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Gray mold disease on roses

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Some of the Oserian Development Company staff graduated with diploma in Kenya Sign Language from the University of Nairobi a project sponsored by Fairtrade Africa for improving communication as part of its award winning inclusivity programme

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|| HORTISPOT ||

the EU is revising rules on quarantine pests leading to rejection of produce due to emerging pests such as the False Coddling Moth that has found a new home in roses sending growers and inspection firms back to their pockets in search of instruments to ensure exports are free of the moth and other dudus



Now we have it now we don't

When Kenya President Uhuru Kenyatta announced the country had struck a deal with China for avocado exports, the news was received with frenzy. A few months earlier, I remember receiving a call from State House asking for information about the fruit. I referred the caller to Ernest Muthomi the CEO of the Avocado Society of Kenya. Like a good citizen, the officer from the House on the Hill updated me on the outcome and appreciated the introduction. I didn't give it much thought until excitement rent the air on the China deal.

As details started falling into place, the CEO of the Fresh Produce Consortium Okisegere Ojepat was next. We got a raw deal from China and we must renegotiate the terms. By we, OJ like we call him, meant the country and the negotiators of the Beijing market. As we discussed why Kenya couldn't trade under the arrangement requiring export of peeled, chilled avocados due to lack of technology, a newspaper article had raised the same concern quoting farmers urging the government to go back to the drawing board. It has not been possible to establish how far the talks, if any, to renegotiate have gone. Neither the Horticulture Crops Directorate, the Kenya Plant Health Inspectorate Service, the Fresh Produce Exporters Association of Kenya or the Export Promotion Council is forthcoming with a clear position on the deal.

Be that as it may, it is clear Kenya has upped its avocado production and as reported extensively in this edition, the crop is poised to grow into one of the largest agribiznesses in the coming years. The featured exporters, Keitt Exporters and Mofarm and farmer Robert Mburu have not shied from expressing open optimism. Keitt, arguably the largest buyer of avocados from contracted farmers, which says the fruit is currently its signature export product, is building a modern packhouse and processing factory in Kenol, Murang'a County. In the words of a director of the firm, the factory will take all available fruit for processing from its contracted growers. Mofarm on the other hand is moving to a bigger packhouse and reports a shortage of avocados.

Back to the China deal, HortiNews sort the views of exporters and industry experts. One said simply; its madness. But, she hastened to add, it could be an opportunity to bring the technology to Kenya, a big boost to our industrial development and increased earnings. OJ lamented lack of fumigation facilities for a country that sits among global giants when it comes to fresh produce exports. Now, talks about setting up a fumigation centre dates back to early 2000 and it's unbelievable almost 20 years later JKIA is yet to see one. This at a time our largest buyer, the EU is revising rules on quarantine pests leading to rejection of produce due to emerging pests such as the False Coddling Moth that has found a new home in roses sending growers and inspection firms back to their pockets in search of instruments to ensure exports are free of the moth and other dudus. The challenge of increasing invasion of pests and diseases, says Magana Flowers CEO Nicholas Ambanya resulted from shortages of fertilizer earlier in the year that weakened flowers leaving them susceptible to attacks. Costs to stay afloat are reportedly on the upwards of 40 per cent, a not too rosy picture for the flower industry.

As stated at the beginning of this column, HortiNews got a call from State House inquiring on the avocado. This tells you of a huge gap in availability of information on horticulture and for the umpteenth time we reiterate the need for this sector data to be consolidated and a centralized information system for reference be created. Who speaks for the industry again? We are yet to get an answer.

Catherine Riungu



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The Lord Erroll

Kenya set to hold its first Flower Festival in October this Year



Iconic Cascades by Magana Flowers during IFTEX 2018

By MURIMI GITARI

With Kenya being the third largest exporter of cut flowers in the world, the flower industry in the country is set to achieve another milestone by having the first ever flower festival on October 26th this year at Diana Hay Gardens in Lord Erroll Restaurant in Runda.

The festival idea, identified by a communications company – Bold Rose Communications, will be offering an opportunity to celebrate Kenyan flower enthusiasts and inculcate a culture of using fresh cut and garden flowers in our homes, offices, and all spaces of life. This will not only ensure a ready market, but will also instil a Kenyan culture of using flowers, and exchanging them with people to cheer them up, show empathy, love, happiness and gratitude in our day-to-day lives.

Rosemary Kimunya, the founder of the festival, says the event will be a one of its kind with the theme being ‘Bloom in Bravery’. It will be happening during the month of breast cancer awareness and will include breast cancer screening during that day as a way of celebrating the cancer month.

Rose, who grew up in Limuru where flowers are grown in large scale, explains that she has spent lots of time doing research on flowers and is interested in seeing people use their creativity to make art from flowers rather than dwelling so much on science and exports which she says has been the case for a long time in the country.

“Kenyans need to develop the culture of giving flowers to each other instead of getting all what is grown here taken to other countries,” Rose says. She adds that it is unfortunate to see that there are few

Kenyans who know much about flowers and she dreams of seeing them growing and having flowers in their homesteads.

There are very few Kenyans who can afford to buy even a bouquet of flowers as many flower farms have concentrated so much on the export market and they only sell what they get as rejects (those that do not meet export standards) to the local market. According to Ms. Kimunya, during events like weddings, parties and even in offices, artificial flowers are used for décor. Ms. Kimunya and her team aim to see Kenyans embracing and affording the flowers grown by providing a market for the same.

A report by the Kenya Flower Council shows that Kenya is the largest exporter of roses to the European Union (EU) with a market share of about 38%. Approximately 50% of exporter flowers are sold at Dutch auctions, although

direct sales are growing worldwide. The flower industry contributes around 1.06% to Kenya's Gross Domestic Product (GDP).

Our target is not based on the economic aspect; it is about inculcating a culture of putting artistic work in flowers during events and in places where flowers are used for décor, she adds. We want to see Kenyans growing their own flowers, and have a culture of giving and receiving flowers by doing away with the perception that it is wastage to buy a flower, the founder of the festival, who is also an event planner and public relations professional, says.

The festival will have a show that will radiate with professionalism and feature top of the class floral designs, exhibitions and set-ups showcasing creative and diverse Kenyan floral arts.

The Kenya Flower Festival (KeFFlo) also wishes to appreciate flower enthusiasts on this particular day by creating an online contest on bra designing and decorating using flowers under the campaign dubbed 'Glam your floral bra'. Entries will be recorded by way of registering on the website with a rule of using only flowers and environmentally-friendly materials to create a bra.

"The intention is to ensure that we support the Breast Cancer Awareness month campaign using flowers and creativity, hence Kenya Flower Festival - Bloom in Bravery Edition," the founder explains.

The event will provide a networking and marketing opportunity for flower enthusiasts and like-minded organizations. Education will also be offered on various flowers grown in Kenya and how to take care of them at home in order to give them a long vase life.

"There are flower farmers targeting local, however the reception at the local level has not fully developed. It is for this reason we are having the festival that will connect the flower



An image of an elephant made of Rose flowers by Baraka Flowers during IFTEX 2019 at Oshwal Centre

farms with the market we are intending to create. As is the case, flower shows that are held in the country connect flower growers with the export

market," Ms. Kimunya says.

The event will have a couple of activities including education pieces by the various flower experts, children's activities, training on growing of different flowers as well as selling them.

The glamorous floral event will have exhibitors and will feature variety of presentations from leading flower farms, floral event planners, the floral bra contestants, artists, gardeners, landscapers, florists and wedding planners. There will be displays providing an ideal environment for informally training parties interested in the floral items.

It will be an all-day event culminating into a gala dinner later in the evening. Presentation of awards will be done for the different categories. Some of the proposed categories include: the flower farm of the year, floral designer of the year, Kenya wedding florist of the year, home gardener of the year, flower vendor of the year among other awards. Judges will be from the Kenya Floral Arrangement Group and other flower industry experts □



Ms Rosemary Kimunya, the Founder of Kenya Flower Festival, KeFFlo



Pest Alert: False Codling Moth (FCM) in Ornamentals in Kenya

False codling moth is a multivoltine pest which does not enter diapause leading to year-round overlapping generations on host plants

By Victor Juma, Business Manager, East Africa lawn and Garden

The cut flower industry, one of Kenya's most important sectors, earns the country around \$0.5 billion annually. Production of cut flowers is, however, constrained by insect pests and diseases among other factors resulting in yield loss and poor quality produce. Of the pest challenges currently facing flower producers in Kenya is the false codling moth (FCM), *Thaumatotibia leucotreta*, which is categorized as a quarantine pest by the European and Mediterranean Plant Protection Organization (EPPO). Growers have suffered financial losses due to quarantine restrictions imposed on exporting countries and detection of a single larva can result in rejection of an entire consignment.

False codling moth is native to sub-Saharan Africa and is a pest of economic

False codling moth is native to sub-Saharan Africa and is a pest of economic importance to many crops

importance to many crops. It is a key pest of citrus, pepper, avocado, macadamias, and cotton. Previously, there were no known reports of FCM being a pest of roses until its larvae was detected several times by the National Plant Protection Organization of the Netherlands (NPPO) in buds of *Rosa* cut flowers originating from countries where the pest is present. Different studies and trials conducted in Kenya by several researchers has shown that FCM is widespread across the country with Kirinyaga, Murang'a, parts of Kiambu and Nakuru, Machakos and Kajiado counties recording high prevalence rates.

False codling moth is a multivoltine pest which does not enter diapause leading to year-round overlapping generations on host plants. FCM has 2-5 generations annually in natural conditions. The life cycle of the false codling moth includes egg, 5 larval instars, pupa and adult. The complete life cycle takes between 30 to 174 days depending on environmental factors such as temperature, humidity, food availability and quality and photoperiod, with 25°C being optimum.



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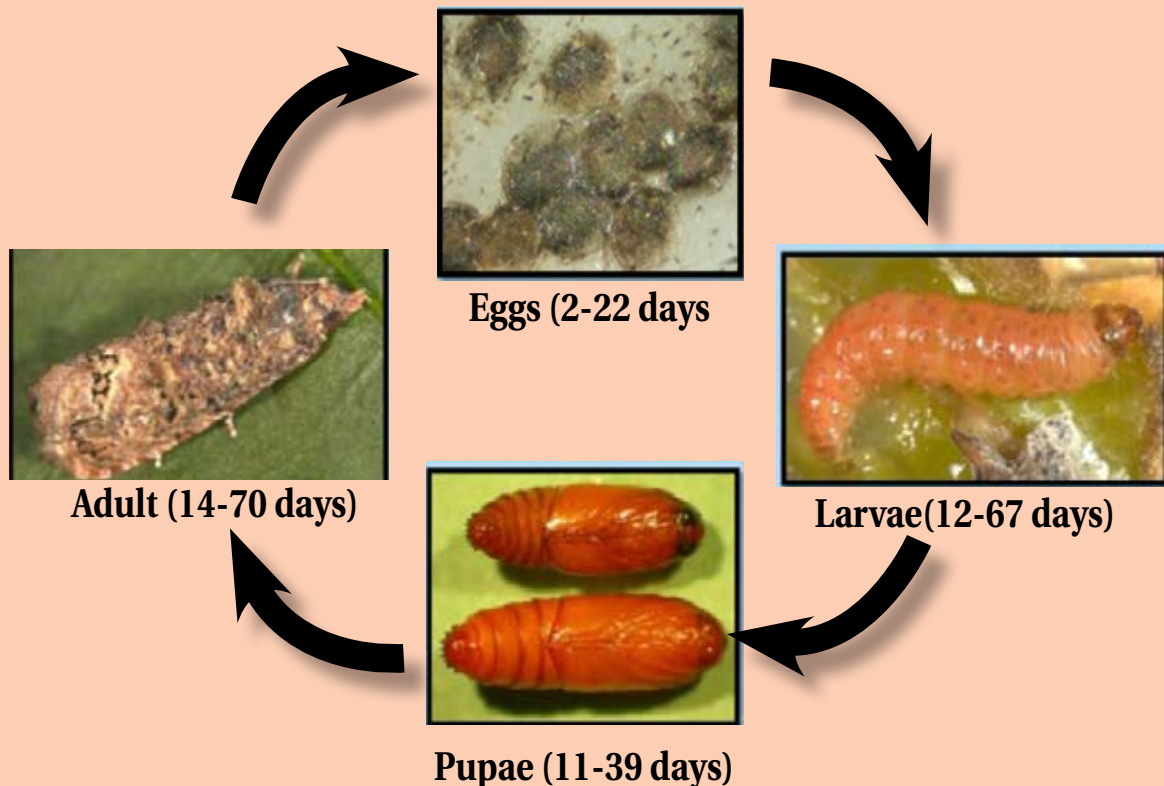
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Life cycle



Mated female moths fly at night, depositing eggs singly or in bunches on flower buds. At an optimum temperature of 25°C, females can lay three to eight eggs per flower bud and up to 800 over her life span. The hatched larvae penetrate making burrows about 1 mm in diameter and feed inside the flower bud. Mature larvae exit the flower bud, then drop to the ground on silken threads to pupate in the soil or within plant debris. After a few days, the pre-pupae turn into pupae, remaining as such in the soil till they emerge as adult moths.

FCM larvae are difficult to detect once they are inside the flower bud, and the singly laid eggs are difficult to detect as well. Thus, it is desirable to use the yellow delta traps baited with a pheromone lure to monitor the extent and densities of this invasive moth pest. Visual inspection of plants involves looking out for signs of poor growth or rot; holes in flowers;

adults hidden in foliage; and crawling larvae. Once the flower is damaged, it becomes vulnerable to fungal organisms that cause rots. Infestations can be identified by the brown spots and dark brown frass.

Current control of FCM in ornamentals consists of chemical application, mating disruption using pheromones and biological control methods, although cultural control practices including field sanitation, removal and destruction of infested flower buds remain an important foundation for all FCM control options. Additionally, the level of control achieved is therefore the sum of the efficacy of all the measures used, denoting that even if efficacy with a single measure is sub-optimal, when several measures are used in combination through the course of one season, levels of FCM control may well exceed 95%. □

FCM larvae are difficult to detect once they are inside the flower bud, and the singly laid eggs are difficult to detect as well

False Codling Moth eats into finances

Surveillance and inspection the pest to be present in most rose production areas except the Mt. Kenya region



Dr Esther Kimani

Listed among new pests, The False Coddling Moth is reportedly becoming a headache among rose exporters in Kenya. Kenya Plant Health Inspectorate Managing Director Dr Esther Kimani spoke HortiNews Managing Editor Catherine Riungu about the new challenge and filed the following report:



Catherine Riungu

How serious is the spread of FCM in flowers

The False Codling Moth (FCM) is a pest with a wide range of hosts. It is an important pest in citrus production. As a native pest which has been reported in tropical Africa, it has not been shown to cause economic yield losses hence little is known about it.

In Kenya, FCM has been reported in roses and capsicum where it does not cause any significant yield losses hence not considered a serious pest concern by farmers. The pest has not been reported to cause any significant effect on the quality of roses and capsicum among other crops.

However, its quarantine status in Europe has affected trade with the European Union of the affected crops.

Surveillance by KEPHIS has identified the pest in most rose production areas except the Mt. Kenya region. Farmers exporting roses to Europe have to put systems that ensure products are free from FCM.

Had this been anticipated when FCM was first reported? Has it been anticipated it would attack flowers?

The EU carries out a Pest Risk Assessment on products being exported in large quantities to the continent. The Union reviewed its regulations to include FCM as a quarantine pest in 2017 and therefore

any plant products found with the pest are intercepted. All trading partners were notified that the new regulations would come into effect in January 2018. The notification included regulations for capsicums and roses.

How is this impacting on exports, to which markets and to what extent? Have we suffered interceptions as a result?

FCM has affected the market by increasing cost of production. Businesses have had to invest more in pest management measures to ensure compliance. KEPHIS also has to carry out audits at farm level that previously was not necessary. We also introduced stringent inspection protocols resulting in large volumes of products being rejected at the exit point. The inspection levels at the EU for roses has also increased and this will lead to delays in produce reaching the market. Non-compliant flowers are destroyed hence a loss to the exporter and the country.

Kenya has had rejections of exported roses due to infestation by FCM. Interceptions lead to losses in revenue as the products found with the pest are destroyed. A lot of interventions have been put in place to manage the pest therefore increasing the cost of production. Though some of the interventions are bearing

fruits, a lot of efforts still need to be made since the tolerance to the pest in Europe is zero.

On the other hand, KEPHIS cost of operations has also increased as more official controls have been put in place to assure the quality of produce and compliance to the new requirement.

What measures does KEPHIS give growers to curb the outbreak, manage infestation if it occurs.

KEPHIS has continuously carried out trainings and created awareness on the identification of the FCM with special emphasis on scouts and quality control officers. Growers are encouraged to monitor and manage the pest using pheromone traps, application of appropriate pesticides, scouting and grading.

Going forward, what is the country position on this and fresh produce exports in general?

There is need to ensure we continue to train growers on market requirements for compliance. There is need for continuous development of skill in identification of quarantine pests.

KEPHIS continues to build capacity of inspectors and quality assurance officers at the growers' premises since the pest is not easy to detect on roses □

Garlic extract managing Parasitic Nematodes

By MURIMI GITARI

Nematodes are the single most significant cause of crop losses worldwide in many crops. There are many different types of plant parasitic nematodes, but they have two features in common; cause directly or indirectly yield reduction or total crop loss, cause significant reduction in crop quality and therefore marketability and value.

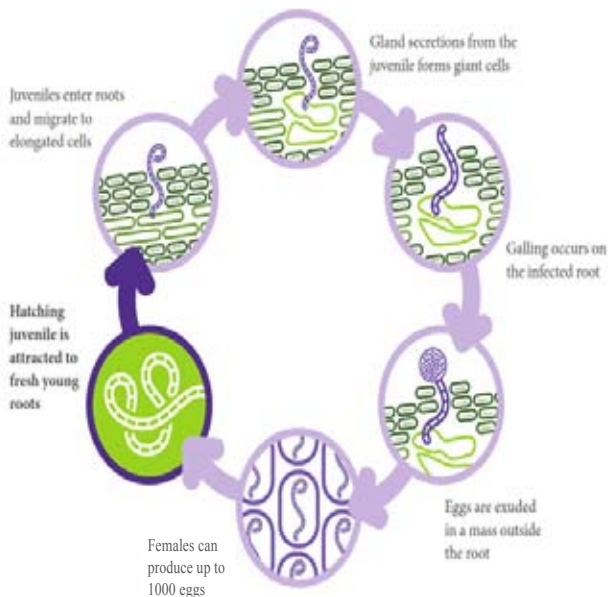
Ecospray, a biological control company based in the United Kingdom, working exclusively with Dudutech, their Kenyan Distributor based at Lake Naivasha (www.dudutech.com) have introduced a new product, Nemguard which is based on extract of garlic, which is now registered in Kenya for use by growers on Roses and French Beans.

Garlic (*Allium Sativum*) contains a wide range of carefully selected organosulfur compounds which show a variety of biological effects including nematicidal, insecticidal, antibacterial and antifungal activity.

The product was approved for use in Europe through the European Union and its member states have registered it for their own specific crop protection issues. Spain, Italy, Portugal, UK France, and Netherlands are some of the countries that have approved the product for use. Speaking to HortiNews, Lee Kaigai who is the Ecospray Regional Manager in East Africa says that Nemguard SC was recently approved for use in Kenya by the Pest Control and Products Board (PCPB).

Mr. Kaigai says that Nemguard has been positioned for sustainable management of parasitic nematodes that damage plant roots. Farmers can now reduce their reliance on existing synthetic more aggressive actives that are becoming less available in the market by opting to use Nemguard which has proved to be environmentally friendly and not harmful to human health. It is a natural product that is low risk and sustainable as it does not harm beneficial organisms in the soil like fungi and bacteria involved in the breakdown of organic matter.

"So far we have conducted commercial trials with flower growers where the problem exists. The approach has been first establishing the nematode threshold



through soil sampling and analysis in the lab and we have obtained good control in the field."

Nematodes are destructive pests that cause yield losses. They feed on roots where they pierce them and take away nutrients and water from the plant. The piercing also enables entry of soil borne diseases and viruses introducing secondary infections. For flowers as an example Yield in terms of the stems per area is reduced while the flush period is extended due to stunting. Quality of stems is also reduced with smaller sized heads and thinner stems.

There are numerous genus of parasitic nematodes however locally *Meloidogyne* (root knot nematodes) that attacks plant roots causing galling is the most prevalent and widely studied. These are sedentary endoparasites meaning they have part of their lifecycle outside the plant root and part inside. Through the cycle once inside the roots the nematodes trigger abnormal multiplication of cells which results to formation of giant cells (galling) where they feed from. Eggs are exuded outside the roots and the infective juvenile has a needle like structure called a stylet that enables entry into roots by piercing. These are some of the distinctive features of this genus that have made it successful as a

soil pest.

A keen look at the nematode problem locally will reveal other genus like *Heterodera* (Potato cyst nematode) whose incidence in Potatoes needs to be given serious attention. Awareness of this problem is now increasing with more experts in the field, availability of diagnostic tools locally and the desire by commercial growers to optimize yields.

Ecospray aim is to suppress the parasitic nematodes to allow crop yield and quality expression while ensuring soil health is maintained by not destroying beneficial soil organisms.

Dudutech train farmers on identifying nematodes and advising them on the importance of adopting Integrated Pest Management system (IPM) for sustainability of the environment. This is in regard to combining various strategies in controlling pests through cultural, physical, biological and as a last resort chemical means.

Ecospray is geared towards having a product that is a sustainable and safe option for managing parasitic nematodes problems in approved crops and are looking at other crops so as to expand the usage of the product. □

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Mature for the cut

Harvesting and Post-harvest handling of flowers



Michael Gathage, Senior Grower , demonstrating how the cut and hold secateurs are used at the cut stage of flowers

**By NDIRITU NJORA and
ANTHONY MUTAI**

According to industry experts, it takes about 10 years of sweat to deliver a flower to the market. From breeding to trials to commercialization then consumer acceptability a journey through which out of thousands of the initial seed, only one might cross the tape to deliver a two to three-week vaselife of beauty. It is those last weeks that matter most. Between harvesting the flower and purchase by the end consumer, one mis step can boomerang on the 10-year investment.

Where does the last mile begin? We asked Michael Gathage, a grower at Oserian Development Company? Are you asking about the harvesting procedures? We don't know, was our prompt response, which Gathage, a seasoned grower laughed out loud about. Yes, he said, harvesting with laid down procedures. Tell us about the procedures. Gathage took a pair of scissors and with a surgeon's precision demonstrated how to cut a flower stem when it is ready for harvesting. But before the cutting, a few other things are considered.

Harvesting flowers is a science, he told us. It begins at the cut stage. "Different flower varieties have different cut stages, and determined by client requirements. The right cut stage is determined by harvesting flowers in advance and placing them in a vaseroom to monitor behaviour and vaselife. If the flower droops it is not the right cut stage. The flower should open anytime from seven to fourteen days. Once the cut stage is determined, the grower can then grow the flower commercially on a large scale." Says Gathage.

Harvesting of flowers is done twice daily at Oserian, in the morning and in the evening for uniformity. This may as well be thrice a day according to the number of flowers that are ready and available to be harvested. A forecast done on the previous day helps determine what flowers to harvest, climatic conditions of the previous day are also checked.

The supervisor does a briefing during harvest on what is required.

"White varieties are more sensitive to damages, and are harvested using a sledge." He furthers adds. Harvesters are required to use a special set of secateurs which must be clean and sharp to swiftly cut, hold the flower and put them in their arms in one movement keeping the stem intact. The tool is disinfected by constantly dipping it into a sanitizer to prevent the spread of bacteria to the stems which pose a risk of blocking the uptake of water causing premature wilting.

There are three key factors considered when harvesting flowers - shape, colour and the ring. Shape is different in each variety. The colour of the petals shows the flower is ready. The ring of the flower refers to the size of the flower. The petals must be slightly open and not too tight. The cut point is determined by market demand with high demand the cut point is upwards when branching while when the demand is low the cut point is downwards.

Harvesting follows the cultural activities which are done by skilled personnel at the right stage. During this point, all the cut flowers are collected in clean buckets filled with a post-harvest solution that contains food for the flowers. The harvest is transported to the packhouse receiving bay, off loaded from the mode of transportation and placed in a shaded environment.



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Dodhia Packaging Kenya Limited**

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At Oserian, geothermal electric tugs have replaced trucks and every other minute they are seen snaking in and out of the packhouse reception after discharging flowers. The tugs are part of the farm's green energy initiatives aimed at reducing carbon footprints for a safer environment.

As the flowers arrive at the pack house reception, they are dipped in a calcium hypochlorite solution which protects them against botrytis. All roses are dipped in the solution due to susceptibility to the disease. Once dipped, shaken to remove

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excess water and after 15-20 minutes, taken into the cold storage chain where temperatures of 4 degrees Celsius slow down metabolism to prolong vase life. After being in storage for four hours, they are then graded as per clients' specifications.

The standard operations procedures (SoPs) at the pack house change after every hour. Flowers found to have defects do not make it to the grading stage. The quarantine area in the pack house checks for pests and diseases above 10 %. The most commonly checked diseases are botrytis, powdery and downy mildew, mites and damages. They also check on the mixed cut stage and wrong profile where reception records must match with harvesting state details. Every bunch received is traceable to the greenhouse



Harvesting tools are sanitized in chlorine water to avoid spread of bacteria

of origin and the staff who handled it and the time.

Post-harvest activities, include cooling, defoliation, cleaning, sizing, sorting, bunching, packing, storing and shipping. The main objectives of post-harvesting activities is to keep the flower stems cool, avoid loss of moisture, avoiding physical damages to the buds and to slow the metabolic activities. The quality of the stem flower is largely determined by the post-harvest activities.

Pests and Diseases

Due to the challenges of pests and diseases in flowers, breeders are increasingly developing varieties that are resistant.

"The most common pests and diseases in the flower farms at harvest are botrytis which mostly hits when it's rainy, or in

high humidity. To manage botrytis, we ensure there is minimal humidity among plants by providing good air circulation, we practice modified irrigation in cases where we have infected flower heads we remove them to prevent spread of diseases." Says Gathage.

Thrips also pose a big threat to the flowers, traps are set to attract the pests that are known to like the colour blue. The traps are also laced with glue which traps the pests preventing them from reaching the flowers. Besides this, Integrated Pest Management (IPM) is used to fight pests whereby a predatory mite known as Phytoseiulus is released into the plantation to eat destructive pests such as the red spider mites. These phytoseiulus get rid of the pests and leave the flowers intact thus no chemical sprays are used in pest control.

Disease resilient varieties

De Ruiter, one of the leading rose breeder's from The Netherlands, continues to work hard with growers to find specific varieties to combat the various diseases found in cut flowers. Growers are constantly looking for an edge over their competitors in an ever increasing industry to produce top quality product in an age when chemicals & pesticides are being strictly regulated. With this in mind De Ruiter is looking to come up with disease resilient varieties to tackle diseases such as Agrobacteria, with varieties such as (Furiosa®, Sonrisa® & Zanta®) Botrytis resilient varieties like (Frutteto®, Red One® & Mandala®) Downey Mildew resistant varieties like (Almanza®, Rhodos® & Pink Rhodos®) & Powdery Mildew resistant varieties like (Wham®, Rhodos®, Pink Rhodos® & Lovely Rhodos®).

Agrobacteria:

Furiosa® (high producing retail red).
Sonrisa® (high producing retail yellow).
Zanta® (high producing retail cerise).

Botrytis:

Frutteto® (large bud, premium, special shape).
Red One® (low altitude premium red).
Mandala® (special shape & colour).

Downy Mildew:

Almanza® (high producing retail orange).
Rhodos® (low altitude, premium red).
Pink Rhodos® (low altitude premium pink).
Lovely Rhodos® (low altitude premium bi-colour).

Powdery Mildew:

Wham® (premium auction pink)
Rhodos® (low altitude, premium red)
Pink Rhodos® (low altitude premium pink).



DeRuiter

creating flower business

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