-20 mm long, bright red or pink in colour with light maroon head capsule.

Pupa: The pupa has a cream-yellow colour earlier to dark brown when mature. Both male and female have serrated posterior with a tough silken cocoon and live amongst debris or in the upper layer of soil.

Adult: Male is slightly smaller with wingspan 15-16 mm, female 19-20 mm. In both sexes, the forewing pattern consists of a mixture of grey, brown, black, and orange-brown markings. They fly only at night and spend the date resting in shades. Male hind legs have a tuft of long white and black hairs. When disturbed can fly up to 1500m.

Damages: The larvae mines into the flower, cut stem or into galls covering the hole with dark frass exudates. A small hole on the flower bud or lump of frass on the galls is a clear indication that the pest id present.

Managing Caterpillars

a) Monitoring: Develop a monitoring plan

• Visual inspection: Inspect a small percentage of each plant type by hand.

• Preferentially examine leaves that have holes or a window effect or that have unusual symptoms; use a hand lens where relevant.

• Plant beating: Gently but firmly hit the foliage against a beating tray. The beating tray should be a single colour; white or black is preferable as this will make moving organisms more visible. It should also be flat; plastic plates with small bumps or grooves are more difficult to use.

• Specific lures or pheromone traps can monitor the activity of specific moths. Presence of the target organism in the trap indicates that they are likely to be present in the crop. This assists in understanding pest pressure.

• Sticky Traps- Use traps to monitor presence of the insect pests. Either use sticky colored traps or light traps depending on behavior of the adult pest

• Place screens over greenhouse vents and closing doors. In this case, extra care must be taken to ensure that pests do not continuously complete their lifecycle in the structure.

• If infestations persist for long periods in a particular greenhouse, grow plants that are not susceptible for a season to break the life cycle

• Choose correct insecticides with no harm to parasitoids and predators.

Edwin Kiptarus
is the Customer Marketing, Flowers, Bayer East Africa.

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Margaret Njambi:

I love Working With Growers

Margaret, Business Development Manager, Corteva Agriscience, is a notoriously hard-working individual. She says, "It is important to view knowledge as sort of a semantic tree – make sure you understand the fundamental principles, i.e., the trunk and big branches, before you get into the leaves/details or there is nothing for them to hang on to."

Margaret is the epitome of the modern polymath going against the grain of specialization. She believes that knowledge needs a solid base before anyone ventures into it deeper details or there is nothing for them to hang on to.

She believes in honing yourself as a generalist, i.e. gain expertise in various disciplines. She started as a rose grower and researcher, then worked with the different agrochemical companies doing pesticides trials in the farm. This made her understand basic agronomy and pest disease management. She then moved into the agrochemical world starting as a technical representative and later technical Manager. This deep knowledge of various disciplines allows her to combine all that she has learned to move forward and innovate and think out of the box.

"Corteva is keen to work with growers to address both existing and emerging challenges, in line with our purpose: "to enrich the lives of those who produce and those who consume, ensuring progress for generations to come".

What experiences led you into agronomy, take us through the journey and your current role with Corteva, what do you enjoy most about working with farmers?

My agronomy journey began about 12 years ago, through an attachment at a flower farm while still pursuing my undergraduate studies. In my final school year, I undertook a project on vase life of Carnations; and consequently, began my career in the flower industry post-graduation, working as a rose grower and researcher in one of the farms in Naivasha. While at the farm, I was keen on pest management and was involved in conducting registration trials for pesticides of various agrochemical companies. This stint gave me exposure in basic agronomy and pest and disease management principles on key crops. Later, I joined one of the leading agrochemical organizations as a technical representative and later as technical manager working with growers to develop and introduce new pest control solutions in the flower sector.

Presently, I hold the role of Business Development Manager at Corteva Agriscience, where I drive demand generation activities through: Technical, Product and Sales support, marketing support including launches, developing technical/marketing content. I also represent the voice of customers - working directly with growers informs on their specific pain points thus enabling me to voice their needs at the local product concept team which I am part of. We are therefore able to match the grower needs with their pain points hence delivering tailor-made solutions to their needs. At Corteva,

we endeavor to wear the customer "hat" while making every decision. We constantly strive to understand our customers and their respective journeys better so we can address their needs effectively as we provide solutions. It has indeed been a great and rewarding journey so far.

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

Corteva is keen to work with growers to address both existing and emerging challenges, in line with our purpose: "to enrich the lives of those who produce and those who consume, ensuring progress for generations to come". Corteva is keen to service each segment in the best way possible based on their needs. We listen to and find creative ways to collaborate with customers and provide solutions to the growers.

We have a cross cutting portfolio that tackles common challenges in the ornamental sector namely: Aphids, Caterpillars, False Codling Moth (FCM), Leafminers, Mealybugs, Nematodes, Thrips, Whiteflies, Downy Mildew, Powdery Mildew, Rust. The portfolio brands are as follows; Acanto®, Closer®, Delegate®, Dithane®, Equation Pro®, Fidelity®, Runner, Tanos®, Tracer®, Uphold®, Vydate®.

Through various partnerships, we strive to team up with our business partners and stakeholders to meet the changing needs of growers and customers while maintaining Corteva's position as a trusted brand.

Are you seeing any 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 Corteva.

False Codling Moth (FCM) continues to pose a threat not only in the cut-flower segment but also in the horticultural sector as whole. Additionally, flower retailers / markets and secondary standards continue to exert pressure on growers' choice of pesticide - a trend likely to continue. The current Corteva flagship brand registered for managing FCM is Delegate® (Spinetoram 250g/Kg). Growers to expect introduction of more market acceptable solutions targeting False Codling Moth (FCM) and other emerging pests. Corteva is also keen on providing more support to growers with respect to food chain and MRLs related issues.

FCM is categorized as a quarantine pest by the EU. You recently held a virtual training with farmers. What are some of the key takeaways and how can farmers use this resource? How can Corteva help growers manage and control it?

Indeed, FCM pest remains a challenge and has had an impact on the horti-sector and business in general. Some key takeaways during the virtual panel session were:

• The FCM pest is expensive and difficult to control and is present in all flower growing regions countrywide

• The FCM challenge is not an individual farm challenge but rather a countrywide farm problem since should there be many interceptions, we risk increase of the sample size requirement and ultimately may result in losing competitive advantage as an export market in the region. The pest thereby must be tackled communally.

• Emphasis on the importance of pest identification to manage the pest - the growers were enlightened on how to ID the pest in its different lifecycle stages and various plant parts where the pest stage is more likely to be found.

• The eggs are finding their way to the destination market as

From Page 16

From Page 15

they are laid across the whole spectrum of the rose bush and can be easily missed during scouting – eggs hatch on their way and are discovered as pests while in the destination market

- Ability of the larval stages of the FCM pest to hide in crown galls thus rendering scouting efforts futile consequently spray penetration becomes a challenge. This calls for physical checks (post-harvest handling) which is time consuming and expensive in respect to personnel. Flower buds also risk being easily damaged during physical inspection.

• There is need for a customised IPM strategy to effectively manage the pest specific to the farm - this was observed through a surveillance study conducted on a number of farms detailing the challenges in management of the pest.

• Another challenge noted to compound the FCM notoriety is that it has multiple hosts therefore increasing pest pressure throughout the year.

- The pest is active at dawn and dusk and breeds all year round.

The grower needs working solutions and there is need for a concerted effort from each industry stakeholder/player to work together with the growers and contribute in their capacity towards combating the pest. This will adequately address the FCM challenge going forward and preserve the industry.

• The winning strategy against FCM is to eliminate it from production rather than tackle the pest at the exit point.

• The umbrella bodies are available to coach members on best management practices of the FCM pest.

- They are also engaging the EU to help them understand the various mitigation measures in place locally and the commitment of growers towards effective management of the pest. Additionally, the engagement is to ask the EU to maintain the current sample size (rather than increase) and eventually reduce it.

- A protocol developed by the one of the umbrella bodies in conjunction with other stakeholders for the management of False Codling Moth in Kenya was shared. The manual details pest identification, pre-harvest and post-harvest management techniques and other resources available for growers use.

• KEPHIS contribution towards mitigating the FCM pest:

- Collating pest data from farms for use to guide on FCM management

- Inspection and certification of production systems for roses and Capsicum

- Stringent inspection before certification of export consignments at the point of exit

- Training of scouts, QCs and Supervisors on FCM identification and management

- Collaborating with the industry in awareness creation and sensitization; have conceptualized and shared an FCM alert poster

Ultimately, the grower needs working solutions and there is need for a concerted effort from each industry stakeholder/ player to work together with the growers and contribute in their capacity towards combating the pest. This will adequately address the FCM challenge going forward and preserve the industry.

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

Growers are currently facing more restriction from the markets/retailers on pesticides to use on the produce they are exporting. This means that the number of active ingredients they can use has significantly gone down. This continues to pose a challenge on having spray programs that sufficiently address resistance management concerns. On the other hand, the range of chemical groups and mode of actions continue to dwindle as a result; there is also the challenge of using pesticides that have different brand names but target the same site of action or are within the same chemical groups. This lowers effectiveness of the management strategies of the various pests. What growers need to consider is FRAC and IRAC guidelines, which can easily be accessed online. During Corteva product launches, we provide resistance management guidelines to follow in the usage of the active ingredient being introduced into the market. Corteva is passionate about product stewardship; as such we continuously provide trainings on our solutions and how one can rotate with other active ingredients available in the market.

Corteva has a rich incoming pipeline, what can you promise the flower sector?

Corteva is working towards providing growers additional tools to tackle both existing and emerging pest and disease management in the flower sector. Currently, from an R&D pipeline, we are working on solutions to tackle downy mildew, botrytis, powdery mildew and nematodes.

On new product introduction, we have some brands that are ready for introduction commercially, among them are two additional insecticides, which Corteva will launch before the end of the year.
Expect to see more Corteva participation in the sector through various grower engagement activities.

Corteva Agriscience Unveils Solutions for The False Codling Moth

By Mary Mwende

An appealing orotund voice of Mr. Shyka Luc, rent the air, bringing to attention all members present in a Webinar conducted by Corteva Agriscience. As a major pest in Kenya currently, the webinar aimed at finding a collective solution to tackling its menace in Kenya.

After carefully listening to panelists, Evelyne Pamba, Corteva Technical Lead said, “thank you panelists, as Corteva we are here to share our False Codling Moth solutions.” She paused momentarily then continued, “So far we have three products, two in the market and one in the pipeline. The three are namely; *Radiant 120SC, Delegate 250WDG and Uphold 360SC*.” She continued, “They contain Spinetoram which is an improved version of Tracer, an existing product in the market. Radiant 120SC is for vegetables, Uphold 360SC on vegetables and flowers and Delegate 250WDG for Flowers”

Everyone in attendance was all ears not to miss the gist. As Ms. Evelyn went on with her speech, narrating the milestone reached by Corteva, it was all smiles from the farmers and stakeholders present. The long sought solution to False Codling Moth (FCM- *Thaumatotibia leucotreta*) dilemma had finally made its grand entry into the market. It was a wrap for the harrowing FCM pest.

Spinetoram Attributes (Radiant 120SC and Delegate 250WDG)

She informed growers *Spinetoram* are

created by synthetically-modifying natural *spinosyns* produced by *Saccharopolyspora spinosa*. Their physical, chemical, and toxicological properties are similar to spinosad. It was registered in 2007 under US EPA Reduced Risk Pesticide Initiative. It provides equivalent or better control of *Lepidopteran* pests (caterpillars) in addition to thrips. It has excellent knock down, rain fastness and long lasting effect.It is highly effective by ingestion and also by contact activity. It is not directly ovicidal but hatched larval will eventually die, mostly active against larval stages. It has also moderate to good residual activity and rain fastness with effectiveness of up to 14 days depending on crop and pest as well as a good trans laminar movement and safe on beneficials.

Spinetoram does not flare mites, aphids or other secondary pests. It is also compatible with other tactics in Integrated Pest Management (IPM) programs. It’s an excellent rotational partner with insecticides with different modes of action (*chlorantraniliprole, Indoxacarb, emamectin benzoate* and others). *Spinetoram* has been recognized as Reduced Risk Pesticides and was awarded the US Presidential Green Chemistry Challenge Award.

Methoxyfenozide (Runner 240SC)

Methoxyfenozide is more active on young larvae, Adult fertility and fecundity effects by *methoxyfenozide* were also observed in some insect pests such as *Spodoptera littoralis*, *Cydia pomonella*, *Lobesia botrana* and others *Methoxyfenozide* causes cessation of larval feeding within 2-24 hours while death occurs in days.

UPHOLDTM360SC (Spinetoram and methoxyfenozide)

It is a combination of two powerful modes of action (*Spinetoram* and *methoxyfenozide*) which affects multiple life stages of pests with *Spinetoram*-affecting larvae and *methoxyfenozide*- affecting the eggs and neonates. They are convenient and user-friendly. They complement each other in both contact and ingestion activity and fast

Mr. Francis Karanja
Sales Manager ESCA

knockdown and long residual control of target pests.

It's best for use on trees, vines, vegetables, corn, cotton, Ornamentals & sugar beet with market-leading activity on major *lepidopteron* pests (Caterpillars). UpholdTM360SC Active Ingredient & Product is *Methoxyfenozide (ovicidal)* 300ga.i/L and *Spinetoram (larvicidal)* 60ga.i/L with a Suspension Concentrate Formulation.

This product has multiple effects on all insect stages (eggs, larvae, adults). It has both ingestion and contact activity, difficult for pests to escape its action and it acts quickly with a long lasting effect. It does not show any cross resistance with different IRAC groups. Therefore, it is a resistance breaker for difficult to control pests that have developed resistance to other modes of action with no impact to beneficial arthropods if label instructions are correctly adhered to.

Product Profile

The product has low impact on most beneficial insects (predators & parasitoids) & on bees. It does not flare mites or aphids. It's compatible with other tactics in IPM Programs. It is an excellent rotational partner with insecticides with different modes of action (*chlorantraniliprole, indoxacarb, emamectin benzoate*). Both active ingredients have been recognized as Reduced Risk Pesticides and were awarded the US Presidential Green Chemistry Challenge Award.

Crisis brought about by False Codling Moth

The detection of FCM at any stage of development in a consignment leads to interceptions of the whole consignment leading to wastage and losses. This interceptions are attributed to inspections have become rampant for both roses and capsicum.

Flower growers have had several control measures to rid off the pest but still there are some pests that are being found in exports to EU hence interceptions.

Growers Experience

Speaking during the webinar, Mr. Tom Ochieng, a director with Penta Flowers said, FCM has been a serious threat to growers". He said the pest is in all growing regions and unlike many pests, it is active at night making it difficult to grow. Adding, "the cost of running FCM checks in pack houses is high in terms of personnel, time, and physical damages".

Industry Interventions

Industry regulators namely KFC. FPEAK and FPC in a video communication said Kenya's main market the EU was under threat. Since its emergence in 2018, consignments of roses among other horticultural produce from Kenya to Europe have been intercepted upon the presence of FCM. This is because the European Commission (EC) includes FCM on its list of harmful organisms recommended for regulation as quarantine pests to prevent its introduction into Europe.

In the video, farmers shared their experience and the challenges they were facing. To wrap up the video communication, Mr. Ojepat Okisegere of FPC, Patrice Ngenga of FPEAK and Benard Nyambega of KFC narrated the measures and trainings the institutions are taking to ensure the pest was no longer a threat.

Government Interventions

Dr. Mary Guantai of KEPHIS said the regulatory body was Collating pest data from farms for use to guide on FCM management. In addition, they had introduced inspection and certification of production systems for roses and Capsicum, a stringent inspection before certification of export consignments at the point of exit and training of scouts, QCs and Supervisors on FCM Identification and management. They are also collaborating with the industry in awareness creation and sensitization; FCM alert posters

Farmer Engagement

Answering questions from farmers, Mr. Francis Karanja said, "The packaging will be in two pack; 1 litre and 2 litre containers. The pricing will be advised once the product is available but it is meant to be farmer friendly."

Conclusion

Corteva Agriscience has a range of high-value products and smart solutions to agriculture. They are focused towards finding long lasting solutions to challenges faced by farmers globally.

Corteva Unveils Fidelity 400WDG; A Wrap for Destructive Sucking and Chewing Insects

Evelyne Pamba,
Corteva Agriscience Field Scientist Lead

By Mary Mwende Mbithi

Flowers and horticultural growers preparing their spray program now have many options to consider from including a new superior formulation against sucking and chewing insects, thanks to Corteva Agriscience. It was an epoch making fete as the growers came together in jubilation through a webinar to welcome the entry of Fidelity 400 WDG. Fidelity is a broad spectrum product registered for the control of caterpillars, whiteflies, aphids, mealybugs and thrips.

With a good number of farmers and stakeholders in attendance the quorate was definitely set. There was optimum silence and stillness that you could hear a pin drop as members appeared attentive in their up close shot screen views. “In the last two years Corteva has offered numerous lasting and tangible solutions to growers in fight against resistant, new pests and diseases,” the pitch perfect voice of Mr. Anampiu Kithinji, the commercial leader for Corteva Agriscience, ESCA went on as he gave the opening remarks. This assertion was timely as it only meant that Corteva was the anchor to the volatile horticultural sector coming just in time to salvage the sector from the dreaded sap sucking and chewing pests.

Fidelity TM 400 WG

“Thank you all for your attendance, Corteva has once again come up with a more sophisticated solution to managing the recurring pests.” Ms. Evelyn Pamba’s delectable voice greeted the air. “It is our pleasure as Corteva to bring you FIDELITYTM 400WG, which is a new insecticide premix product for ornamentals, vegetables and fruits with market leading activity on major insect pests.” She went on, “It contains two actives; *Isoclast* and *Spinetoram* thus providing concurrent control of chewing (caterpillars, thrips) and sap sucking (aphids, whiteflies, mealy bugs) insect pest. Anxious smiles filled the mini screens of the farmers and stakeholders present and from the look everyone was looking forward for a trial of the product.

Product Profile

The formulation is: A wettable granular which contains Isoclast 300 gai/Kg and Spinetoram 100 gai/Kg. It has a combination of two powerful modes of action *(Isoclast and Spinetoram*) which have an excellent fit. *Spinetoram* is an IRAC Group 5 insecticide (*spinosyns*), which are nicotinic acetylcholine receptor (*nAChR*) allosteric modulators while *Isoclast* is an

IRAC Group 4C insecticide (*sulfoximines*), which are nicotinic acetylcholine receptor (*nAChR*) agonists. Fidelity 400 WG has both contact and ingestion activity. It has fast knockdown and long residual control of target pests. With the broad spectrum, almost all insect pests can be controlled at a go. It has low impact on most beneficial insects (predators & parasitoids) and also on bees if label recommendations are followed. It also does not flare mites or other pests and is compatible with other tactics in Integrated Pest Management (IPM) programs making it an excellent rotational partner with insecticides with different modes of action.

Isoclast Attributes: Has an excellent activity on *aphids, whiteflies, scales* and *mealy bugs*. It has a very fast knockdown and long residual control. Its activity is by ingestion and contact with an excellent systemic and translaminar activity. It has a unique mode of action and is effective against insect pest populations resistant to other insecticides. It is a valuable rotational partner with insecticides with other modes of action.

Spinetoram Attributes: It is most active against *caterpillars* and *thrips*. It is highly effective by ingestion, but also significant contact activity with good translaminar movement. With an excellent knock down, rain fastness and long lasting effect and not directly ovicidal, but larvae often die immediately after hatching. It has a moderate to good residual activity and rain fastness; effective for up to 14 days depending on crop and pest.

Fidelity 400 WG positioning

It is positioned as cross-spectrum insecticide. It provides control of sucking and chewing insects, especially advantageous when the pest overlap in crops. The curative treatment for most insect pests. In resistance management it acts as rotation tool in intensive protected crops. It competes with new mixtures from competition.

Growers Testimonials

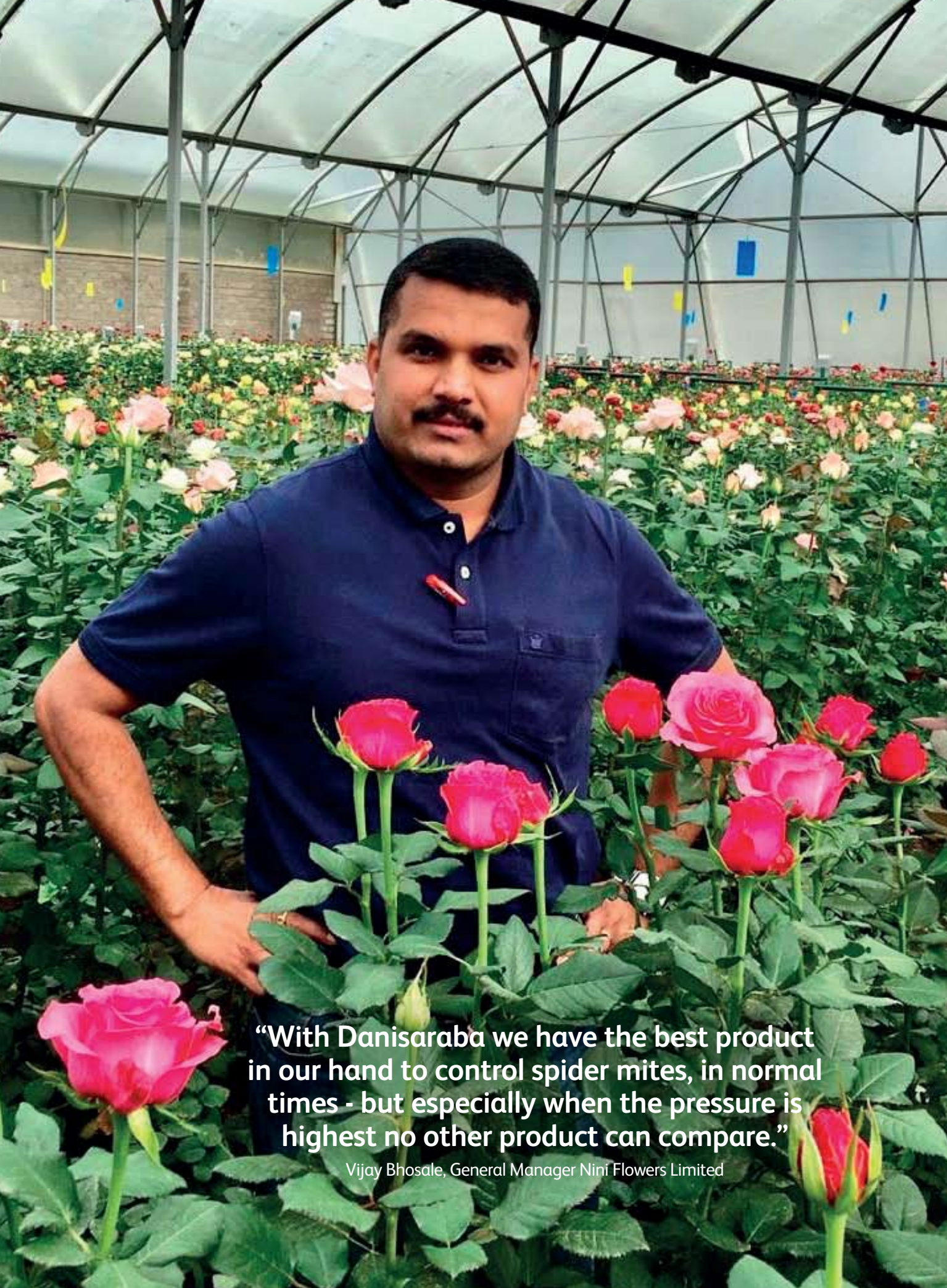
Giving his account after trying out Fidelity 400 WG on roses, Mr. Ezekiel Mugambi of Equinox Agriculture said, “We applied 7 days apart targeting mealy bugs and in 3 weeks we achieved good control” Pius Kimani of Olij said, “I have used Fidelity 400 WG on indoor and outdoor plants and after two applications, I achieved control on all leafhoppers and caterpillars.” George Hopf of interplant too gave his account, “I did extensive use on elimination of thrips, mealy bugs and whiteflies and the results were promising.”

Government representation

Dr. Mary Guantai of KEPHIS talked about the most common pest biology explaining their damages bit by bit. She said different pests have continued to threaten the Kenyan horticultural exports in the European Union making the produce to go through interceptions. This has resulted in economic loses. To curb this challenge the government is working towards engaging growers and availing useful information as well as resources towards fighting their menace.

Distribution

Mr. Stephen Ndiga and Mr. Jack Massawa of Lachlan Agriculture said they were partnering with Corteva Agriscience in distribution of their products. Currently Fidelity 400 WG is packaged in 40 grams and are still working on a 200gram pack. “The product is available through the team or the company’s email, info@lachlanafrica.com,” Stephen Ndiga concluded.



“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.

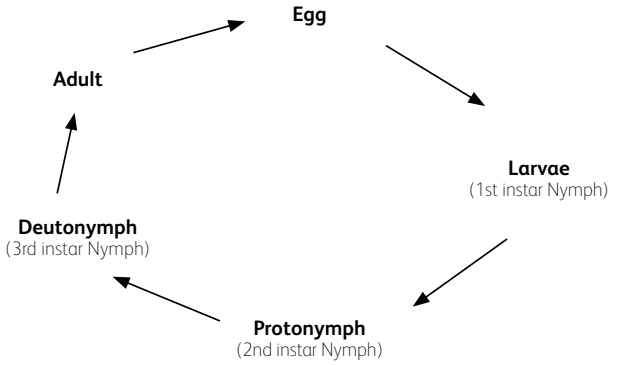


Figure 1: Life cycle of a mite.

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

Post-Harvest Handling of Cut Flowers

Generally, Cut flowers are highly perishable compared to any other horticultural produce. They are susceptible to a fungus disease like Botrytis due to relative humidity. This disease causes flowers to turn black and decay. Export of fresh cut flowers requires proper harvesting and care of flowers after harvest to maximize the vase life and ensure a high quality product. Flower quality after harvest depends on handling.

Lengthening the vase life of cut flowers depends on pre-harvest procedures.

The longevity of the vase life of cut flowers is dependent on daily harvest at their proper stage of development. Harvesting too early or too late reduces their vase life. Each plant species has a minimum harvest maturity stage in which flowers can be harvested without affecting their postharvest quality. Nonetheless, some flowers can be harvested at the bud stage with no reduction in quality and vase life.

The weather conditions and plant environment also affects the postharvest longevity. For instance, too much rainfall can cause water stress prior to harvesting.

If flowers are to be stored or shipped over long distances, they are usually harvested at an earlier stage. After harvesting, they need to be moved to a cool area to remove field heat. The lower the temperatures, the longer the flowers last. In the cool area, stems are recut and placed in solutions depending on the specific need of the flowers to help them recover from wilting.

Prior to Harvest

- Plants should be healthy and turgid.

- Plastic buckets and cutting tools should be cleaned and sanitized. Do not stack buckets if the outside is not clean.
- Cutting tools should be sharp. Dull cutting tools can result in crushed stems hence reducing water uptake.

Harvesting

- Harvest in the morning or evening when temperatures are low and plant water content is high.
- Remove foliage on stems that will be below water to avoid decay or bacterial growth.
- Never lay flowers on the ground or dirty surface as they collect dirt and contaminate the stems and buckets.
- Cut stems on a slant or straight (square). Slant cuts will keep stems from lying flat on the bucket bottom and increase water uptake.
- Disinfect cutting tools frequently, or at least 2 times each day.
- Grade and bunch flowers immediately after harvest to reduce handling steps and damage on leaves and stems.

If flowers are to be stored or shipped over long distances, they are usually harvested at an earlier stage. After harvesting, they need to be moved to a cool area to remove field heat.

- Bring flowers into the shade and place in clean buckets of clean warm acidified water (to reduce air bubbles) and a biocide if unable to grade immediately.
- Avoid over-filing containers with flowers to prevent bruising and tangling.
- The depth of the water in the buckets should be deep enough to cover the bottoms of the stems, usually 1-6 inches depending on the size of the stems and buckets.

After Harvest Care

- Move flowers to a cool area to be recut and placed in solutions depending on the specific need of the flowers.
- Recut stems under water to prevent air bubbles in the water conducting tissue. Air bubbles reduce the uptake of solutions.
- Place flower in solutions depending on the need of the flowers.
- Once harvested, cut flowers are typically placed in a low light or dark environment where photosynthesis is at a minimum.

IPM ESSEN from 25 to 28 January 2022 at Messe Essen

New special show “Packaging in horticulture” planned

Starting signal for the world’s leading trade fair for horticulture: After a break due to the pandemic, IPM ESSEN is back with current topics and innovative products. From 25 to 28 January 2022, the green sector will have a top-class platform at Messe Essen to discuss one topic in particular: Sustainability. With its products, horticulture makes a decisive contribution to climate protection. The industry’s need to exchange ideas in person is therefore great. Thanks to rising vaccination rates, the signs for the next IPM ESSEN are green. Numerous exhibitors from Germany and abroad have already confirmed their participation in the industry event of the year and booked a stand. The usual extensive supporting program will be extended by the topic “Packaging in Horticulture”.

With regard to the demand for flowers and plants, the conditions for a successful IPM ESSEN 2022 could not be better. The own home as a cozy retreat and the garden as a green oasis of well-being play an even greater role with the consumer in times of pandemic. Self-sufficiency in fruits and vegetables is also back in fashion - especially among the younger generation. At the same time, consumers are developing an ever greater eco-consciousness. “The horticultural industry must make itself fit for the future in order to meet today’s demands. Regardless of the pandemic, climate change continues to concern us. Sustainable solutions must be presented and discussed. The next IPM ESSEN is more than overdue, because we need this international communication platform as an important innovation driver,” emphasizes IPM Advisory Board Chairwoman and President of the Landesverband Gartenbau NRW e. V. Eva Kähler-Theuerkauf.

With regard to travel and accommodation requirements, the starting position for IPM ESSEN in January 2022 has improved considerably. “Tests, vaccinations and a comprehensive hygiene concept allow trade fairs to be held safely again. We have the claim to confirm our position as the world’s leading trade fair and continue to orient our trade fair planning to the international market,” explains Oliver P. Kuhrt, Managing Director of Messe Essen. “We assume that we will organize an IPM ESSEN which, due to its cutting-edge subject matter and the communication needs of the industry, will be able to build on the successes of previous years.”

“We are again experiencing a very high level of willingness to participate in IPM ESSEN 2022 in all exhibition sectors. Especially now, the industry needs a platform for innovations

and personal exchange," Sabina Großkreuz, Business Unit Manager Marketing at Messe Essen, looks ahead to the next event. A large number of exhibitors from Germany and abroad have already confirmed their participation in the industry event of the year and intend to present themselves in the usual size at IPM ESSEN.

Among them are joint presentations from Belgium, Costa Rica, Denmark, France, Great Britain, the Netherlands, Poland, Spain and the USA. "We really missed IPM ESSEN this year. It is simply the most important trade show for us in the field of winter-hardy nursery stock, ornamental plants and perennials. We have already reserved our British joint stand for next year and look forward to seeing our customers and partners again," says Pat Flynn, Trade Association Manager at the Commercial Horticultural Association - CHA.

New: Special show on sustainable packaging

Climate change and environmental protection have long since entered the minds of end consumers. The industry faces the challenge of meeting the desire for greater sustainability. A first step can be the use of environmentally friendly packaging. The new special show "Packaging in Horticulture" provides the producing horticulture industry with an overview of the market and shows possible solutions. In addition to products made from recycled plastic, the focus is also on plastic alternatives and reusable systems. Visitors can experience further retail trends and POS concepts that can be implemented on a one-to-one basis at the IPM Discovery Center. Guided tours and a Speakers' Corner impart knowledge and practical tips for successful business in the floral retail sector. Further highlights such as the Infocenter Horticulture, the BGI Trade Center, the Green City with live floristry and the start-up area of the "Young Innovative Companies" are planned. IPM ESSEN intends to maintain its usual extensive supporting program and is also planning the International Horticultural Forum, the future congress GaLaBau Ausblicke, the series of lectures on the EU campaign "Green Cities for a Sustainable Europe", floricultural competitions, a career forum and the Training Day.

> "The horticultural industry must make itself fit for the future in order to meet today's demands. Regardless of the pandemic, climate change continues to concern us. Sustainable solutions must be presented and discussed.

Air Cargo Market for Flowers is Anything but Normal

Face-to-face contact with customers, suppliers and employees is key, but modern technologies can also fill in.

Freight companies pride themselves in offering the best cold chain in the market. Most companies operating from Nairobi have invested in extended cold stores, including closed dock shelters, and individual temperature-controlled storage facilities.

There have been many changes over the last few years in the logistics business environment, impacting the customer base. An indepth-knowledge of the ever-increasing demands of the fresh cut flowers and fruit supply chains is needed to uniquely manage the supply chains. There is need to deliver independent service to the market where growers, wholesalers, retailers, unpackers and auctions can make use of the services. This can be built on strategic partnerships with the world's key cargo airlines.

Handling and logistic services of perishable products by air

In flowers, the main supply chain is the Kenya – Netherlands trade lane for imports with hundreds of flights weekly, but also serve the USA, the Middle East and Far East with hundreds of weekly flights. Flowers are harvested, conditioned and packed at the farm today to be transported to the airport overnight for flight departure next day. Flights to The Netherlands usually depart in the evening to arrive in Amsterdam, but also leave the next morning for Maastricht or Liège. Shipments are collected at the airport and delivered to the importer within hours after landing. Flowers are either sold on the day of flight arrival, or are auctioned off the next day or sold directly to supermarkets. Occasionally, today's harvest can fly to Amsterdam the same day and can be sold next day.

The most critical steps, in terms of maintaining the quality of the product?

There is an absolute need for supply chain collaboration in order to achieve the shortest possible lead times in place and avoid the product from being exposed to temperature deviations in each and every step of the process.

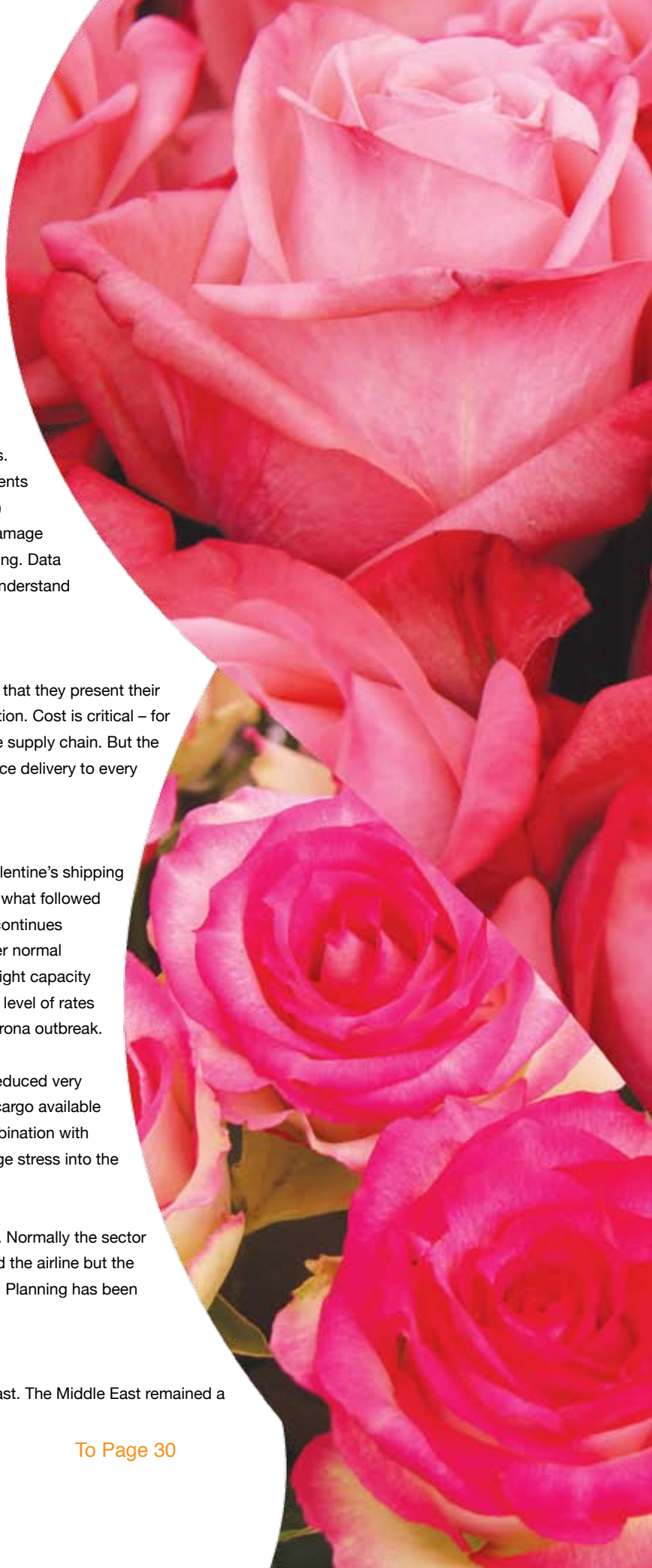
Role of the grower to help protect product quality

Make sure that the product is properly packed and remains temperature-controlled at all times; from post-harvest onwards. Growers need to continuously manage this area of risk. Whether it is temperature controlled trucking to airport or the necessary investment into well-designed and manufactured packaging material; all aspects of cold chain management help the industry to deliver superior product to the market."

Freight companies expertise to keep the chain running smoothly, and to maintain quality?

Freight companies pride themselves in offering the best cold chain in the market. Most companies operating from Nairobi have invested in extended cold stores, including closed dock shelters, and individual temperature-controlled storage facilities.

Also, they have put time and money into temperature controlled transport of aircraft pallets from the Kenya cold stores to the aircraft. Upon arrival in Europe, shipments are delivered as quickly as possible to customers. Temperature-controlled logistics suppliers select the shortest routes to ensure the shipment is delivered timely. Tracking teams monitor each and every shipment, keeping the full chain informed as to the progress of these shipments. To minimise handling of boxes they work closely with our clients and encourage shipments on skids (no bottom deck boards) rather than individual boxes. This approach results in less damage to the packaging and content and quick loading and unloading. Data loggers have become an important business tool to better understand temperatures during transit."



Air freight costs

To operate as efficiently as possible it is important to ensure that they present their customer's product to the market in the best possible condition. Cost is critical – for all customers. Clearly, logistics is an expensive aspect of the supply chain. But the main focus remains on scale and on the quality of their service delivery to every customer.

Coronavirus Impact

Economic indicators had just pointed to a rather sluggish Valentine's shipping season when the coronavirus pandemic hit us hard. Luckily, what followed was a relatively quick recovery. Nevertheless, the business continues to be under pressure with lower shipping volumes than under normal circumstances. The biggest challenge is the very tight air freight capacity situation (as airlines redeploy their aircraft) and the very high level of rates demanded by the aviation industry as they too battle the Corona outbreak.

At the start of the global lockdown, airfreight capacity had reduced very fast; by approximately 60 to 70 per cent and there was still cargo available for around 50 per cent of the available capacity. This in combination with the almost worldwide grounding of passenger flights put huge stress into the market.

Rates increased and the lack of capacity went hand in hand. Normally the sector turns around big volumes, balanced between the grower and the airline but the market turned into a daily market for a longer period of time. Planning has been immensely difficult."

Most affected regions/routes

The most affected regions for us were the US and the Far East. The Middle East remained a strong region for to serve.

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Business kept going

It has been a proactive approach by leveraging relationships with carriers, buying space from the airline and offering this space to customers. Use of alternative routes has also helped.

The situation in the global supply chain.

The capacity crunch continues and the air cargo market is anything but normal. This situation applies especially to the US market where recovery is a long way off. A weakening dollar does not help either. Other regions seem to be picking up or remain stable but overall it is a very volatile business environment."

Debt Management

Unfortunately there are a few customers impacted by the slow down and it is no secret that their debt situation is not great. This is of course concerning, especially since these debtors have long relationships with the freight companies and there are real people with real challenges behind these numbers. It is important to try to assist as much as possible where there are problems but there is need to balance this situation given not to affect company's cash flow.

Contracts

The whole situation is still very fragile. First, there were signs of improvement but more recently we witnessed a flare up of Covid-19 cases with many markets turning down again. In the best-case scenario for the industry, international passenger flights pick up as countries open up again with people feeling healthy and safe to travel around the world. In such a situation, extra capacity will help driving prices down, benefiting global trade as a whole.

Rationalisation in terms of the number of carriers and a more specialised sector

This is expected. The sector is already experiencing major cost savings on the part of global airlines and that will have an impact on our industry. The major part of the savings are currently hitting the passenger side of the airlines and the cargo operations will follow. On a positive note, airlines hopefully realise that cargo and especially perishable cargo will always be there. It is more or less disaster proof. On the other hand it is impossible to compete with pharmaceutical products.

Sea freight

This trend is already on. It had started some years ago but the Covid-19 pandemic will provide an extra boost. It is anticipated more type of flowers and many more types of fruits and vegetables to be moved via OFR. Luckily, it has shown in the past that local experts are ready to handle this. This development is expected to pick quickly. However, there will still be a big need for AFR, especially once Covid-19 is under control but there will be a shift to more OFR. That is for sure.

Last Few Months

Covid-19 clearly has shown how fragile the sector is but also shown how good it is in adapting to new situations. Face-to-face contact with customers, suppliers and employees is key, but modern technologies can also fill in. Additionally, it is good to experience that employees also have been able to adapt and daily contacts with their relations have been different but everything has run smoothly.

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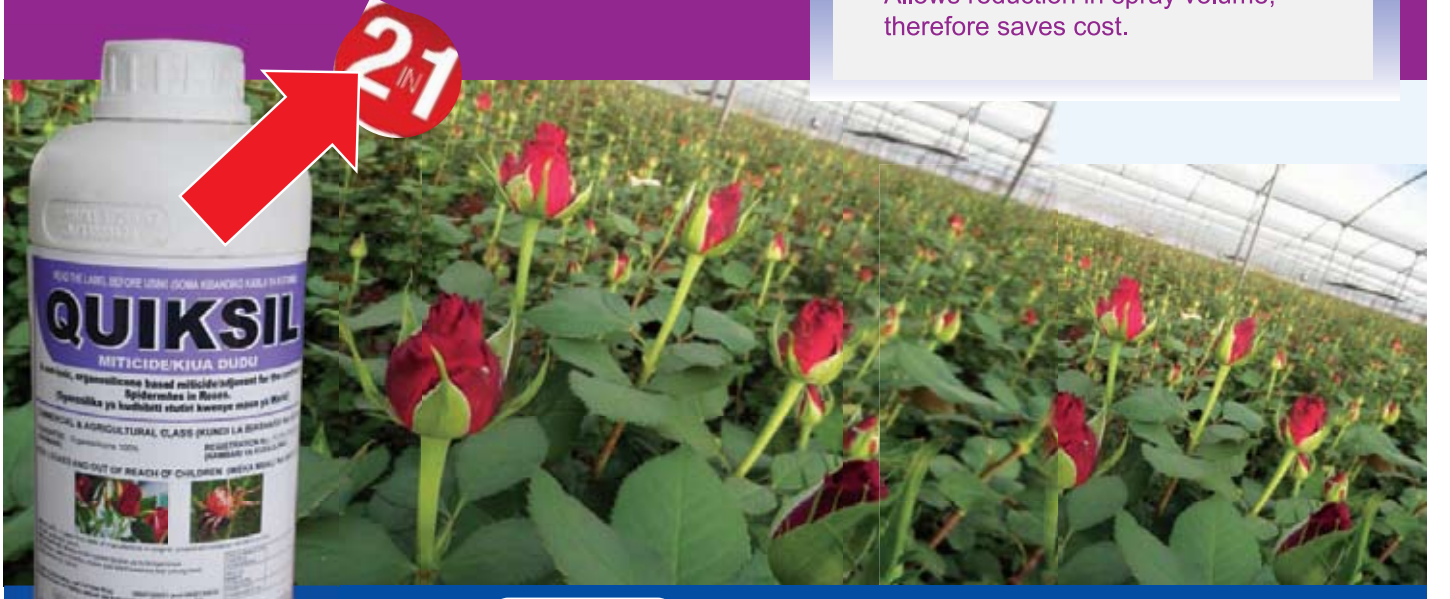

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Mr. Ralf Lopian

Phytosanitary ambitions succeed or fail with the capacity of the weakest link

Ralf Lopian is the Chairman of the international steering commitee for the 2020 International Year of Plant Health (IYPH), which extends beyond 2020 due to Covid-19. In this interview, Lopian highlights plants' economic, social, and environmental value while sounding the alarm over an ever-increasing threat from pests and diseases. To minimise further introductions and spread of devastating pests and diseases, Lopian urges governments to invest more in surveillance, monitoring and capacity building.

Global Problem

Protection for our plants is more critical than ever as insect pests and pathogens are attacking them globally. The problem is growing as a result of globalisation. "Plant pests and diseases can more freely move around the world with the international flow of goods. International travel and the subsequent movement of people have also radically increased the spread of pests and diseases over the past decades," says Ralf Lopian, who, next to his role as IYPH steering committee chair, also works for Finland's Ministery of Agriculture and Forestry.

New pests and diseases appear now in territories where people had never spotted them before, with negative consequences on local ecosystems, agriculture, and food security. "What is more, once established in a new area, plant pests are often impossible to eradicate," notes Lopian

When it comes to climate change, there is the indisputable fact that a change in weather patterns affects plant pests' epidemiology, distribution and impact. "Due to global warming, more pests are not only appearing earlier in the season; but raising temperatures also create new pathways for pests to thrive and spread. Climate change influences the movement of trade flows for agricultural commodities, and threatens both the quality and quantity of crops", says Lopian.

Economic Losses

Pests and diseases are responsible for losses of 20 to 40 percent of global food production; and trade losses in agricultural products exceeding USD 220 billion every year. "Balancing the impact of climate change, pest occurrences and food production is an unprecedented global challenge for the scientific community as we aim at producing more with less resources and degrading soils to feed 9 billion people by 2050", continues Lopian.

He points to pests and diseases transported from their endemic ecosystem to a completely new one and have had catastrophic economic impacts using the Fall Armyworm (FAW; Spodoptera frugiperda) as an example. "In 2016, the FAW was introduced into West-Africa and can now be found in almost every African country. Analysis of its economic damages are still investigated, but preliminary assessments find that it can cause USD 6.2 billion worth of damage in maize production alone."

One of the most dangerous plant bacteria worldwide is *Xylella fastidiosa*, which emerged in Southern Italy in 2013 and subsequently spread to several other EU countries in the

Mediterranean basin.

An EU economic analysis projected that *Xylella* could cause an average annual economic impact of €5.5 billion in direct production losses, €0.7 billion in resulting trade losses and could cost 300,000 people their jobs in the agricultural sector alone.

The Global Increase In Pests And Diseases

Global scientific research finds that the growth of phytophagous insects is exponential with 9.5 new species found each year compared to 4.5 per year between 1950- 1975, and most new insects link to nursery stock products.

A polyphagous pest or disease has more potential pathways to be distributed. There are many more hosts to live off, complicating the early detection, surveying, monitoring and eradication of pests and diseases. This is an evolutionary advantage over monophagous pests and diseases who are much easier found in inspections and can be much easier eradicated once found."

Societal Values

Again in a broader perspective: protecting the world's plants for the future means protecting crops' economic value and protecting our eco systems and physical and mental health. Plants are the building blocks of life, they provide food, oxygen, medicines and shelter, and are deeply anchored in many populations' culture and traditions.

Lopian believes plant health must be higher on the agenda of politicians. "This notion is one of the reasons why Finland, the IPPC and the FAO promote the concept of an International Year of Plant Health. We need to make the public and political decision-makers aware of the serious consequences pests and diseases can pose for the environment, economies and societies."

Are we waiting for the next crisis?

Staying ahead of damaging plant pests requires constant vigilance at every level. Growers, traders, gardeners, foresters and farmers all need to be on the lookout in the field for the first signs of disease. How can the IPPC community, finding itself on top of the pyramid, give the issue the prominence and priority it deserves, permanently and without waiting for the next crisis?

"This is also one of the main objectives of the IYPH. Raising awareness among the public to make them awake to the dangers of bringing uninspected plants and plant products from abroad. In addition, the cooperation between the public and the private sector to make more efficient phytosanitary regulations which can be applied by professionals and can convince them that they are necessary for their own economic benefit. The IPPC community is composed of 184 contracting parties that provides an international framework for protecting plant resources from pests and diseases and promote safe trade among all countries. Here we have the unique opportunity to adopt International Standards for Phytosanitary Measures (ISPMs), and thus provide advice to people and operators on harmonised and more efficient ways to carry out safe trade and act responsibly," notes Lopian. He warns against the online delivery of plants and plant products since postal packages can easily bypass the normal phytosanitary controls vital for keeping our agricultural industries safe from external

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"Due to global warming, more pests are not only appearing earlier in the season; but raising temperatures also create new pathways for pests to thrive and spread.

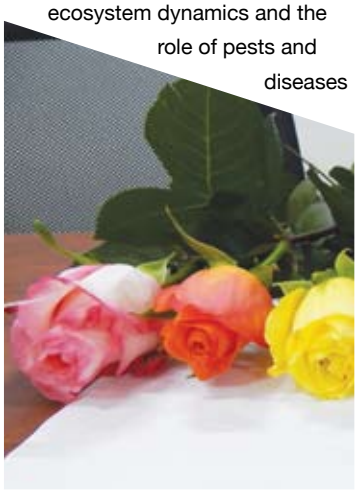
threats.

The Weakest Link Deserves Attention

In a well-oiled plant health control chain, authorities responsible for screening imports and exports are efficient, diligent, well-staffed and resourceful. However, IPPC has identified phytosanitary capacity and resource limitations as being one of the most significant barriers.

"It is unfortunate that many countries do not have the resources available, the lack of political will or simply a lack of sufficient political structures to build up a competent and efficient national phytosanitary system. Our global or regional phytosanitary ambitions succeed or fail with the capacity of the weakest link.

To minimise further introductions and spread of devastating pests and diseases, Lopian urges countries to invest more in surveillance and monitoring, being the pillars under a well-functioning plant health regime. Moreover, governments should invest in an extra phytosanitary research capacity to deliver fundamental knowledge of ecosystem dynamics and the role of pests and diseases in their ecosystems. "Ultimately, this would help establish sustainable and environmentally friendly ways of controlling plant diseases including the use of pest and disease-free starting and planting material. It would also deliver knowledge on the impact of climate change on pests and diseases and their hosts. An important subject for the immediate future of our biosphere."



Pheromone Traps And Sentinel Plants

Pheromone traps are standard practice in countries such as New Zealand and Australia to detect tropic fruit flies near the point of entry. These can undoubtedly play a more prominent role in European countries, particularly in the south.

The potential role of sentinel plants in surveillance for pest introductions is much newer. Lopian calls the planting of sentinel European trees in, for example, China very promising.

"One of the primary observations in plant health is that many 'exotic' pests and diseases are not important in their area of origin. There they co-evolved with their hosts in the ecosystem and achieved a balance. When these pest and diseases are transposed into new ecosystems they do not have the balance with their new host species and quite often devastating damages occur. The idea to plant highly susceptible plants near points of entry or risk areas is very appealing since it is a cheap and effective way of detecting small populations of introduced pests and diseases, which then allows for rapid eradication measures."

For more details and registration for AIPH's International Plant Health Conference click here: AIPH International Plant Health Conference • AIPH

Flushing hydroponic systems to be a solution for all

Nutrient imbalance, waste, and an alternative solution. We recommend that hydroponic growers flush their systems every month to every few months, depending on the type of system they're running. But why? We're also fans of recirculating system because it conserves water and nutrients.

Let's talk about why this is necessary and how you can practice conservation.

The problem: nutrient imbalance

The main reasons for flushing a hydroponic system is nutrient imbalance. Hydroponic fertilizers are specifically formulated for specific crops (you can buy nutrients for a type of crop, like greens or flowers), but each farmer grows a different combination of crops in different conditions, and the ratios in which plants take up nutrients is usually just a little bit off.

This nutrient imbalance is also affected by metal components if the system has any. Zinc and aluminum ions can cause toxicities if they accumulate over time.

While it's easy to just use plastic tanks and fittings, or to coat the metal components in your system with an epoxy to reduce leaching, sometimes the presence of metal is unavoidable.

Another reason that growers flush their system is a hygiene practice. Algae and many plant pathogens can survive in the water, and regular cleaning with a mild bleach or peroxide solution, or another oxidizing agent is a preventative measure.

Two solutions: flushing and mass balancing

Most hydroponic growers take care of this nutrient balance problem by flushing the system and starting from scratch with nutrients. This is certainly the easiest method.

This practice can have a downside, however, because often the solution dumped from a system when it is being flushed isn't used elsewhere. This can be wasteful.

The alternative to flushing a hydroponic system is to learn to mass balance. To do this, growers would get their water tested for individual nutrient levels. This usually has to be done through a lab.

Then the grower would adjust each individual nutrient to its proper level. The reason that many growers choose to flush over mass balancing is that lab test can be pricey. Still, this option can be cost effective, depending on the size of the system and access to lab testing.

Ultimately, how you choose to deal with nutrient balance is up to you.

The Irony of Flower Growing

The business is weather sensitive and doesn't respect sundays. Beside, the market vagaries, pests and diseases are always, real to hit your crop

It is pretty easy to start a horticultural business, and that's one of the strengths of our industry. Conversely, closing a business can be a difficult and challenging task. But that is food for thought for another story.

While in protected cropping, the estimated cost to build a new greenhouse can range from one million per hectare for a standard model or from €2 million or more for a state-of the- art greenhouse. New business development can still be more straightforward -even if you do not have much money.

A budding entrepreneur should first start by identifying the variety he wants of course, you need to maintain your crop and have a piece of land. And even if the harvest is seasonal, these crops can make enough money for a living. Is it so easy? The answer is no. And that is no surprise if you consider running a flower farm is no walk in the park. It comes with challenging endeavours.

To become a successful flower farmer, you will have to work long days and contend yourself with an income per hour that is extremely low when compared to other specialists such as lawyers, dentists, accountants, or civil servants.
A successful flower farmer has long accepted that his business is weather-sensitive with cut flowers that don't preserve Sunday rest and need harvesting seven days a week. Besides adverse weather conditions, the market's vagaries, pests and diseases are always ready to hit your crop unexpectedly.

Even a relatively small temperature change can influence your income dramatically. Just think of sudden warm and sunny spring weather in the Netherlands, which can cause Easter tulips to burst into bloom prematurely, followed mainly by oversupply, low prices, empty greenhouses and missed peak sales.

The situation can also happen in, for example, Kenya, Colombia or Ecuador, with rose farmers gearing up the Valentine's Day peak sales when an unexpected cold spell can kill their flowers. Gone is their income. Flower farming is an unpredictable business, and most entrepreneurs realise that weather conditions can still take them by surprise, no matter how well they listened to the weather forecast and followed the daily news.

To fight external threats adequately, the farmer has only one weapon: increase your harvest, your number of flowers per m² and your quantity per hectare.

Clever economists explain to us how stupid we are and warn farmers about the cycle. Well, farmers had known about the cycle long before the economy as a science existed. But can these clever economists also offer farmers a better alternative, or can they explain to them what to do better? At present, the irony of the global health crisis is that there has never been such a long period of high prices for flowers and (bedding) plants. Demand is higher than supply, and this is every grower's dream.

I have worked in the sector for long. I can't remember

when flower prices were so high; even last summer, the prices were excellent.

When prices are high, growers have a much better, more optimistic feeling than when the prices are too low. So the mindset of a grower also changes with the weather and the profits or losses they make: the high ups and deep downs continuously change from day to day.

According to this cycle behaviour, growers always consider investing their profits in expanding their farms more greenhouses and better equipped. The question we should ask ourselves today is - how to prepare for the future?

The coronavirus pandemic will end sooner or later, followed by the usual ups and downs in the market.

The peak February-to-May cut flower season brings 60 per cent or more of the income for the whole calendar year. If a grower decides to invest today based on the results of the last 16 months, he invests for a period to come where price developments go as pre-Covid.

In the past, we noticed that when chrysanthemums yielded reasonable prices, the following year, these chrysanthemum growers expanded so much that years later, the supply was higher than the demand.

You can see similar examples with tulips, alstroemeria, iris, lily and recently peonies. Based on this knowledge, perhaps growers can consider using their profits to pay their debts and their banks to become more independent. Alternatively, to invest in quality schemes.

It is no secret that one of the main reasons for being self-employed is to live an independent life. And we also know that in the end quality products will yield better prices in the market."

When prices are high, growers have a much better, more optimistic feeling than when the prices are too low. So the mindset of a grower also changes with the weather and the profits or losses they make: the high ups and deep downs continuously change from day to day.

‘Post-Covid, trade fairs will emerge stronger than before’

Flower trad Fair (IFTEX, NHFAIR) the region premier horticultural trade shows, are all set for their return after corvid crisis. The trade exhibition’s speakers people are adamant that they will go ahead soonest possible. Floriculture magazine spoke to one of the TradeFair organisers.

What Makes A Good Trade Fair?

“Responsibility, enthusiasm and peace of mind are the nouns that come to my mind. I consider it my responsibility and primary role to ensure that after celebrating many years of excellence, flower trade shows are the place to be for the entire ornamentals sector. I see it as an obligation to those companies and visionary entrepreneurs who, by the start of the millenium, found that the Kenyan ornamental sector not only needed but also deserved a platform to share knowledge and friendship and to generate new sales.

“I am excited because we horticultural business people should always act with an open spirit and participate in sectorial projects. By taking up the role of an organiser, you automatically represent a collective, and it means that colleagues have trust in me. I am lucky to encounter the same feelings of responsibility and enthusiasm within the show’s organising committee, a group of businessmen defending the same interests and facing similar challenges. It gives me peace of mind that I have a team of professionals in the organising committee. I am just the face of a great team.”

It is no secret that your aspiration is to have a face to face Trade Fair under the new normal.

“Of course, we are all longing for circumstances that will allow us to pick up our work, to be able to travel, to visit customers and suppliers. Unfortunately, this plan is not in our hands. Let us hope that science, vaccines and people’s social responsibility will allow us to overcome the pandemic in the coming months. I am adamant that very soon, there will be a physical trade show.

Last year, despite the worldwide disruption, it was not a very

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"A trade fair is a space for relationships, a meeting point, a neutral ground where supply and demand meet."

bad year for Kenya's horticulture sector, and the outlook is looking more better for this year. I am, of course, over the moon when some of my colleagues tell me that this year there will be a shortage of flowers. The coming editions can make it in to the history books as one of the biggest successes; people are looking forward to the event."

What are the challenges for the Fair's future?

One of the primary challenges is maintaining our trajectory and not losing our identity; Trade Fair is a promotional platform for companies. We want every segment of our industry to feel rightly represented and cared for, whether we talk about ornamental plants, production technology companies, farmingequipment companies, Crop protection, crop nutrition companies and logistics companies.

They are all equally important and necessary. Atrade Fair is the sum of them all. The word 'service' must be present in all our reasoning.

Whether they are exhibitors or visitors, companies will continue to trust trade Fairs if we add value to their products and services.

Every company goes to a trade fair with different objectives. Some are looking to export, increase their domestic market presence, build customer loyalty, access new channels or present new products, test products, or strengthen their sales

network. Attending a trade fair is a way of positioning oneself in the market and facing the competition.

But above all, a trade fair is a space for relationships, a meeting point, a neutral ground where supply and demand meet." Last year, most growers opted for a virtual meetings like many other sectors.

Are certain online elements here to stay?

"The hard months of confinement last year showed us the benefits and limitations of online solutions. When we could not move, they allowed us to keep working and maintain relationships with customers and suppliers. They showed us that there were issues that could be solved online, avoiding travel and meetings, saving time and money.

Once we can get back to business as usual, we will get back to face-to-face issues. In other sectors such as banking, insurance, telephony, or IT, online tools will continue for longer.

Now our industry seems to be fed up with them, and they are running away from them. "Our sector thrives on relational and personal contact. I believe that post-Covid trade fairs will be maintained and will even emerge stronger than before. Online tools will be one more instrument of communication, and they will be complementary. I say this because there are not known as 'great successes' in the different initiatives carried out, neither in our sector nor in any other. However, they were the best solution given the exceptional circumstances."

You as an industry veteran, how did you see the trade show evolve over the past decades?

"Looking back at many years of Trade Fair history, we would need much more time and space than is available in this interview. As I said before, a trade fair should be a promotional tool 'at the service' of a specific sector. For the years, the reality of our market, and the needs of companies have changed and trade Fairs have been able to adapt at all times. Our challenge is to continue to do so. If we are helpful to them, they will continue to trust us.

"A trade fair is a reflection of a sector, and it is where you can best observe the boom or bust periods of companies. I am an optimist by nature, and I am convinced that our sector has some very positive years ahead of it. If the industry is doing well, trade fair will do well. We are seeing how society's consumer habits are changing.

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
AAA- Flowers-Rumuruti	Roses	Rumuruti	Anil	-	-
AAA- Flowers -Chui Farm	Roses	Timau	Phanuel Ochunga	07522506026	-
AAA-Simba Farm	Roses	Rumuruti	Eliud Wachiya	0727258218	-
Fairy Flowers	cutings	Limuru	Kennedy Kamau	0712204894	kenreal07@gmail.com
Farm-Sunripe		Naivasha	Antony	0711827785	naivasha@sunripe.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	0780314387	ramnath.sarbande@xflora.net
Afriscan Kenya Ltd	Hypericum	Naivasha	Charles Mwangi	-	-
Aquila Development Co	Roses	Naivasha	Abhay Marathe	0729776656	gm@aquilaflowers.com
Balaji Flowers	Roses	Olkalou	Ra0 Venkatesh	0726337266	-
Baraka Farm	Roses	Ngorika	Lucy Yinda	-	lucy@barakaroses.com
Batian Flowers	Roses	Nanyuki	-	-	-
Beautyline	Flowers	Naivasha	Peter Gathiaka	0721392559	peter@beautyli.com
Big Flowers	Roses	Timau	Gideon Waweru	0721178974	-
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
Blue Sky	Gypsophilla	Naivasha	Patel Sushant	0725622333	info@blueskykenya.com
Bloom Valley		Salgaa	Karani	0733529666	-
Blooming Dale Roses Kenya Ltd	Roses	Nanyuki	Sunil	0718991182	info@bloomingdaleroses.com
Buds and Blooms	Roses	Nakuru	Shivaji Wagh	0720895911	shivaniket@yahoo.com
Carzan (K) Ltd KS	Summer flowers	Salgaa	Stanley Rotich	0721931710	stanley@carzankenya.com
Carzan (K) Ltd ST	Hypericum, solidago		Adung'o	0716019094	adung'o@carzankenya.com
Carzan - Molo	Carnations	Molo	Charles Chelule	0728784081	charles.chelule@carzankenya.com
Charm Flowers	Flowers	Athiriver	Ashok Patel	020 352583	ashki@charnflowers.com
Chestnut	Flowers	Mt. Kenya	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	kipkirui89@gmail.com
Colour crops Naivasha	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	Steve Outram	0733 609863	s.outram@dummenorange.com
Eco Flora	Roses	Salgaa	Jackson Mbanya	0723565630	production.eco@btfgroup..com
Elbur flora- kimman	Roses	Nakuru	Daniel Moge	0721734104	kimmanexp@gmail.com
Enkasiti Thika	Flowers	Thika	Tambe	0734256798	enkasiti@gmail.com
Equinox	Flowers	Nanyuki	Harry Kruger	0707266956	harry@equinoxflowers.com
Everest Flowers Ltd	Flowers	Mt. Kenya	-	-	-
Everflora Ltd.	Flowers	Thika	Bipin Patel	0735873798	everflora@dmblgroup.com
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
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	Mahindra Patil	0798254199	--
Fontana Ltd - Ayana Farm	Roses	Mau Narok	Osman	-	-
Flamingo Holdings Farm	Flowers	Naivasha	Peter Mwangi	0722204505	peter.mwangi@flamingo.net
Flamingo Holdings-Kingfisher Farm	Flowers	Naivasha	Mr. Isaac Karanja	0720473502	kingfishercarnations@flamingo.net
Flamingo Holdings- Kingfisher Farm	Flowers	Naivasha	Jacob Wanyonyi	0722773560	jacob.wanyonyi@flamingo.net
Flamingo Holdings-Siraji Farm	Carnations, Roses	Nanyuki	Peris Muturi	-	-
Flamingo Flora	Roses	Njoro	Sam Nyoro	0721993857	s.ivor@flamingoflora.co.ke
Flora ola	Roses	Solai-Nakuru	Lucas Choi	0721832710	lucas.floraola@gmail.com
Flora Delight	Summer flowers	Kiambu/ Limuru	Marco	0710802065	marcovansandijk@yahoo.com
Florensis Ltd	Cuttings	Naivasha	Anne Marie		annemarie@florensis.co.ke
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@bth.co.ke
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	Shailesh Kumar	0722203750	hfl.srk@gmail.com
Highland plantations	Cuttings & Herbs	Olkalau			production@highlandplants.co.ke
Imani Flowers	Summer Flowers	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	Mirium	-	production@kariki.co.ke
Kariki Ltd - Nanyuki	Eryngiums	Nanyuki	Richard Fernandes	062-31023/6	bondet.production@karik.biz
Kariki Ltd - Naivasha	Summer	Naivasha	Glory Gatwiri	0718328382	hamwe.production@kariki.biz
Kariki Ltd - Molo	Fowers	Molo	James Oluoch	0716333717	jame.oluoch@kariki.biz
Kariki - Hamwe	Hypericum	-	Benjamin Ribai	0723721748	hamwe.fm@kariki.biz
Kenflora Limited		Kiambu/ Limuru	Abdul Aleem	0722311468	info@kenfloraa.com
Kentalya	Cuttings	Naivasha	Linnet	0733549773	lynette@kentalya.com
Kikwetu		Mt. Kenya	Rathan	0787266007	
Kisima Farm Ltd	Roses	Timau	Craig Oulton	0722205828	craig@kisima.co.ke
Kordes Roses	Roses- Breeders	Karen	Luce	0735995566	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	Oppaso Bandgar	07120070053	oppasobandgar@vegpro-group.com
Kongoni River Farm -Bemack	Flowers	Timau	Mangesh	0797 874583	
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
Lathyflora		Limuru	Mbauni John	0753888126	info@lathyflora.com
Lauren International	Flowers	Thika	Dilip	0720796629	laurenflowers@accesskenya.co.ke
Laurel Investment	Roses	Nakuru	Rajedra Jadhav	0738359459	rajendra.laurel@bht.co.ke
Livewire	Hypericum	Naivasha	Esau Onyango	0728606878	management@livewire.co.ke
Lolomarik	Roses	Nanyuki	Topper Murry	0715 727991	topper@lolomarik.com
Mahee Flowers	Roses	Olkalao	Natarajan	0738999149	natarajan@eaga.co.ke
Maridadi Flowers	Flowers	Naivasha	Jack Kneppers	0733333289	jack@maridadiflowers.com
Maua Agritech	Flowers	Isinya	-	-	-
Mau Flora	Roses	Molo	Manju	0748254171	manju@mauflora.co.ke
Milenium Growers	Summer Flowers	-	Sushant Wankara	0731316000	sushant@marvelgreens.com
Molo Greens	Solidago, carnations	-			
Mt. Elgon Flowers	Roses	Eldoret	Bob Anderson	0735329395,	bob@mtelgon.com
Mwanzi Flowers Ltd	Roses	Rumuruti	Ram	0722265845	-
Mzuurie Flowers - Maji Mazuri	Roses	Eldoret	Mark Juma	0727471034	mjuma@majimazuri.co.ke
Mzuurie Flowers - Molo River Roses	Flowers	Kilelwa	Andrew Wambua	0724256592	awambua@moloriverroses.co.ke
Mzuurie Flowers - Winchester Farm	Roses	Karen		0725848909	
Mzuurie Flowers - Winchester Farm	Flowers	Bahati		0725848909	
Nini Farms	Roses	Naivasha	Philip Kuria	0720611623	production@niniltd.com
Nirp East Africa	Roses	Naivasha	Danielle Spinks	0702685581	danielles@nirpinternational.com
Ol Njorowa	Roses	Naivasha	Charles Kinyanjui	0723986467	mbegufarm@iconnect.co.ke
Oserian	Flowers	Naivasha	-	-	-
Panda Flowers	Roses	Naivasha	Vivek Sharma	0731040498	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	Richard Siele	0722716158	tambuzi.sales@tambuzi.co.ke
PJ Dave Flowers	Flowers	Isinya	Sanjiv Dogra	0737576966	pjdaveflowers@wananchi.com

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
PJ Flora	Roses	Isinya	Santos Kulkarni	0738990521	santosh@pjdave.com
Plantech Kenya Ltd	Propagators	Naivasha	Idan Salvy	0702187105	idan@plantechkenya.com
Porini Flowers	Roses	Molo	Shakti	0739676998	gm@poriniflowers.com
Primarosa Flowers Ltd	Roses	Olnjororok	Peter G. Njagi	0718342381	production.mp2@primarosaflowers.com
Rain Forest Farmlands Ltd	Roses	Naivasha	Boniface Kiama	0718925040	longere@fleurafrica.com
Ravine Roses Flowers	Flowers	Nakuru	Peter Kamuren	0722780811	bkiama@fleurafrica.com
Redland Roses	Flowers	Thika	Aldric Spindler	0733603572	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
Rimiflora Ltd	Hypericum	Njoro	Richard Mutua	0722357678	richard@rimiflora.com
Riverdale Blooms Ltd	Flowers	Thika	Antony Mutugi	0202095901	rdale@swiftkenya.com
Roseto	Roses	Roseto	Aravind	0786157344	gm.roseto@megaspingroup.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	Ashesh Mishra	0792217088	ashesh@xflora.net
Schreus	Roses	Naivasha	Haiko Backer	-	-
Shades Horticulture	Flowers	Isinya	Ashutosh Mishra	0722972018	info@shadeshorticulture.com
Shalimar Flowers	Flowers	Naivasha	Dinkar Wandhekar	0702418174	dinkar@eaga.co.ke
Sian Roses - Maasai Flowers	Flowers	Isinya	Anthony Kipng'eno	-	-
Sian Roses - Agriflora (K) Ltd	Roses	Nakuru	Charles Mulemba	-	cmulemba@sianroses.co.ke
Sian Roses - Equator Roses	Roses	Eldoret	Nehemiah Kangogo	0725848910	nkangogo@sianroses.co.ke
Sierra flora	Roses	Njoro	Pravin Yadhav	0735741774	farm.sierra@megaspingroup.com
Simbi Roses	Roses	Thika	Karue Jefferson	067 44292	simbi@sansora.co.ke
Sirgoek Flowers	Flowers	Eldoret	Andrew Keittany	0725 946429	sirgoek@africaonline.co.ke
Solai Milmet/Tindress	Flowers	Nakuru	Shantaram	0740212816	solairoses@gmail.com
Subati Flowers	Roses	Subukia	Naren Patel	0712 584124	naren@subatiflowers.com
Subati Flowers	Roses	Naivasha	Naren Patel	0712 584124	naren@subatiflowers.com
Suera Flowers Ltd	Roses	Nyahururu	George Kimathi	0724622638	gkbuuri@gmail.com
Sunfloritech	Roses	Naivasha	A Duzairajan	0794572232	farmmgr.tulaga@btfgroup.com
Sunland Timau Flair	Roses	Timau	Ken Mwiti	-	info@lobelia.co.ke
Stockman rozen	Roses	Naivasha	Julius muchiri	0708220408	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	Richard Siele	0722716158	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
Top Harvest	Roses	-	Pius Kimani	0721747623	pius.kimani@gmail.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	Nakuru	Fred Kisumo	0720107691	fkisumo@united-selections.com
V.D.Berg Roses	Flowers	Naivasha	Johan Remeeus	0721868312	johan@roseskenya.com
Valentine Ltd		Kiambu/Limuru	Joseph Kariuki	0728 093 379	joseph.kariuki@valentinegrowers.com
Van Kleef Kenya Ltd	Roses		Judith Zuurbier		roses@vankleef.nl
Van Kleef Ltd	Roses	Njoro	Karan Mandanna	078500460	karan@vankleef.nl
WAC International	Breeder	Naivasha	Richard Mc Gonnell	0722810968	richard@wac-international.com
Waridi Ltd		Athi River	Julius Ruto	-	farmmanager@waridi.com
Wilham Kabuku	-	Nairobi	Natarajan	0735 792 063	natarajan@eaga.co.ke
Wildfire	Roses/summer	Naivasha	Eliud Kimani	0727598349	roses@wildfire-flowers.com
Wilfay Flowers	Gypsophila/hypericum	Subukia	Makori	0723358644	makoriwilfay@gmail.com
Wilmar Agro Ltd	Summer Flowers	Thika	Alice Muiruri	0722 321203	alice.muiruri@wilmar.co.ke
Windsor		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	Japheth Chelal	0721770597	-
Zena Roses - Sosiani Farm	Roses	Eldoret	Jackson Mbanya	-	-
Sololo Agriculture	-	-	Andrew Tubei	-	-

CEREALS MAGAZINE

WHEN THE REST ARE SANITIZING AND STAYING AT HOME
YOU ARE BUSY ENSURING THEIR STOMACHS REMAIN FULL

Thank You Farmers

KORDES ROSES
East Africa