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THE LEADING FLORICULTURAL JOURNAL IN THE REGION

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Insects Management in Cut Flowers

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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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A connected world

As the COVID-19 pandemic drives profound societal and organizational shifts, managers in the flower sector have the opportunity to return to work by designing the future of creating a context for a connected world.

People's hunger for information during the crisis validated the phrase "knowledge is power." As individuals around the world clamored for whatever information they could find on virus spread rates, care information, vaccine development, safety measures, business closures, and more, organizations used institutional knowledge to extend their adaptability, as they were able to quickly deploy workers into new roles, or even new organizations, by leveraging the knowledge that was now at their fingertips.

As they stage the return to work, flower growers have the opportunity to leverage the power of AI to build a culture of actionable knowledge-sharing and knowledge creation that strengthens organizational connectivity and affords the organization resilience to be able to withstand, and even to thrive in, environments of disruption, uncertainty, and change.

Knowledge has been and will continue to be a key competitive differentiator when it comes to driving organizational performance. The power of people and machines working together offers the greatest opportunity for creating knowledge in human history. However,

advanced technologies, new ways of working, and shifts in workforce composition are rendering traditional views of knowledge management obsolete. To capitalize on these changes, many organizations need to redefine how they promote knowledge creation to help maximize human potential at work.

Let us connect in 2022 for better sector

Masila Kanyingi
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Insects and Mites Management in Cut Flowers Farming

Scouting and Early Detection

Early detection is one key to successful insect management on outdoor cut flowers. Insecticide treatments are rarely 100% effective. Regular and careful observation of the plants will help detect pest problems as they are just beginning. In greenhouses and high tunnels, yellow sticky traps may serve as a useful tool for some insects detecting.

Place traps among the flower crops checking them weekly to determine what pests may be present and as an indicator for the effectiveness of treatments. Plant foliage may be tapped over a white sheet of paper to look for mites and thrips.

Insects Causing Damage by Chewing

Pests with chewing mouthparts feed on all parts of the plant. These pests tear or cut, then chew and swallow bits of tissue leaving a ragged leaf or flower margin in the process. The tissue is removed mostly from the outer margin inward. In severe cases, most of the leaf may be eaten, in other cases, the insect may not be able to chew completely through the leaf surface and the result is a lacy appearance to the damaged leaf.

Some chewing pests prefer only the tender inter-veinal tissue; a skeleton of veins is all that is left after attack. Since chewing pests feed on large quantities of leaf or flower tissue, apply an appropriate pesticide on the leaf or flower surface so that the insect will ingest sufficient residue to be killed. Some common chewing insects that are known to cause damage to cut flower crops are:

Caterpillars: Several species of moths and butterflies are pests of cut flowers. Larvae hatch from eggs laid and generally feed after dark. Plants may be cut off at or near the ground overnight. Some species also climb and feed on the foliage. A single pest can kill several plants in a night. Newly planted annual flowers are most vulnerable.

Insects Causing Damage by Piercing-sucking

Perhaps most damaging although not as apparent, are insects and insect-relatives that suck plant juices. Aphids, mealybugs and whiteflies are among the most common. Insects with piercing-sucking mouthparts do not chew plant tissue. They pierce the leaf, flower, roots or stem with sharp, needle-like structures.

Once these structures are inserted into plant tissue, the insect pumps liquid such as sap into its stomach. At the same time a salivary liquid is pumped into the plant to facilitate food withdrawal. In some cases the saliva may cause a toxic reaction in the plant. This process of feeding also accounts for the fact that insects with piercing-sucking mouthparts can transmit viruses and mycoplasm- like organisms to healthy plants.

Damage caused by piercing-sucking insect may show up as small specks or chlorotic spots where the plant or flower was punctured. Others cause twisted, curled or deformed plant or flower growth, largely because of the introduction of the toxic saliva. Still others cause general wilting which may eventually lead to plant death. Occasionally, leaves may have holes as a result of damaged tissue that has dried, become brittle and fallen from the leaf.

Because these pests do not consume any of the plant surface, stomach poisons on the surfaces of plants don't work very well. In this case a systemic pesticide, one that enters the plant system so the insect picks up the pesticide as it feeds or a contact

insecticide may work best. Some insects are capable of transmitting diseases from infected to uninfected plants. The most important ones here are;

Aphids: Aphids can occur in large numbers very quickly. Apart from the damage they inflict directly by removing plant juices, they also are effective vectors of many virus diseases. Plants can generally cope with small numbers of aphids. However, during high temperature, aphids have the capacity to multiply rapidly and cause extensive damage.

Whiteflies: The greenhouse whitefly can be important pests. Generally, these insects confines their activity to the warmth of the greenhouse. However when outdoor temperatures become favorable, they leave the greenhouse to infest suitable hosts outdoors.

Mealy bugs: Mealy bugs suck sap from plant phloem, reducing plant vigor, and they excrete sticky honeydew and wax, which reduces plant and fruit quality, especially when black sooty mold grows on the honeydew. Large accumulations of mealy bugs, their egg sacs, and wax can be unattractive. High populations feeding on foliage or stems can slow plant growth and cause leaf drop; however, healthy plants can tolerate low populations without significant damage.

Piercing and Rasping *Thrips:* Thrips is a common pest on cut flowers and this pest has rasping-sucking mouthparts. This describes feeding with both piercing-sucking and chewing mouthparts. Thrips puncture the tissue, then sucks the sap and fluid that is released from the injured tissue.

Thrips are very tiny, (about the size and shape of a grass seed), cream to dark colored insects that prefer to feed in opening leaf and flower buds. Some species will feed on leaf tissue where they produce silvery depressed areas that frequently contain black specks. Thrips will attack many cut flowers. Feeding damage appears as a dull discoloration.

Flowers can be streaked, mottled or flecked with off-color areas. In some cases new growth may become misshapen and deformed, or buds may fail to open. Thrips also transmit impatiens necrotic spot virus (INSV), a serious disease in the greenhouse industry. The potential exists for INSV to cause problems in cut flower production also.

Insects with piercing-rasping mouthparts make them vulnerable to insecticides with systemic and contact activity. Since thrips prefer to feed in tight, protected places such as expanding flower buds, multiple applications of insecticides are often necessary for adequate management.

Mites : Although mites differ from insects in several ways, their damage to ornamental plants resembles that of thrips and lace bugs. They have evolved into sharp mouthparts that mites use to pierce the surface of the plants they feed on in order to suck out the contents of the plant cells. Mites evidently inject saliva as they feed for

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one of the first symptoms is failure of the host plant to blossom. Infested plants then exhibit a variety of plant growth regulator symptoms including twisted and distorted growth, and shortened internodes and petioles. Spider mites can be a problem all year indoors and have a very broad host range. Spider mites suck the chlorophyll from leaves which results in fine white spots or stipples on the leaves. Heavy feeding causes yellowing, browning and eventual death of leaves. Some spider mite species produce webbing that covers the leaves and stems when populations are high. Spider mites are generally a problem during the warm summer months.

Mining Insects

Leafminers: The larvae of this group feed within the leaves of plants. Females deposit eggs on the underside of leaves. On hatching, the maggots burrow between the upper and lower leaf surfaces and feed. Many leaves may have light green or white winding trails that eventually turn brown and die.

The mature larva emerges through a slit in the leaf surface and enters a resting stage where it passes as a pupa in the soil.

One method of controlling these pests is to pick off and destroy infested leaves and, in the fall to remove and destroy plant remains. Elimination of alternate weed hosts also helps reduce populations of leafminers in the field.

Boring Insects

The larval stage of some moths cause damage by boring into stems and other parts of plants and are known as borers. There are many borers that attack cut flowers. To help reduce borer populations, it is advisable to destroy old leaves and other debris in the fall or before hatching of the eggs in the spring.

False Codling Moth (FCM): FCM is a major pest, feeding on a wide range of rose varieties. It survives under warm and humid conditions producing up to five generations annually. Larvae stages are the most destructive and it's during this stages they will attack the crop boring a hole while feeding and dwelling in it till they pupates and gradually falling to the ground. Maturity is temperature and gender dependent, with males maturing earlier in warmer conditions compared to female FCM. FCM in roses are identified from any occurrence of small holes in petals. Once the pest is in larvae stage, it goes straight to the center of the bud destroying the plant.

Adult female

Adult male

Insect Management

There are four main methods of insect management namely; cultural, mechanical, biological and chemical.

Cultural Method

The best approach to both disease and insect management begins with good sanitation and soil management. Keep the field free of weeds and plant debris. Adjust soil fertility and pH based on soil tests and space plants to allow sufficient air circulation within plantings.

In addition, it is also recommended that growers humidify the greenhouse. This will reduce mites and thrips.

Lastly, if one area is heavily infected, it can be a source to the rest of the farm. A grower can decide to prune it completely.

Chemical Method

When using a pesticide, good spray coverage is important. Unfortunately, not all of the material you apply actually reaches the target insect. Therefore, even small changes in spray distribution and delivery can have a large impact on success or failure.

Many insects look similar but are very different in their biology, habits and controls. A wrong identification can result in choosing the wrong pesticide or management strategy and obtaining poor control. Things like pesticide selection and placement, cultural practices, and frequency of treatment all hinge on proper identification.

Most damaging pests are apt to attack a wide variety of plant types while a few are specific to a limited number of hosts. In any case, it is important to be able to recognize the damage that results from the feeding of particular insects so that management strategies can be applied before the damage becomes extensive, or preventative steps can be taken.

Considering the above, growers are advised to take note of the chemical mode of action. It is also important for growers to understand whether the product is systemic or contact. Lastly on chemical control, growers must confirm the target stage in the whole insect life cycle (Juvenile or Adult)

Mechanical Method

Insects can be controlled through sticky traps, pheromone traps and insect nets

Biological control

Insect predators mainly phytosillus for control of mites and bacillus for the control of thrips are also used in management of insects.

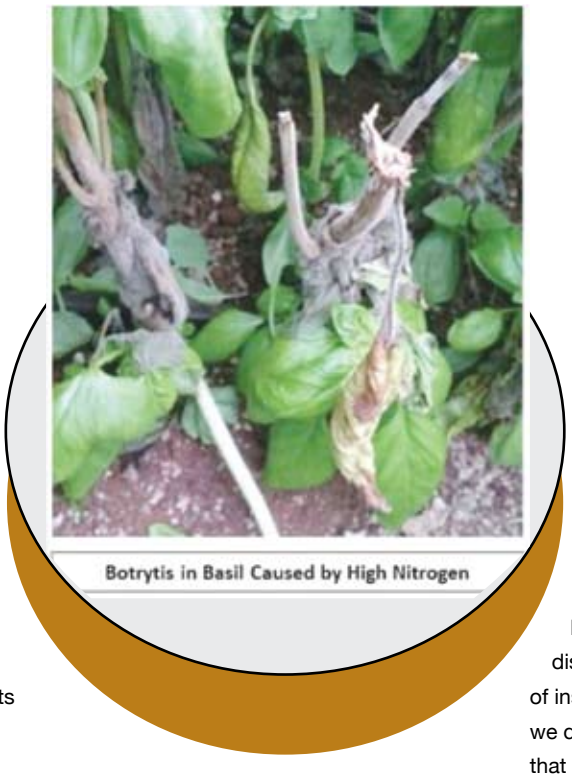
Protecting Pollinators from Insecticides

Protecting pollinators, especially honey bees, from pesticide poisoning should be part of any pesticide program. To avoid killing bees, do not apply pesticides hazardous to bees during the blooming period.

Ideally, pesticides should be applied when there is no wind and when bees are not visiting plants in the area. The time and intensity of bee visitation to a given crop depends on the abundance and attractiveness of the bloom. In general, evening or early night applications are the least harmful to bees.

Dust formulations and microencapsulated pesticides are usually more hazardous to bees than sprays. Wettable powders often have a longer residual effect than emulsifiable concentrates. Ultra-low volume (ULV) formulations of some pesticides are much more toxic than regular sprays.

Role of Nutrients in Plant Disease & Pest Management



Botrytis in Basil Caused by High Nitrogen

Plant disease & pest management using chemical pesticides raises serious concerns about food safety, environmental quality and pesticide resistance. These concerns have dictated the need for alternative plant disease & pest Management techniques. In particular, plant nutrients could affect the disease tolerance or resistance of plants to pests and diseases.

This is evident in the increasing pressure on growers to grow healthy flowers, fruit and vegetables with less and less chemical pesticides. The export markets normally check for pesticide residues in the produce and high MRL levels can limit market access. There is also more pressure from the local markets on pesticide use and residues.

Mineral Nutrition & Plant Disease

Before the First World War, pest and disease control was achieved through a combination of proper crop husbandry, crop rotation and sulphur and copper. During the First World War, a great deal of research was done on chemicals for chemical warfare. An off shoot of this research was production of chemicals that were effective for pest and disease control in crops. There was a major agricultural revolution. Pest & diseases were controlled, and food production became more secure and yields increased. It was only years later that we became aware of the side effects of these chemicals on human health. Not all chemicals are bad, and without proper pest and disease control we would be unable to feed the world. However, it's important to grow responsibly and minimize pesticide use where we can.

Before the First World War a great deal of research was done on the role of plant nutrients in plant disease and pest management, and this work is now being re-visited and expanded on.

Plant Disease & Pest Management in Sustainable Agriculture

Soil Structure & Drainage

Many diseases start due to problems with rooting, soil structure, no oxygen, lack of drainage and water logging. A deep, well-drained soil with a good crumb formation is your first line of defense against plant diseases. Next, the moisture levels and temperatures play an important role in 'activating' pathogens. Generally higher moisture levels and temperatures encourage diseases and reduce the egg to egg time of insects' life cycles. Sadly, in East Africa we do not have the luxury of cold winters – that can kill off many diseases and insects.

Soil pH

Next, the soil pH has a great deal to do with how fast a disease progresses. Acidic soils tend to suppress quite a few diseases – however they also suppress nutrient availability and crop yield – so approach with care. The soil, water and drip pH determine the availability of nutrients to plants and can create excesses and deficiencies that can encourage insect and disease growth. It is better to keep the pH at the optimum for the plants requirement to grow a healthy disease resistant crop.

Plant Nutrition

Proper plant nutrition is your next line of defense. Any nutrient that is deficient or in excess will increase a plants susceptibility

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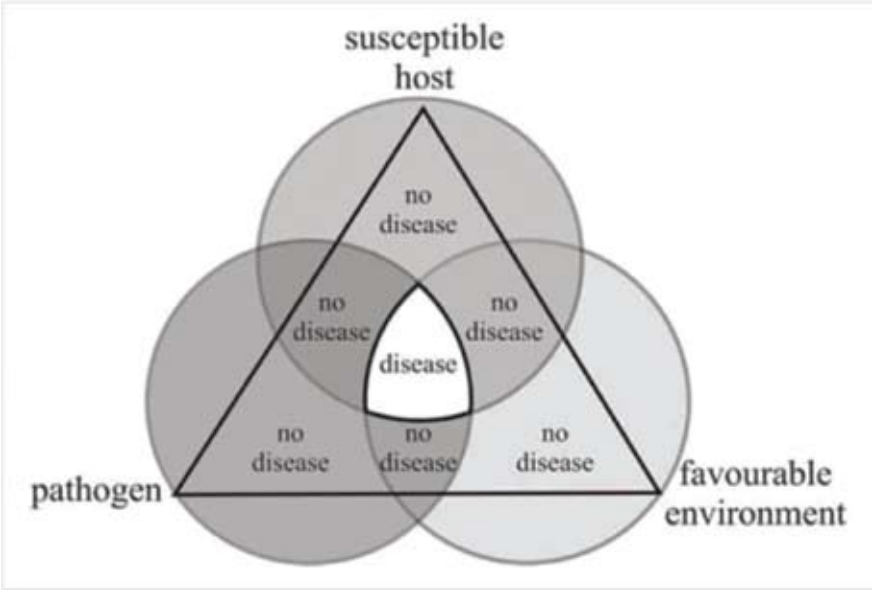


The Plant-Disease Triangle. For a disease to happen, it needs a pathogen, a susceptible host and a favourable environment. Disrupting any of these will reduce the problem.

to diseases and pests. Nutrients that are known to influence pests and diseases in plants are: – the Nitrogen form, Potassium, Calcium, Sulphur, Chlorine, Nickel, Manganese and Silicon.

Calcium is a primary disease controlling nutrient. The amount of calcium in the soil determines many things! The pH, The structure, The aeration. Check Calcium levels and ensure you have at least enough and at best luxury levels.

Calcium in the plant is used to make Calcium Pectate – this determines how strong the cell walls are, and how resistant they are to insect and disease attack.

Many diseases in many crops can be prevented by having enough Calcium in the plant tissue. Low calcium in the soil results in compacted waterlogged soil, with poor nutrient uptake efficiency and weak stressed plants.

Calcium is known to suppress club root in cabbage, fusarium wilt in tomatoes, erwinia soft rot in potatoes and botrytis blight in many fruits and vegetables. Adequate Calcium is essential for good shelf life of produce. Calcium is taken up via the transpiration stream and can become definition in cool, overcast or humid weather conditions.

Potassium plays a major role in insect and disease suppression. Potassium deficient plants are very susceptible to both diseases and the weather! In many areas we are lucky to have enough or excess potassium in the soils. However, it can become easily fixed into certain soil types, e.g. illites and clays. Unlike most plant nutrients – potassium does not become a part of any plant constituent and remains present in the plant sap. It is very mobile in plants and quickly moves from the older to younger leaves and to identify a deficiency you need to do a leaf analysis on both and compare.

Excess potassium can also suppress or encourage diseases depending on the total nutrient status of the plant. In general potassium will suppress most diseases but can encourage Erwinia rots, downy mildew and nematodes.

The Nitrogen: Potassium (N:K) ratio is also critical for some diseases and insects. A high N:K ratio can encourage diseases. A high K:N ratio tends to reduce disease severity and in conjunction with adequate phosphorous can reduce reproduction in aphids.

Nitrogen excesses tends to produce weak, fast growing plants that are very susceptible to insects and disease damage. Most damping off disease occur due to excess nitrogen, high nitrogen encourages botrytis in plants that would normally be resistant to it. The form the nitrogen is supplied to plants in can also have a major effect on disease resistance. Nitrogen can be absorbed by plants as the reduced NH4 form or the oxidized NO3 form. NH4 reduces pH while NO3 increases pH. Diseases react differently to the N-form. Nitrate suppresses Fusarium wilts and Rhizoctonia root rots while ammonium suppresses most other soil borne diseases.

Chlorine is not generally considered a plant nutrient and can be toxic to many plants. However, research has found that in chloride resistant plants, chlorine can suppress plant diseases e.g. fusarium crown rot in asparagus, Rhizoctonia crown rot in beets, Fusarium Yellows in celery, and smut and stalk rot in corn. In most cases an increase in chloride resulted in an increase in manganese in the leaf tissue.

Managanese. Plant testing and research has shown a good correlation between the concentration of Manganese in healthy plant tissue vs diseased plant tissue.

Fungal and to a large extent, bacterial diseases are reduced in the presence of adequate manganese uptake, while viral diseases may be enhanced by enhanced plant uptake.

Manganese tends to be abundant in the soil, the limiting factor being the efficiency of uptake. Practices that improve manganese uptake tend to reduce diseases. Mulching, optimum pH, organic matter, soil temperatures and microbial activity in the soil. Glyphosate can reduce manganese uptake and encourage take all. Potato scab is mitigated by lowering soil pH, irrigating or foliar feeding manganese. Some fungicides e.g. Mancozeb are much more effective in the manganese form.

Nickel is required in very small amounts and is generally sufficient in most horticultural soils. It is considered an ultra-micronutrient and not much attention has been paid to it. It is thought that nickel is important for nitrogen cycling in plant tissue and for eliciting the plants immune response by helping with phytoalexin production. Nickel salts are effective fungicide sprays against rust. Nickel uptake can be reduced in cold dry soils and in the presence of excess zinc, copper, manganese, iron, cobalt, magnesium and calcium. More work needs to be done on nickel.

Sulphur is very important in disease control – it is required to induce the plants natural resistance to fungi through triggering natural metabolic processes. This is now termed SIR – (sulphur induced resistance). Sulphur also has a topical toxic effect on funguses and mites – hence the use of sulphur burners in some greenhouses.

Silicon is the second most abundant mineral in soil. Adequate levels of silicon in the plants impart a healthy resistance to most diseases, and the source and rate of applied silicon can strongly affect the control of many fungal diseases in many plant species. Effective / affordable / and practical solutions are required for application of silicon to crops that can accumulate it, as it has been recognized that the use of silicon in pest and disease control would be a viable method of reducing fungicide use in many areas of agriculture. More research must be done on this.

Silicon in various forms has proved to be an effective method of insect control. High levels of accumulated silicon in stalks and leaves can discourage chewing insects, silicon can dissolve chitin, causing dehydration in insects, and silicon can block insects spiracles – preventing oxygen from getting into their bodies.

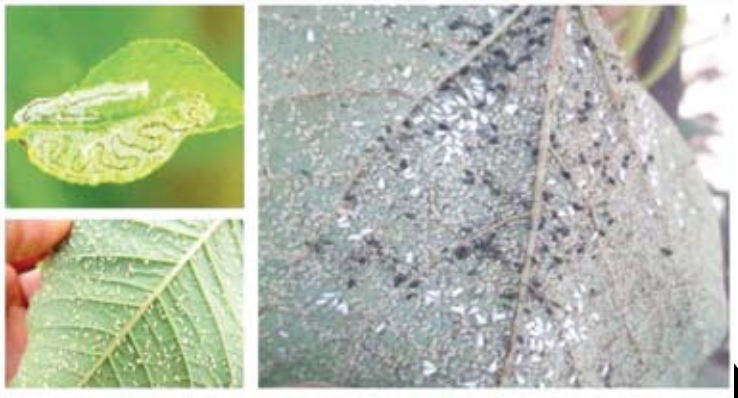
High levels of EC (salinity) or Sodium (sodicity) can greatly affect plant nutrient uptake and healthy plant growth and encourage diseases, nematodes and insects.

As you can see – the plant nutrition plays a huge role in determining plants' tolerance to insect and diseases, and much can be done with optimizing plant nutrition to reduce pesticide use.

For more information on this, and to test the nutrient status of your plants please contact us on support@cropnuts.com.

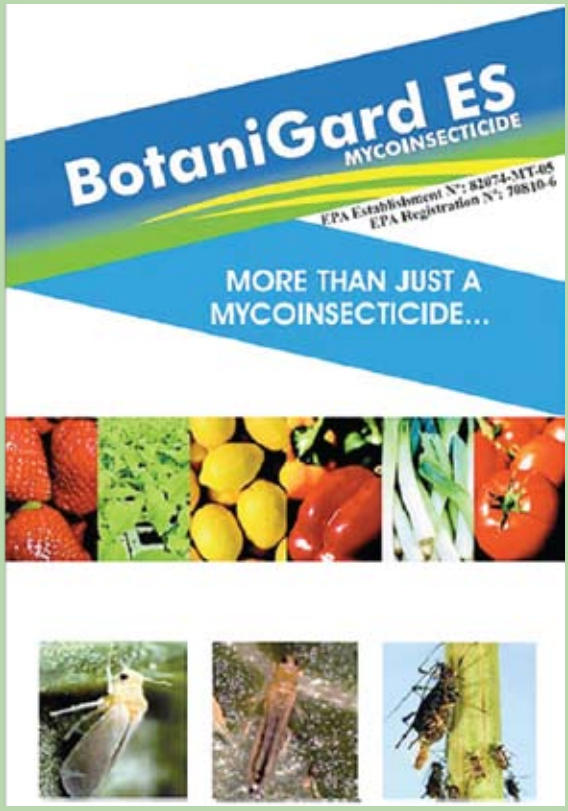
About Ruth

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



Fast Whitefly Breeding in leaves with high Nitrogen to Potassium ratio

Understanding Thrips in Floriculture



Taxonomy

Class - *Insecta*
Order –*Thysanoptera*
Family – *Frankliniella*
Genera- *Thrips*
Specie – *T.tabaci/T.palmi*

By John Ngigi

Introduction

Thrips have evolved to become the worst nightmare to any floriculture grower in Kenya and across the globe. This has happened too fast such that five or ten years ago thrips were considered a minor pest but now account for the biggest budget in pest management.

There are a number of thrips species but the most common are the *Thrips tabaci* and *Frankiliniella occidentalis*. The Western Flower Thrips *(Frankiliniella occidentalis)* is the most common and difficult to control in the floriculture sector. The adults are easily visible since they are slender, small, fringe winged and very mobile in the flower petals. The larvae are smaller, usually hide and not easily visible but the damages are visible (scratches) on the petals and other soft tissues. The adults damage the soft plant tissues by puncturing the epidermis, feeding on the cell contents and laying eggs

The Origin of thrips in the greenhouse

The thrips are either resident in some hot spots or are blown from outside the greenhouse.

Main two types of thrips common with Kenyan flower growers.

1. *Haplothrips Tritici* - Commonly in Mt. Kenya where the population is blown by wind from the wheat fields.

Despite their rapid increase in population and severe damage they cause, the migratory thrips can be controlled since they do not reproduce in the greenhouses.

2. *Frankliniella occidentalis* is the most difficult to control , they are the greenhouse in-bred thrips in specific location of the greenhouse commonly referred to as hotspots .They persist year round.

Life Cycle

Thrips go through six stages in their life cycle (4stages on the foliage and 2stages in the media) Female thrips lay very tiny invisible cylindrical or kidney shaped eggs inside the soft plant tissues usually less than 0.5mm in size. The eggs stay for

2-4days before maturation to the larval stage. A female thrip lays 130-230 eggs in a lifetime!

The larvae (first and second instar) are very active, very destructive and also very small almost 1mm with sharp piercing mouthparts. The larvae resemble the adults but are smaller and have no wings. At the end of second larval instar stage (2-4d ays), the larvae drop to the ground to pupate. They can pupate in the soil, leaf litter or lodge within the plant crevices or galls.

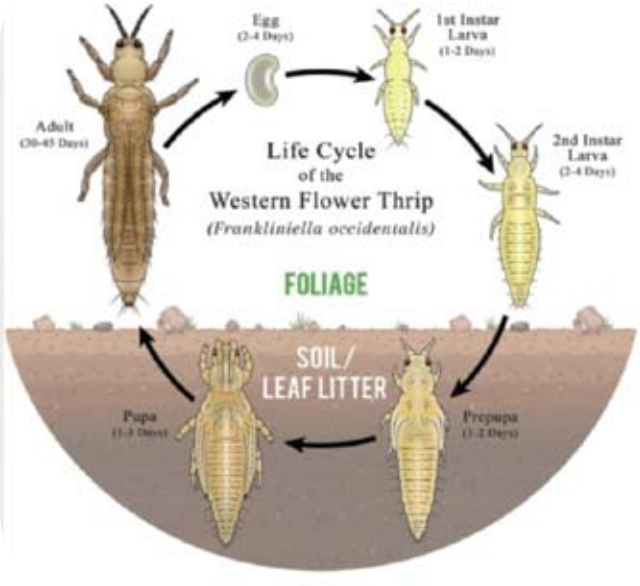
The prepupa matures very fast but the pupal stage takes up to 3 days. During the prepupal and pupal stages, the thrips are inactive and do not feed and therefore no plant damage.

The small, slender and fringe winged adults (usually around 1.5mm) emerge after 2-5 days of the pupal stage. The females live up to 40 days but the males live half the lifespan of the females

The timing for a complete life cycle:

- At 15° C = 34 days
- At 20 ° C= 19 days
- At 25° C= 9 - 12 days
- At 30° C = 9 days or less

NB: As seasonal temperatures rise, the thrips life cycle is shortened and populations rise dramatically.



Damages Caused

Thrips feed by inserting their stylet to the epidermis and suck out the cell contents leading to discoloration and scars on the leaf and flowers (some flowers and petals are deformed).

The females with the help of the ovipositor lay eggs in the soft leaves and petals leading to the"pimpling effect"

Thrips are also known to be vectors of some viruses and this happens while feeding

Why it is difficult to control thrips

- The female lays 130–230 eggs in a lifetime (very high number with high survival rate)
- Small size and cryptic (hiding habits) making them not easily reached by insecticides
- The entire life cycle is very short - about 20 days
- Protection afforded by the flower and the fact that the nymphs spend two periods in the soil
- The eggs are well protected and only few pesticide sprays are effective against them
- Reproduction under greenhouse conditions, is continuously throughout the year
- Most populations have more females compared to males leading to more egg laying
- Easily gain resistance to most used thripicides due to high fecundity and short generation time that increases the probability of a resistant mutation
- Unfertilized females give rise to a male population while fertilized females produce 1/3 Male and 2/3 females.

Cost effective management of thrips

A holistic and proactive approve that put in consideration the IPM is known to be sustainable way of managing this economic significant pest.

Monitoring: This is the key to best thrips management strategies. Regular crop monitoring and scouting could be the only tool for accurate, on time decision making. Adults monitoring can be done by mass trapping with the colored sticky traps or flower head tapping on white clear paper. The level of population or damage will advise on the measures to be taken. Monitoring can also be based on historical basis of the hotspots.

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Cultural Practices: Since thrips have many secondary hosts, clearing of the weeds and bushes that might harbor thrips near the greenhouses will help. The deformed, rejected and damaged heads that harbor thrips should be disposed properly (for instance in soapy water). Mechanical measures like use of nets to reduce the migratory thrips entering the greenhouse via vents, mulching can be used to reduce the emergence of adults from the pupal stages.

Biological Control: Traditionally, natural enemies of insect pests have been the "biological" tool commonly used in IPM programs. In the last decade, the introduction of products based on microbial control agents, such as entomopathogenic fungi and bacteria, are gaining acceptance. Biopesticides have the advantage of being in the market with similar presentation to the traditional chemicals. However, biopesticides and natural enemies can be affected adversely by chemicals.

Alternative applications of synthetic pesticides and biopesticides are being used as a tool to prevent resistance of the pests. Biocontrol agents usually need several days to kill the insect, while the use of chemical insecticides results in an immediate reduction of insect populations. IPM programs seek the best way to combine them, which requires the knowledge of the compatibility and the interactions between the organisms and the chemical agents.

Chemical Control: Develop a programme with at least four different modes of action to rotate from. The programme should keep in mind the different stages of the thrips and the fact that not all products target all stages of the thrips life cycle (understand your products).

On high pressure, use a spray interval of three days and increase to seven-day interval on low pressure. Since eggs and pupal stages are less affected by insecticide sprays, ensure that spray program lasts long enough to control emerging larvae and adults. After sprays, keep monitoring the population to determine if more applications are necessary.

Use of carefully selected adjuvants and lures help improve efficacy of thripicides.

Amiran Kenya have recent launched Gladius, a novel chemistry Flometoquin 10SC from Nippon Kakayu Japan.

"Thrips management is not about a good PRODUCT but a good PROGRAMME"

John Ngigi commercial Agronomist Floriculture and Horticulture Mt Kenya.

Gladius

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Irrigation and Water Management for Sustainable IPM Systems

Adequate, timely irrigation is one of the first requirements of a sustainable integrated pest management (IPM) system as it is critical to overall plant health.

Water management is one of the most critical issues in modern agriculture. Adequate, timely irrigation is one of the first requirements of a sustainable integrated pest management (IPM) system since it is linked to overall plant health. Mismanaged watering can sicken plants, making them more vulnerable to insect pests.

Water can be managed in simple and smart ways. A few tips for water management in vegetable production from the IPM perspective are as follows:

• Always direct water close to plant roots. Flood irrigation leads to the loss of top soil and nutrients and chokes the plant roots; therefore, water close to the roots. Most vegetable growers use a drip irrigation system that trickles water to the plant root zone. Sprinklers can be used for small vegetable plants, but the risk of foliar diseases increases greatly along with uneven water application in the late growth stages. Although a soaker hose is not the best option for vegetable production, it is inexpensive and readily available at a store.

• Keep the vegetable leaves dry to reduce pathogens and insects. Overhead or sprinkler irrigation wets the foliage, which makes conditions more favorable for disease development. Splashing water off the plants may also cause pathogens to splash between closely planted plants.

Although overhead irrigation is good for dislodging aphids from leaves and drowning spider mites, it loses water to evaporation and increases the risk of disease, Low-pressure soaker hose and drip irrigation systems under the plants reduces loss of insecticides applied to the plant foliage. Organic producers who may use bio insecticides for pest management can benefit from these methods. Vegetable fields with a drip irrigation system also make it possible to inject systemic chemical insecticides through the drip line, reducing the need for overhead applications.

• Use mulch

Use mulch on the top soil to hide the irrigation system and to reduce evaporation. Mulch helps retain moisture and reduce weed seed germination and soil erosion. In a garden, mulch can also absorb excess pesticides and prevent them from washing off or leaching. A variety of natural mulches are available; however, it is wise to determine which are suitable for your farm or garden. Pay attention to the thickness of the mulch as excessive watering under thick mulch can be detrimental to the plants and harbor insect pests such as cutworms and armyworms.

• Use a chemigation system

Using chemigation to direct water and insecticide with drip irrigation or a contained system can drastically reduce labor costs as well as the amount of insecticide needed. Record your garden or farm activities in order to document the effectiveness of your irrigation system. When in doubt, call your nearest Extension office for help with designing suitable irrigation and pest management systems so you can enjoy a plentiful harvest.

Courtesy of Extension Alabama A&M & Auburn Universities

Advisory board looks Forward with great anticipation to **IPM ESSEN 2022**

New members will advise the world's leading trade fair for horticulture in future

Preparations for IPM ESSEN 2022 are in full swing. From 25 to 28 January, Messe Essen will once again be the meeting place and innovation platform for the international green sector. The advisory board of the world's leading trade fair recently met to discuss the contents of the next edition of the fair and the programme. The advisory board members provided valuable input with their reports from the industry. With immediate effect, Christoph Dirksen, Member of the Board of Management of Wilhelm Ley GmbH, and Garry Grüber, Founder and Managing Director of Cultivaris GmbH, will strengthen the committee with their market expertise.

"The challenges of our industry, such as energy-efficient production, the use of environmentally friendly packaging or the shortage of skilled workers, can only be mastered if we exchange professional views and are shown new ways. Next year's IPM ESSEN will once again provide us with our usual high-calibre platform for this", Eva Kähler-Theuerkauf, Chairwoman of the Advisory Board and President of the NRW Horticultural Association, is pleased to say. "It is up to us to design this in accordance with the wishes of the sector."

"The challenges of our industry, such as energy-efficient production, the use of environmentally friendly packaging or the shortage of skilled workers, can only be mastered if we exchange professional views and are shown new ways. Next year's IPM ESSEN will once again provide us with our usual high-calibre platform for this"

Current topics in focus IPM ESSEN

therefore specifically takes up the topics that are currently moving the trade fair advisory board and thus the market. For example, a special show will be dedicated to packaging in horticulture. Whether products made of recycled plastic, packaging made of cardboard and paper or other plastic alternatives - the presentation provides a comprehensive overview of sustainable and innovative packaging concepts. The shortage of skilled workers, which is a challenge for the entire sector, will also be given a platform at IPM ESSEN. The Career and Future Forum presents occupational fields and qualification opportunities in horticulture and networks qualified job seekers and companies.

New members in the advisory board of IPM ESSEN

Since the end of September, the advisory board of IPM ESSEN has been enriched by two industry experts. Andrea Hölker, Project Manager of IPM ESSEN, about the creative cooperation: "We are pleased about the new additions to the advisory board and thus also about many new ideas. With this top-class expertise, we see ourselves very well positioned in terms of content for the further development of IPM ESSEN."

A total of 20 experts from the economy, trade and politics belong to the advisory board of IPM ESSEN. Christoph Dirksen is a new member. As a member of the management of Wilhelm Ley GmbH, he has been an exhibitor at IPM ESSEN for many years. He also holds the chairmanship of the North Rhine-Westphalia Nursery Association.

Garry Grüber is the further reinforcement of the committee. The successful plant breeder and Managing Director of Cultivaris GmbH is a regular guest at IPM ESSEN both as an exhibitor and as a visitor and has repeatedly emerged as the winner of the IPM Novelty Showcase with his extraordinary plant varieties.

Further information at: www.ipm-essen.de

Post-Harvest Care of Cut Flowers

Nothing brightens up a room quite like a beautiful bouquet of flowers. Unfortunately, once a flower's stem is cut, the wilting process begins. However, it's possible to keep flowers alive and healthy after being cut. Water and refrigeration allow them to continue to grow and even bloom after being cut.

A vase of freshwater might do the trick for the average consumer. In a vase, flowers can stay fresh for a few days, or as long as two weeks depending on the variety! However, keeping flowers fresh before they reach the market requires great care. Florists need to take special care to ensure that their flowers stay as fresh as possible after harvesting.

Small florist farmers can have trouble keeping their crops fresh. The long trip from the field to consumers' tables is stressful on flowers. However, by carefully harvesting and storing your crop, you can keep cut flowers fresh for 2-8 weeks!

When caring for your crop there are a few essential things to keep in mind. You need to keep bacteria and other microbes from growing. You also need to keep water moving through the plant. Just like keeping food fresh, the most important thing is refrigeration. Keeping your equipment and flowers clean will also protect them from decay. Finally, it is important to keep your flowers drinking by keeping the stems cleanly cut.

What Causes Decay?

1. Depleting Food
2. Bacteria and Fungi
3. Normal aging
4. Water stress (wilting)
5. Physical damage
6. Temperature changes
7. Ethylene accumulation
8. Poor water quality
9. Pre-harvest conditions

Pre-Harvest Care

Good post-harvest care hinges on the pre-harvest procedure. There are many important factors to consider when growing flowers. These considerations are essential to the postharvest longevity of your cut flowers!

Below are a few key considerations for before harvesting (or even planting!) your flowers.

• Choose the right cultivars!

As any florist knows, there are a wide variety of cultivars of every ornamental flower. These cultivars vary in more than just appearance. Different cultivars can be more or less hardy after harvest.

• Flower Maturity Stage

Different flowers have different optimum times for harvesting. When harvesting your crop it is important to know when and how to harvest each variety. Look up the specifics for your particular cultivars before harvesting.

Harvest your crop daily, cutting only the flowers that are in the correct stage. Some flowers can be harvested as early as the bud stage!

• Weather Conditions

It is important to make sure your plants are not water-stressed. They must be properly watered and fully turgid when cut. Irrigating 12-24 hours before harvest maximizes the plants' turgor. This ensures that they will stay fresh longer.

However, heavy rain can cause soil to splash on the stems. This risks contaminating your crop with bacteria.

Post-Harvest Care

Caring for your plants before harvesting is essential. However, keeping them fresh after harvesting is the hard part. Growers need to take great care to protect their crop until it gets to market. There are many steps you can take to keep flowers healthy and fresh.

It is essential to keep flowers cold and clean immediately after harvesting.

Below are some tips on how to make sure that happens!

Water

Giving your cut flowers water is an absolute no-brainer. However, it is important that

When caring for your crop there are a few essential things to keep in mind. You need to keep water moving through the plant. Just like keeping food fresh, the most important thing is refrigeration.

your water is at the right PH (3.0-5.5) and that it does not have too much bacteria growing. Biocides and water treatments such as aluminum sulfate can help create ideal water for your crop.

Buckets

Keeping your buckets clean and sterile is essential. They should be cleaned and sanitized between each use.

When filling buckets with flowers, don't overcrowd them. It is important to let air circulate around the stems to prevent decay.

Walk-In Fridges

It is important to immediately refrigerate flowers to keep them from deteriorating. This is best done in a walk-in refrigerator. Walk-in fridges can be prohibitively expensive, especially for small businesses. These limitations can make it difficult to become a farmer florist.

A walk-in is essential in the hot summer heat. Flowers begin to wilt immediately after they are cut, and this process speeds up the hotter they get. Being able to control the temperature at which you store your flowers is essential.

Making your own walk-in

A walk-in allows you to store large amounts of cut flowers for longer. Traditional walk-ins are expensive to buy and expensive to repair! A broken walk-in fridge could ruin a whole crop of flowers.

A Coolbot allows you to have the same level of protection for your crop, without all the hassle. A broken A/C can easily be replaced with a quick trip to the hardware store, for far less money than hiring a professional repair technician.

Ethylene

Ethylene is a gas produced by flowers and fruits. It is a plant hormone that signals to other plants that it is time to ripen! This can cause flowers to decay quickly. When storing flowers, keeping them cool and well ventilated will slow the buildup of ethylene, keeping them fresh.

Keep your crop fresh

It is essential to any florist to keep your flowers fresh! There are many steps you can take to extend the life of your flowers. Refrigeration is an important part of this process and a Coolbot is a cost-effective way to make that possible!


Would you like to have better flowers and increase profit?
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ROSE DIP SERVICE
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SEA FREIGHT SERVICE
CHRYSAL

Would you like to have better flowers and increase profit?

- Keeps your roses Botrytis free
- Enhances colours
- Ensures uniform opening
- Prolongs vase life
- Prepares for any Sea Freight journey

Chrysal Rose Dip Service

Chrysal offers a unique service in which the entire process of dipping the flowers locally at the growers is monitored by a Chrysal specialist. Growers can save costs while improving the quality of their roses.

Every grower wants to ensure beautiful flowers and low wastage. However, the amount of waste caused by Botrytis is on average 12%*. Waste occurs at the farm, during transport and at the final customer. Chrysal now has the perfect solution to this problem; Chrysal Rose Dip. Rose Dip is extremely effective at controlling Botrytis in the entire flower chain. It also enhances the colours, slows down the opening of the flowers, prolongs vase life and makes long transport possible. Chrysal Rose Dip is the only registered anti-Botrytis product, making it safe to use and up to 95% effective against Botrytis.

* According to a study by Innovative Fresh.

CHRYSAL ROSE DIP SERVICE

CHRYSAL SEA FREIGHT SERVICE

Currently only available in Kenya.

For more info please contact us at info@chrysal.co.ke

CHRYSAL

‘Total Cost Increase is Imminent’

The labour in flowers is 50-55% of the total cost of the product, meaning that this cost will also have to be factored in eventually. It is expected that the wage will increase by $25 per year.

By Luis Cadavid

Over the past couple of months, flower growers have started to see how steadily their costs are increasing. Cost of raw materials is going up because of two key factors. The first is the global logistical collapse, especially in maritime cargo. The second is the diminishing availability because of increased Chinese demand. These two factors have caused a third condition which is that because of the delays, big groups (importers) of different parts of the world are increasing their orders to have stock because of the uncertainty of when the next shipment is arriving.

All these factors together have caused a severe bottleneck forcing freight and the producers to increase the price because of the increased demand, even though part of that demand is artificial and solely caused by freight complications.

What does it all mean?

Cardboard and plastic supplies have gone up around 15% each. This means that packaging has gone up roughly half a cent per stem, assuming a six-cent packaging cost for top-quality materials for roses.

This by itself is not that high of an increase. However, if we combine this with a 30-40% increase in fertilizers and other products for the field.

We reach a rough increase of about 10%, meaning that roses, for example, assuming an average price of 30 cents at the farm, will now cost 33. This increase will not be felt at once; some of the costs have already increased, others have been growing gradually as the local stocks have decreased. Overall, it is estimated that the flower growers will feel the total cost increase towards end of the year. This is not a reality they can avert, it is imminent, and we must all be prepared to face it.

Another interesting factor in Ecuador is the promised minimum wage of $500 by the newly elected president Guillermo Lasso, which increases 25% over the current minimum wage. The labour in flowers is 50-55% of the total cost of the product, meaning that this cost will also have to be factored in eventually. It is expected that the wage will increase by $25 per year.

In the US and EU, we have seen that the price of most goods have gone up, and now the price of flowers will follow. This is something that we have not seen in a long time. Some would say that is long overdue. It is a move that we should support and embrace as it will allow for the continued operation of our suppliers. We must think about a win-win situation for all those involved.

Therefore, we think of the health of our providers as well as our own. It is time to strengthen those strategic relations and expand ties with our providers, be it the farms or those facilitating their products.

Luis Cadavid
Luis optimizes business operations, introduces sustainability, and diversifies markets

Air France KLM Martinair Cargo Welcomes Total Touch Cargo to its SAF

Total Touch Cargo Holland BV (TTC) and Air France KLM Martinair Cargo (AFKLMP Cargo) entered into a partnership within the framework of the airline's sustainable aviation fuel programme. Under the partnership, AFKLMP Cargo will use sustainable aviation fuel (SAF) on selected cargo flights from Nairobi – Kenya to Amsterdam Airport Schiphol, carrying TTC's fresh agricultural and horticultural products.

Bénédicte Duval, Vice President Africa at Air France KLM Martinair Cargo, welcomed Total Touch Cargo CEO/owner Harry van der Plas at the AFKLMP Cargo headquarters at Schiphol to sign the formal documents.

The agreement includes a fixed annual investment from Total Touch Cargo that will allow AFKLMP Cargo to further expand development and procurement of SAF. TTC's contribution will be used to cover the cost differential between conventional aircraft fuel and SAF.

350 tonnes

Total Touch Cargo specialises in the air transport of fresh flowers, vegetables, herbs, fruit and fish from Nairobi to Amsterdam on a daily basis. The company has been playing an instrumental role in developing the "cold chain" industry from Kenya. To guarantee faultless quality control, Total Touch Cargo has its own airside-based warehousing and cold storage facilities, in a joint venture with Kenya Airways, at the Jomo Kenyatta airport in Nairobi.

Total Touch has been transporting TTC's fresh products since 1995. On average, Total Touch Cargo ships around 350 tonnes a week from Kenya throughout the year.

Pier Luigi Vigada, Director Eastern & Southern Africa at Air France KLM Martinair Cargo says: "We are delighted that a professional company like Total Touch Cargo and its visionary CEO Harry van der Plas have teamed up with us. Total Touch Cargo is the first Freight Forwarding agent in Africa to commit to our SAF programme. Its vision on sustainability and enthusiasm about our programme form part of a clear path to make the airfreight industry for daily commodities, a cleaner and more sustainable one.

Congratulations to Total Touch Cargo!"

Harry van der Plas, CEO/owner at Total Touch Cargo says: "The SAF programme fits in perfectly with our vision and drive to be a first-mover in relation to innovative industry developments, as well as maintaining a focused strategy to be a distinguished service provider with top-quality airlines and long-term relationships to achieve optimal customer satisfaction."

Cooking oil

SAF is a jet fuel made from renewable sources such as cooking oil and serves as a sustainable alternative to fossil fuel that reduces carbon emissions by a minimum of 75%. It is blended with conventional fossil fuel and can be used by all aircraft engines.

The AFKLMP Cargo SAF programme enables different stakeholders in the logistical airfreight industry to power a percentage of their flights with SAF. Customers determine their own level of engagement and we ensure that their entire investment is used for sourcing SAF.

By participating in our programme, our customers not only reduce their carbon footprint, but confirm their commitment to leading the industry towards a more sustainable future. Only with the support of all stakeholders can we successfully develop a more viable market for SAF.

Corteva Agriscience Launches UPHOLD 360SC

Active on all economically important Lepidoptera pests.

Flower growers attending the launch of UPHOLD 360SC had only one question in their minds. How can they effectively and efficiently manage their cost of production and still win at flower exports into the global market?

Thanks to Corteva Agriscience who have been burning the midnight oil to ensure Kenyan growers maintain their seat on the global high table. Three months after the launch of Fidelity 400WDG, a wrap for destructive sucking and chewing insects, your trusted Lepidoptera and Thrips partner is back with a boom. This time round, with Uphold 360SC, a new innovation active on all economically important Lepidoptera pests.

With confidence and surety, Evelyne Pamba, the Corteva Agriscience, Field scientist Lead ESCA said, “the market is looking for an attractive, quality flower which is environmentally safely produced. In addition, it is demanding flowers produced with less active ingredients hence low toxicity and more so green chemistry. On the other side of the coin, you, the farmer is looking for ways to cut your costs”.

Adding, “however, with new challenges especially climate change and chemical resistance, this is not a walk in the park. Every now and then, some pests which were never considered serious are knocking the door or growing resistance. One such pest is the caterpillar. For the last few years, Caterpillars have evolved to become the worst nightmare to any floriculture grower in Kenya and across the globe”.

UPHOLD 360SC?

This is a new insecticide that combines the activity of two powerful modes of action actives, for use in ornamentals, fruits & vegetables among other crops with market-leading activity on major lepidopteran pests (Caterpillars). It provides equivalent or better control of Lepidopteran pests (caterpillars) than leading reference products currently in the market.

Uphold is a new insecticide for the control of key Lepidoptera pests which combines two powerful modes of actions, the spinosyns and the molting accelerating compounds. The product has multiple effects on all insect stages (eggs, larvae, adults). It has both ingestion and contact activity making it difficult for pests to escape its action. Uphold 360SC acts quickly (3-24hrs) and has long lasting effect (10-21days depending on the species). It does not show any cross resistance with the existing chemistries hence acts as a

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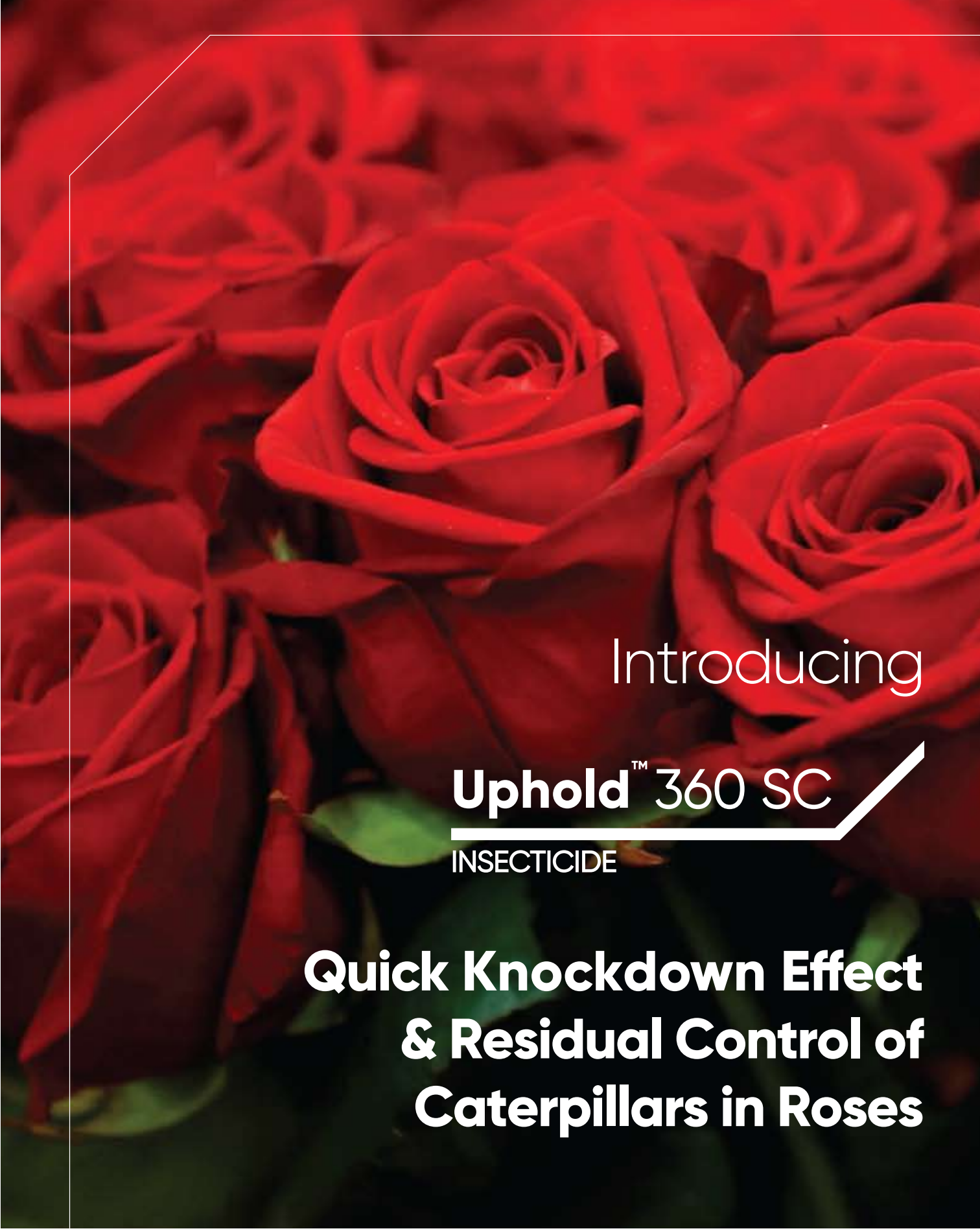

Introducing

Uphold™ 360 SC

INSECTICIDE

Quick Knockdown Effect & Residual Control of Caterpillars in Roses

FROM PAGE 26

resistance breaker for difficult to control pests that have developed resistance to other modes of action. It does not impact beneficial arthropods if label instructions are followed and has excellent rain fastness of 2 hours.

Mode of Action
The two active ingredients; spinetoram and methoxyfenozide are very complementary against lepidopterous pests. Methoxyfenozide (IRAC Group 18 insecticide - diacylhydrazines) and Spinetoram (IRAC Group 5 insecticide - spinosyns) have excellent complementary fit. They both have contact and ingestion activity, fast knockdown and long residual control of target pests. In addition they affect multiple life stages of pests and are convenient and user-friendly.

Methoxyfenozide.
Ecdysone mimic, it mimics and competes with the natural hormone, ecdysone, for its receptor and initiates a pre-mature and lethal molt to caterpillars. It is not metabolized as easily as ecdysone so it causes unnaturally high levels of the ecdysone mimic. As a result the eclosion hormone, required for completing a molt, is not released and the intoxicated insect is caught inside the old cuticle. Its effects are different from chitin biosynthesis inhibitors and juvenile hormone mimics and take place over a much shorter time period. It is highly selective for Lepidoptera ecdysone receptors, albeit it will bind to other taxa EcR receptors with a much lower affinity.

Spinetoram
It acts at a novel site in the insect central nervous system known as Dma6-nACHR causing nerve depolarization and hyperexitation of the nervous system. This leads to a progression of symptoms which ultimately lead to insect death through muscle contractions, insect tremors, lack of coordination and prostration and paralysis.

Why use Uphold
Uphold has a low impact on most beneficial insects (predators, parasitoids & bees). It does not flare mites or aphids. It is also compatible with other tactics in Integrated Pest Management (IPM) programs. Uphold is an excellent rotation partner with insecticides with different modes of action. Its main rotation partners include chlorantraniliprole, indoxacarb, emamectin benzoate and others. Both active ingredients have been recognized as reduced risk pesticides and were awarded the US

Presidential Green Chemistry Challenge Award.

Resistance Management
In her conclusion, Evelyne called on farmers to Use IPM programs and monitor insect populations in addition to following the label recommendations to manage resistance. “Effective resistance management is critical to preserve the value and effectiveness of UIPHOLD 360SC”, She said. Adding, “Growers need to rotate with different insecticide with different MoA and only use labeled rates”. She advised farmers to target early development stages when possible and beginning of infestations. She called on them to respect label maximum number of applications (3 per season).

In her wrap- up she emphasized on the specific Uphold 360SC attributes Attributes
1. Dual mode of action: Helps manage resistant and tough Lepidoptera insects.
2. Apply with confidence across a wide spray window.
3. Secondary ovicidal and sub-lethal effect on adults.
4. Contact and ingestion action. Acts quickly and has long lasting effect.
5. Minimal impact on beneficial insects.

Conclusion
“This will definitely fill an emerging big gap especially on reduction of molecules used,” said Tom Ochieng’, the Production Director, Penta Flowers as he officially launched the product. Mr. Vaibhav Deshmukh of Elgon Kenya Ltd, the distributors of the products said the product was readily available in one litre pack and 200mls was on the way. He called on growers to take advantage of the new innovation.

The event attended by most of the growers was well co-ordinated by Francis Karanja, Sales Manager Corteva Agriscience, ESCA and Joan Mbuva, Marketing Assistant. Mr. Karanja said the other products registered as Spinetoram or Methoxyfenozide will still remain in market but called on farmers to avoid the application of more than three spinosyns applications in a season for resistance management.

“With the new campaign in Europe on Farm to Fork and reducing active ingredients by almost 50%, the new innovation was the way to go.” Mr Nicholas Njue of Corteva Agriscience concluded,

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INSECTICIDE

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Adenia acquires leading grower of premium roses in Kenya

Adenia Partners, a private equity firm investing in Africa, has acquired a majority stake in Altilands SA, the parent company of Red Lands Roses ("Red Lands"), a leading grower of premium fresh-cut roses in Kenya. Red Lands is internationally recognized for its green horticultural practices that respect people and the environment. Financial terms of the transaction were not disclosed.

Mr. Aldric Spindler, Executive Director

Established in 1996 by agronomist, Isabelle Spindler, Red Lands operates a farm of 28 hectares, 35 kilometers northeast of Nairobi, at approximately 1,565 meters above sea level. Red Lands' premium fresh-cut roses have fuller heads, longer stems, and an enviable vase life of 12 to 21 days which not only provides value for its targeted premium florist market, but also ensures an overall lower carbon emissions profile. Red Lands is recognized globally as a leader in the production of spray roses and the Company produces 16 million stems per year which comprise of over 200 varieties of fresh-cut roses. The Company sells exclusively to wholesalers, predominantly serving markets in Russia, Eastern and Central Europe.

Adenia has invested in Red Lands due to its strong reputation for high-quality roses and advanced farming practices, being one of the first farms in East Africa to utilize 100% hydroponic farming. Adenia was also impressed by Red Lands' strong pricing power which is driven by the Company's direct route-to-market model that avoids the auction system where most of Kenya's fresh-cut roses are sold. Adenia will collaborate with Red Lands' management to accelerate the expansion of its production capacity through cultivation of an additional 20 hectares of land.

This capacity will be readily absorbed by existing, as well as new customers. The investment will also lead to growth in the number of employees, a significant number of whom are women, from 500 today to nearly 750 in two years.

"We are delighted to partner with Red Lands Roses to help grow this exceptional company whose niche business model was pioneered by one of the few women in this male-dominated sector. We look forward to working closely with the leadership to build on the Company's strong foundation," said Martha Osier, Partner at Adenia Partners.

"Adenia has a strong track record of accelerating growth and institutionalizing family-led companies like ours. We look forward to partnering with Adenia and leveraging their experience and expertise," said Red Lands Roses Managing Director, Isabelle Spindler who, together with her husband Aldric Spindler, will remain as executive directors responsible for farm expansion. Recently appointed CEO, Disha Copreaux, has assumed active management of the Company. Disha is a Kenyan citizen, and she brings both operational and strategic experience in commercial farm management having previously served in leadership roles at Export Trading Group (ETG) and Syngenta.

About Adenia

Adenia Partners is a private markets investment firm committed to responsible investing and a sustainable Africa. Founded in 2002, Adenia has successfully raised US $500 million across 4 funds. Adenia has a proven track record of strong and consistent performance with 30 platform investments executed and 16 realized exits. Based on-the-ground across Africa, Adenia has one of the most highly qualified African private markets investment teams in terms of educational pedigree, longstanding experience as entrepreneurs and investors, and local in-depth knowledge. By creating stronger companies with quality jobs, fostering economic improvement, and elevating companies to meet ESG standards, Adenia is increasing the enterprise value for investors, whilst benefiting workers, communities, and companies in Africa. For more information, please visit: www.adenia.com.

About Red Lands Roses

Red Lands Roses is a leading grower of premium roses, including the popular Spray roses. The farm produces approximately 16 million fresh-cut roses for sale annually and grows almost 200 varieties of roses in its catalogue. Red Lands Roses has achieved numerous international certifications including the MPS environment A and Kenya Flower Council Silver status, the latter of which is accredited by the South African National Accreditation System (SANAS). For more information please visit: https://www.redlandsroses.com

Thank You!

The Board of Directors, Management and Staff of Florinews Ltd Wish you a Merry Christmas and a Prosperous 2022.

HERITAGE FLOWERS

Mr. Shailesh Kumar
Managing Director of Heritage Flowers

Heritage Flowers: 'Thriving in the Bloom'

By Mary Mwende Mbithi

Heritage Flowers Ltd is one of the crème de la crème flower farms in Kenya. Situated in Rumuruti in Laikipia County, Kenya's Rift Valley region, they are Kenya's producers of high quality roses. It was established in 2019 by Mr. Shailesh Kumar Rai, a crop scientist and a horticulture graduate from Govind Ballabh Pant University in India.

With the knowledge and expertise he gained from working in the flower industry for over 27 years, Mr. Shailesh Kumar, the current Managing Director of Heritage Flowers, decided it was time to start his own farm. He then embarked on a journey, never to look back. A journey that has so far been a blossom of success!

Background

The year 2019 was when the idea of starting Heritage flowers Ltd was made a reality. Mr. Kumar acquired a 56 hectares piece of land in Rumuruti, Laikipia County.

He built greenhouses on 10 hectares of it and planted 16 varieties of Standard Roses. He later expanded the farm and started growing 12 varieties of Spray Roses which are super-intermediate (a head size of between 4.5cm -5cm).

Currently, Heritage Flowers has become more diverse as they have begun growing Chrysanthemum too. They are also on an expansive plan to grow the farm to 40 hectares by the year 2024.

According to Mr. Shailesh, Rumuruti was an ideal place for the flower farm because the land was easily available and cheap. It was also a virgin land with vegetative soils and the equator passes through Rumuruti therefore ensuring abundant (12 hours) sunlight and appropriate diurnal temperature for a bigger head size, more stems and good quality flowers. The land is also located near a perennial river thus availability of enough water. Rumuruti was also ideal because, it has an altitude of 1900mm above sea level and rainfall of 1000mm.

Operations

Internal set standards at Heritage Flowers have set out overall responsibility including management, guidelines on GAPS, minimal use of pesticides and fertilizers, environment policy, social responsibility and staff welfare.

To comply with this, the farm undertakes frequent internal audits in order to identify and document any risk assessment on regular basis and prepare a time bound action plan. The company also monitors the whole process to ensure targets are met while reversing the action plan in the light of changing circumstances in the dynamic industry.

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Water Usage: Water is the lifeline of the of the flower industry, without it the industry is as good as dead. In striving to produce quality products, they also reach for ways to reduce water usage a finite resource. This is ensured by, installing water meters, rotors, sprays, valves and central control systems have been installed which offer a range of technical superior enhancements for improved water management. Spray heads and valves have water saving regulators. In addition, Heritage Flowers collects all rain water.

Nutrition: Heritage Flowers aims at fertilizer and chemical reduction and better plant quality through water conservation techniques among them, the fully computerized irrigation system that ensures only the needed water is used. Recycling of water also ensures minimal soil erosion and contamination hence preservation of water catchment areas and environment conservation.

Spraying: The overall objective is to reduce the pesticide usage while at the same time ensuring responsible and safe use. This takes place within the guidelines set out in the company policy and statutory regulations. Application of pesticides is determined by scouting and identification.

Spot spraying with pesticides that are friendly to the environment as opposed to blanket spraying is practiced. Accurate and timely uses of remedial measures in crop protection reduce the impact to the environment. All scouts undergo an in house training to enable them identify all the disease and pests found in cut flowers.

To ensure that safety is attained, spray application and implements are well maintained with correct calibration to ensure that chemicals are applied at recommended rates. During spraying, it's mandatory for sprayers to dress in appropriate protective clothing such as respirator, goggles, overalls, gumboots, impermeable gloves and headgear.

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

Chemical Storage: The farm uses a number of chemicals and fertilizers. The manner in which these fertilizers are stored determines their quality and effective usage. The operational policy is "First in First out" to ensure that expired chemicals are not used.

Waste separation and Re-use: There are five major sources of waste. First, the crop remnants that are composted and used as manure on the farm. The second source is the polythene sheeting from the greenhouses that are sold to a NEMA approved contractor for recycling.

Thirdly, drip irrigation tubing, which are also sold to contractors for re-use. Fourth, chemical container, because of their hazardous nature, they are sold to Environmental and Combustion Consultants Ltd. Fifth, the waste papers from office use are send to companies that can recycle.

Environment: Heritage Flowers ensure the safety of their operations to the environment and exercise the concern for the environment wherever they operate. They ensure continuous improvement on the impact of environment by operations and processes.

Therefore they develop innovative products and processes that have minimal impact on environment. They do this by reducing waste, conserving water and energy and exploring opportunities for recycling, in order to reduce and prevent pollution.

To achieve these, the farm assesses fully the environmental impact of new and modified processes at design stage. The assessments cover the entire life cycle. These measures ensure that environmental incidents are reported, investigated and remedial measures put in place.

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

auction market with a 25% direct market. During the onslaught of the pandemic, the availability of premium roses was quite low with the prices too high.

That's when Heritage went for 100% direct selling introducing into the market the 'super-intermediate' roses with the help of the wholesalers who introduced the new line. The wholesalers began making higher margins with the super-intermediate', thus the demand for them grew. So far this has helped establish the Heritage Flowers brand name in the international flower market.

Marketing Strategy

Heritage Flowers is focused on growing a variety that is rare in the current flower market, the 'Super-Intermediate' (a flower quality that is between Premium and Intermediate, about 4.8+ cm mostly 5cm+). Since June 2020, Heritage Flowers has fully ventured into direct market. "We are currently at 100% direct market and we export our flowers to Russia, the European Union, Middle East and Australia." Said Mr. Kumar.

Human Resource

Heritage Flowers values its employees and it is committed to continuous training and investment in personnel development. In addition, it has a package full of incentives. The employees are given house allowance, medical care and other welfare facilities.

It has created jobs to hundreds directly and tens of thousands indirectly. Heritage Flowers endeavours to provide a safe, hygienic and healthy working environment. Adequate and appropriate protective clothing is also provided. The staff working in the cold rooms and spraying have their heavy jackets. Upon engagement all sprayers undergo a cholesterol level test and regular others after hire. Sprayers are alternated regularly for health purposes. They also undergo regular internal and external trainings.

What Covid-19 meant for Heritage Flowers

Generally, all high altitude growers were affected by the Covid-19 pandemic and so was Heritage Flowers which went through a dire situation at the onset of the pandemic. This saw the farm cut down on work force as well as cost of fertilizers and Chemicals.

In May-June 2020, the company got back on its feet and went through a 70%-75%

Stephen Gachoki: 'Elgon Kenya's Post-Harvest Treatment Essentials '

By Mary Mwende Mbithi

A confident, accomplished and highly experienced graduate in Food Science and Technology sits in his spacious office expediting his duties jovially. With over 20 years experience in Floriculture, Mr. Stephen Gachoki, takes the helm of Elgon Kenya post-harvest technical department as the Senior Technical Manager. He is one of the most industrious post-harvest professionals in the cut flower post-harvest sector.

Mr. Gachoki has spent several years of his profession in various pack houses, marketing and technical departments ensuring correct handling of cut flowers after harvest. In his current position at Elgon Kenya, he is working with farmers and stakeholders in conducting product trials, post-harvest audits, trainings, manufacturing, marketing and distribution of postharvest treatment.

Just as their tagline 'Transforming farms and lives through technology' Elgon Kenya is a supergiant Agri-input supplies company in East Africa. It has been in existence since the 19th century and has continued to impact the lives of farmers through technological advancements.

It has positioned itself as a one stop shop for both small- and large-scale farmers providing cutting edge solutions that address customer needs. Some of their products include; agrochemicals, fertilizers, seeds, Irrigation Equipment, Animal Health, Farm Equipment, manufacturing of packing items and Green house polythene.

"Flower aging begins immediately after harvesting therefore, retreatment prolongs their vase life by rehydrating and maintaining quality," Mr. Gachoki reiterates as he takes me through the post-harvest products offered by Elgon Kenya. He hands me two products registered as Vaselife and Florissant.

"These are the products for post-harvest treatment, they extend the vase life, energize the flower, enhance the bloom among other beneficial aspects to a flower," he adds. He goes on explaining with so much vigor and not leaving out details. For a moment, I am prompted to engage him.

Floriculture: Elgon Kenya has an aggressive post-harvest prowess in the flower sector, kindly discuss the brand portfolio.

Steve: Elgon Kenya has the best post-harvest brands; Florissant and Vaselife. Both brands have products that

have premium flower care for the whole of the consumer chain, from grower to consumer.

Vaselife brands are used by growers and customer ends. The products supplied are both liquid and powder based. On vaselife we have Vaselife Universal Hydrate 100 clear, Vaselife Clean Start,Vaselife Uno,Vaselife Defend and Vaselife cut flower foods.

Florissant is available in solution, powder and dispersible tablets. It is fit for all cut flowers, Astroemeria, Lily, Euphoria, Erygium, Delphinium, Gypsophila, Veronica and other ethylene sensitive flowers. The Different Florissant variants are good for protecting the flowers from ethylene produced by internal or external sources, maintaining the leaf quality, improving ornamental value, improving water uptake, preventing bent-neck, conditioning, nourishing, optimizing vase life, energizing the flower and enhancing bloom. On Florissant we have Florissant 100c, Florissant 210 xC, Florissant 500n, Florissant 2000, Florissant 810 and Florissant 820.

Floriculture: What are some of the services offered at Elgon Kenya post-harvest department?

Steve: We purpose to make our consumers enjoy their flowers for a long period of time. We also offer our clients the best prices, not forgetting our sustainable packaging to minimize the negative impacts on the environment. Our solutions are also tailor-made to improve specific business goals, providing advice and cost-effective training in order to reduce waste and improve quality. Our delivery team is up notch making our products available where and wherever needed.

Floriculture: Are you seeing any new trends emerging in post-harvest, if so, what are they and what are your thoughts on them? What should growers expect from Elgon?

Steve: Yes. There will always be in trends. Currently; there are new post-harvest products in the market from Elgon Kenya that are already in the market. They are pocket-friendly, easier to use and dissolve to cater for both large scale and smallholder farmers. Growers should expect many more innovations from Elgon Kenya Ltd.

Floriculture: Kindly discuss why post-harvest products are essential to farmers.

Steve: It is mostly important to repeat that flower life ends after cutting, thus there is need to prolong life through retreatment to maintain the quality and bloom. Correct use of post-harvest products is key in order to achieve desired results. The best post-harvest treatment should contain these three components namely; Hydrants for opening cells to uptake water and solutions, Acidifier to reduce the pH and help in killing bacteria as well as surfactants to reduce water tension.

Floriculture: Describe the challenges growers face when buying post-harvest products for their operation. What are some of the things farmers need to consider and how can Elgon help?

Steve: Growers mainly face usage challenges especially in reading instructions that come with products and this is where Elgon Kenya comes in to train them and analyze the products with the farmers to see their suitability in their respective flower farms.

When it comes to pricing, farmers look for effective pocket-friendly products, and this is where we tell the growers; Elgon got you covered! If a farmer buys our products in bulk, we are ready to deliver them to their farms on time.

On matters sustainability, again, Elgon has products that are environmentally friendly with a packaging that suits and protects the products.

Floriculture: What can you promise growers?

Steve: We value our farmers so much and it is no doubt that we endeavor to improve our customer experience to greater heights. We therefore continue to offer after sales services to our clients on consultation upon encountering challenges, trainings, post-harvest audits, trials, advices, availability and quality maintenance of products.

Thank you!

Agricultural service provider Cropnuts launches cutting edge soil testing platform powered by AI

Crop Nutrition Laboratory Services Ltd (Cropnuts), Africa's leading independent laboratory for agricultural and environmental testing, has launched AgViza, a disruptive AI based soil testing and digital crop advisory service for smallholder farmers.

Soil testing services have been out of financial reach for smallholder farmers, which is reflected in the fact that poor soil fertility remains a key driver of yield loss in smallholder farms across Africa.

AgViza soil testing technology will change the status quo by empowering farmers with this critical soil management information.

The technology bundles soil testing, farmer training and specific agronomy advisory into an affordable digital service.

It is built on five years of research and development drawing on Cropnuts' extensive soil knowledge, combined with decades of experience serving African farmers and an extensive Africa-wide geo-referenced soil sample database.

The platform's bespoke artificial intelligence engine measures soil fertility properties, which allows it to deliver high-quality soil health management and fertilizer application advice to farmers via interactive SMS, backed up by trained local agronomists.

The combination of different technologies reduces the cost of soil testing by more than 75%, making it more affordable for all types of farmers, especially smallholder farmers in remote locations.

AgViza erases need for traditionally expensive and complex lab analysis

According to the DOB Equity and AHL Venture backed company, AgViza is a B2B service model that works through business partners such as fertilizer companies, produce aggregators, public sector extension, development organizations, digital market platforms and financial institutions and addresses key challenges within the smallholder agriculture sector.

Once the partner agronomists collect the soil samples from farmers' fields, AgViza's soil testing engine will measure and correlate the soil fertility properties in the soil, which overcomes the need to use traditionally expensive and complex lab analysis processes.

Traditionally, Cropnuts served large and medium farmers, but its development of the innovative, low-cost soil testing platform will allow it to serve millions of smallholder farmers in Africa.

This is critical to realising the potential of Africa's smallholder farmers, improving their livelihoods while contributing to food security and economic growth.

Currently less than 0.5% of smallholder farmers have used soil testing, illustrating the massive potential impact of this technology.

Jeremy Cordingley, Managing Director at Cropnuts, says, "We are positioning AgViza to become a key driver of financial inclusion for smallholder farmers. Soil testing will help farmers know the right fertilizer requirements and, in turn, this de-risks lending to farmers."

"The field specific input recommendations will improve farmer yields, leading to higher incomes and improved repayment ability, giving financial institutions better assurance on their farmer loans.

"It also gives farmers greater confidence to invest in their land when they know exactly

what to do and see the impact first hand."

As a result, smallholder farmers can sustainably maintain healthy soils and achieve long term productivity even when exposed to extreme weather events, such as droughts and floods, which are being accelerated by climate change.

Saskia van der Mast, DOB Equity Co-CEO, says, "After years of development and capturing thousands of calibration soil samples, Cropnuts now has a scalable and digital solution to enable millions of farmers to become more productive and profitable.

"We believe Cropnuts has the potential to accelerate investment in the agricultural value chains, increase food security, as well as manage climate risk."

Cropnuts' cutting-edge technology makes it the frontrunner in the testing of soil fertility, water quality, food safety and fertilizer quality, to name a few.

With soil testing already incorporating organic soil carbon levels, the technology has an important role to play in combating climate change by measuring how adapting agricultural practices and inputs enhances soil health and sequesters carbon from the atmosphere.

Kisima Farm certified with Kenya Flower Council's highest accreditation

Mr. Craig Oulton,
General Manager Floriculture at Kisima Farm

"The KFC Gold accreditation covers various important standards, from environmental to social sustainability. At our farm, we are continually working on being the best that we can be. Not just for ourselves, but for our environment and community as well," says Craig Oulton, General Manager Floriculture at Kisima Farm. Oulton explains all the hard work that has gone into achieving this high standard, from water management to implementing gender equality committees, and how all of this leads to higher quality flowers.

What does it take to achieve gold?

Oulton explains that gold is the highest accreditation that the Kenya Flower Council can give. "It is an internationally recognized accreditation that covers various standards. It is particularly focused on sustainability, both concerning the environment and the social aspect. Therefore, everything at the farm is looked at, such as the types of chemicals that are used, as well as how you treat your staff and serve your community. At Kisima, we are continually bettering ourselves to be the best farm that we can be, and everything we do has a sustainable factor."

Improving practices, improving flower quality

"We are very proud of achieving the gold accreditation, as we are great believers in the practices of our farm. When you set everything at the farm up to be the best that it can be, the quality of the flowers will also enhance. And when everyone coming to work at the farm also feels secure and knows what they are doing, all of the pieces of the puzzle come together, and high quality flowers are the result."

United Selections Set to Represent WAC Breeding in Africa and Europe

In their pursuit to bring more colors and to contribute immensely to the development of a robust floral supply chain, United Selections's recent partnership with WAC breeding goes a long way in contributing to this cause. WAC breeding is famously known for Catch the Bi-colored rose, the Robins and Weavers collections among other established varieties.

United Selections have a strong footing on the red roses, with the established Madam Red and also Upper Class and Red Torch and recently coming up strongly with their spray roses. Breeding a colourful future is a commitment and one that requires a partnership like this to add more color-choices for growers to choose from globally. In rega¬rd to this partnership; trial and commercial requests for all WAC varieties; commercial and new varieties in both Africa and Europe will be handled by United Selections.

CIOPORA's Advocacy Goal Achieved:

30 Years Community Plant Variety Protection for Species with Long Development Cycles

Dr. Edgar Krieger,
Secretary General of CIOPORA

Breeders of asparagus, flower bulbs, woody small fruits, and woody ornamentals will soon enjoy a 30-year protection term under the Community Plant Variety Rights (CPVR). The extension from 25 to 30-year CPVR term has been passed by the overwhelming majority in the EU Parliament (641 out of 704 MP) and adopted by the European Council. The extension will apply to the CPVR in species concerned, both currently in force and issued in the future.

As requested by CIOPORA and the fellow breeder organizations Euroseeds and Plantum, the extension of protection will finally accommodate the needs of breeders of the varieties with especially long breeding and stock building cycles, allowing for equitable refunding of research and investment in the breeding programs. The prolonged term of protection and variety exploitation will also allow breeders, many of whom are small and medium enterprises, to explore new business opportunities and reinvest in the breeding of new and improved varieties.

"This is a great assurance for breeders of these species and a positive signal to the entire breeder community that their needs are being acknowledged by the policymakers", says Dr. Edgar Krieger, CIOPORA Secretary General. "Effective IP protection is key for ensuring that the European SMEs are ready to rise to the challenge and deliver tangible results, e.g., for the European Green Deal and the Farm to Fork strategy."

The regulation is expected to come into force before the end of the year, twenty days after the publication in the Official Journal of the European Union. The list of the varieties in the affected groups of species will be released by the Community Plant Variety Office. The latter has announced that it will work with its Registrar to identify the qualifying crops and update the terms of the corresponding CPVR titles if force. The titleholders will be notified in due time.

A Mega Export Boost by Horticulture for Kenya's Crops.

Over the first eight months horticultural produce has beaten all odds to emerge Kenya's top agricultural export based on information available to the public domain. According to CBK, revenue generated from horticulture rose from 70.3 billion ($636 million) to 87.8 billion ($795 million) compared to last year's first eight months.

Unexpected lockdowns saw the low demand of horticultural produce. After reopening economies and lifting up of lockdowns and curfews in various parts of the globe, the demand has been restored. Cut flowers, fruits and vegetables demand has shot up immensely.

Kenya's exports have so far grown by 11.5%. Most of it is attributed to manufactured goods in about 39%. CBK Governor Patrick Njoroge in a monetary policy committee meeting talked of the improved tea prices in recent auctions. "Tea prices have shown an impressive improvement in recent auctions and we hope that will be upheld." Said Mr. Patrick Njoroge.

According to CBK, the lower comparative earnings in this current year (2021) are due to increased buying in the second quarter of last year (2020). Tea importers stored large amounts of tea due to the uncertainty that was brought up by covid.

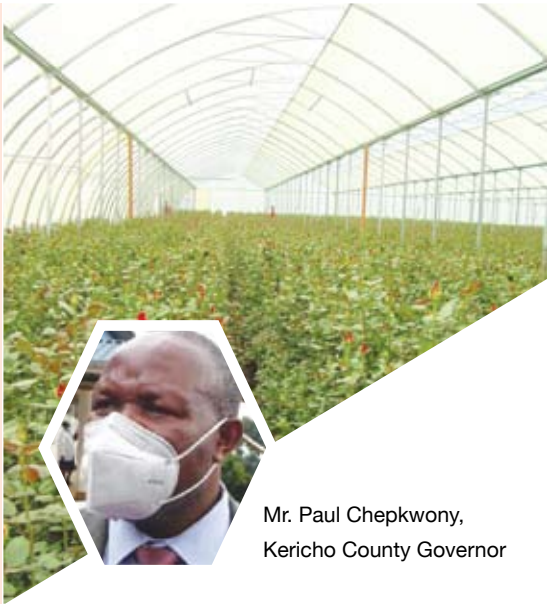
Sh60 Million Clean Energy Initiatiative For Flower Farm Workers.

About 4,500 Nakuru and Murang'a county flower workers are set to benefit from a Kshs 61 Million (470,000 Euros) sustainable clean energy project.All this is courtesy of Aldi Supermarkets in Switzerland and Finland's Foreign Affairs Ministry.

Workers from four flower farms (i.e Sian, Penta, Aquilla and Simbi) will benefit from cooking gas and solar panels for domestic consumption. This is under the Kenya Rose Project which is run by Fair Trade Africa.

"We are targeting 4,500 workers directly and 22,000 dependents in the five-year programme that will also benefit the vulnerable groups in the society," said Marion Ng'ang'a of Fair Trade Africa.

The Controversy that Surrounds the Sale of Finlay's Lemotit Flower Farm



Mr. Paul Chepkwony, Kericho County Governor

The Sale of Finlay's Lemotit Flower Farm in Kericho to Black Tulip Group has been surrounded by a lot of controversy. This was after the Kericho county governor, Paul Chepkwony, got into a legal tussle with Finlay's management.

Governor Chepkwony said that Finlay's management ought to have consulted with his administration prior to the sale of the flower farm because the farm operated on a leased land. Chepkwony also said that they would fight for the rights of the workers who were laid off by Finlay.

"Leased land should be sold under the agreement of the county and national government," he said. On the other hand, Finlay Flowers GM Steve Scott said discussions were going to be held with stakeholders from Black Tulip to agree on details regarding the takeover.

Karuturi Fights to Stop Property Auction

After Stanbic Bank was given the go ahead by the Supreme Court to auction Karuturi assets 7 years ago, the joint receiver managers recently placed an advert in one of the dailies, advertising the property for auction.

They were inviting interested persons to submit their expression of interest for the purchase. Karuturi went back to court to stop the auction, suing CFC Stanbic Bank and the joint receiver managers.

Karuturi aimed at temporarily stopping the receiver managers from offering for sale by public auction or purporting to sell by public auction or private treaty the parcels of land.

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	Ghanshyam Dusang	0721638005	manager1@everflora.co.ke
Evergreen Crops		Nairobi	Arun Singh	0721941009	arun@evergreencrops.com
Exotic Peninah	Roses/ Carnations	Athiriver	Dan	0734626942	dan@exoticfields.com
Fairy Flowers	Flowers	Limuru	Sylivester	0753444237	sylvesterkahoro@yahoo.com
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	-	-	--
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
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
PJ Flora	Roses	Isinya	Santos Kulkarni	0738990521	santosh@pjdave.com

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
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
Shalima Flowers (k) Ltd	Flowers	Nairobi	Natarajan	0738 999149	natarajan@eaga.co.ke
Shalimar Shalimar	Flowers	Naivasha	Dinkar Wandhekar	0702418174	dinkar@eaga.co.ke
Shalimar- Kabuku Farm	Flowers	Thika	Mohan Raj	0724265777	kabukufm@eaga.co.ke
shalimar-Mahee Farm	Roses	Olkalao	Kirthan	0705401431	maheefm@eaga.co.ke
Shalimar-Mwanzi Farm	Flowers	Rumuruti	Ram	072426585	mwanzifm@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	-	-	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	-	-	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
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	-	-

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