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Ethylene Damage of Flowers Attributes to Upwards of 30% Flower Loss

Flower industry experts estimate as much as 30% of all flower loss is a direct result of ethylene damage, due to either internal or external sources of exposure. Ethylene, an internal gaseous plant hormone, profoundly influences the growth and development of plants. It acts at trace levels throughout the life of the plant by accelerating wilting, regulating the opening of flowers, and the abscission (or shedding) of leaves and flower petals. Ethylene is produced from essentially all parts of higher plants, including leaves, stems, roots, flowers, fruits, tubers, and seedlings. Its production can also be induced by a variety of external aspects such as mechanical bruising or environmental stresses. Flooding, drought, chilling, wounding, and pathogen attack can induce ethylene formation in the plant. Ethylene produced from external sources such as other flowers, banana-ripening rooms in supermarket distribution warehouses, propane heaters, forklift fumes, bacteria, and even cigarette smoke also can have devastating effects on flowers when exposed.

Cut flower plant responses to ethylene:

- Stimulates leaf and flower biological aging, called "senescence"
- Inhibits stem and shoot growth
- Induces leaf, bud and flower shedding, commonly known as "abscission"
- Stimulates epinasty where the leaf petiole grows out, leaf hangs down and curls into itself
- Induces a rise in respiration in some flowers which causes a release of additional ethylene. This can be the one bad flower in a flower box spoiling the rest phenomenon, affecting the neighboring flowers
- Affects geotropism, the turning or growth movement of the flower stem in response to gravity
- Inhibits stomatal, or pore, closing found in the leaf and stem epidermis that is used for gas exchange, stimulating flower aging



Rose - Flower Aging
Untreated for Ethylene



Rose - Treated for Ethylene



Orchid - Flower Drop
Untreated for Ethylene



Orchid - Treated for Ethylene



Carnation - Inward Rolling of Petals
Untreated for Ethylene



Carnation - Treated for Ethylene

Ethylene will shorten the shelf life of cut flowers and potted plants by accelerating floral senescence and abscission. Flowers and plants that are subjected to stress during shipping, handling, or storage produce ethylene causing a

significant reduction in floral display. Some examples of flower types which are more affected by ethylene damage include rose, orchid, carnation, alstroemeria, stock, delphinium, phlox, and freesia.

Ethylene can cause significant economic losses for florists, markets, suppliers, and growers. Floralife has long been involved in developing ways to inhibit ethylene production in flowers to keep flowers fresher longer, through the commercialized innovation of EthylBloc™ Technology. By inhibiting ethylene sensitivity, flowers don't respond to ethylene produced internally or from external sources, far increasing the quality, freshness, and profits of flowers overall.



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18 Celebration of the life of Hans Zwager, the Flowering Dutchman

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|| HORTISPOT ||

Every single drop counts for flower farms, which explains why greenhouse rooftop is fitted with gutters that collect and direct water to the reservoirs



Why we should make personal commitment to harvest water

In just two or so days sometime in February when rains had failed for so long, heavens opened. And in those two days, Magana Flowers Limited collected water that could last 14 days. The farm grows water dependant flowers in its 18 hectares farm. But what is even more interesting is the grower's elaborate water collection and usage model which offers vital lessons to the country especially at a time when rains have become sporadic as a result of changes in climate.

Every single drop counts for flower farms, which explains why greenhouse rooftops are fitted with gutters that collect and direct water to the reservoirs. But beyond the collection, use is controlled to allow minimum usage. There is daily monitoring of usage which includes an automated system that checks the amount used daily and possibility of any leakages.

When HortiNews team visited the farm, it was amazed by the passion and drive being chaperoned by the top management with its CEO Nicholas Ambanya taking charge to ensure that even in cleaning the packhouse the judicious use of water is observed.

"It is not rocket science to harvest water and ensure we prepare ourselves in case of drought. There are just simple lessons we as Kenyans have refused to learn. If everyone of us tapped into their rooftops, whether at home, school or churches and harvested water, we would not be having this perennial problem of crying water scarcity even days after we have rains," Mr. Ambanya told us.

His remarks are corroborated by a report by the United Nations Environmental Programme, UNEP that shows that Nairobi alone is capable of supporting up to ten million people each with 60 litres a day if the county tapped into water harvesting techniques. The report further adds that the supply potential of the county stands at an approximated 460,000 cubic metres, with only 50 per cent of that getting to consumers.

Trouble comes when even after torrential rains like the ones we witnessed in February, we all go back to the cycle of water shortage, with water rationing becoming an all too familiar trend. The problem, UNEP posits, does not lie in rainfall or lack of it, but by water wastage. The catch, the agency advises lies in inexpensive water harvesting techniques.

The same lessons can be transferred into farms. According to, Water for wealth and food security: Supporting farmer-driven investments in agricultural water management, a study by The International Water Management Institute (IWMI), expanding the use of on-farm water management techniques could increase yields up to 300 per cent in some cases, and add hundreds of billions of shillings to household revenues across sub-Saharan Africa.

With the reality of climate change now becoming all too familiar, especially in a country classified as water stressed, water collection should be our top priority. And it doesn't require the intervention of the government because it isn't rocket science.

Previous experiences, including Magana Flowers' have shown us that indeed those low cost techniques do actually deliver the greatest wins. If we all did our little bit in this aspect, it would translate into a national and global resolve to be and remain water secure.

HortiNews

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MOVING COOL BUSINESS GLOBALLY

Red Lands Roses Gets the Greenlight

BY BOB KOIGI

In just five months since installation of a solar plant, Redlands Roses has reaped huge benefits, having saved an approximated Sh 2.2 million in power bills while reducing its carbon footprint, in a classic example of how renewable energy is becoming growers' saving grace at a time when electricity costs are said to contribute 40 per cent of flower companies' expenses in Kenya. This, even as this energy remains unreliable. The solar panels are said to have a yearly production of 369.7 megawatts.

The project which costs Sh 33 million was designed using a hybrid

process that interfaces the Kenya Power grid and diesel generators, the plant supplies a portion of the electricity necessary for the pumps used to irrigate the plantings, as well as the refrigeration systems.

French solar company Urba Solar carried out the engineering, development, and construction of this ground-mounted power plant which covers the farm with parking canopies.

Panels at the farm are placed in between the greenhouses with half of them being placed on parking spots facing East while the other half are set on the ground facing west. The design is to allow for maximum tapping of

the sun according to Urba Solar.

These panels are connected to a power system with an automated device which has three inputs including energy from the solar panels, Kenya Power and Genset. The outputs which represent the consumption of energy are managed and regulated by the automated device ensuring uninterrupted and cheap power access by the farm.

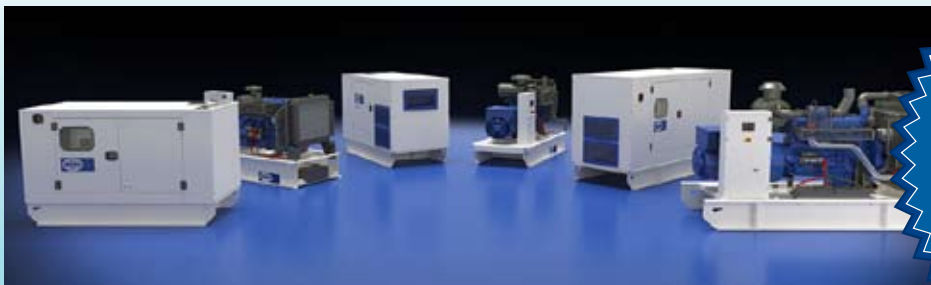
According to Aldic Spindler, Executive Director at Red Lands Roses, the farm's monthly bill has dropped from Sh 1.7 million to around Sh1.2 million per month

"This type of project makes a lot of sense for us as we are in hydroponic

⇒25

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International Flower Trade Expo president Dick Van Raamsdonk.

The 6th edition of the International Flower Trade Expo (IFTEX)

By DICK VAN RAAMSDONK.

For the sixth year in a row, Kenya is set to host the International Flower Trade Expo (IFTEX) (June 7-9 at the Oshwal Centre, Parklands, Nairobi).

This year's show, apart from affirming the strength of Kenya as a leading supplier of flowers in the world comes amidst renewed focus in the country following the classification of JKIA to Category A status enabling direct flights to the US from Nairobi. Kenya's flowers are a sensation in the US but until the categorization, it has been costly and lengthy to ship the country's flowers to the world's biggest market after the EU.

Owing to the availability of the flights, we expect more American buyers in Nairobi next week going by confirmed visits and increasing inquiries.

The beauty of Kenyan flowers was visible at the recent China Flower Trade Fair in Guangzhou and the World Floral Expo in Las Vegas (US) held early this year on different continents with similar high levels of attraction to the country's flowers.

In China, visitors came from all the corners of the vast continent some purposely looking for the Kenya pavilion where a remarkable display resulted in buyers expressing interest to attend the Kenya flower show (IFTEX) to see more

varieties and colour. For this reason we expect more buyers from Asia, the country's newest and promising market frontier for flowers.

Since IFTEX opened its doors here in 2012, there has been a steady pattern of target visitors. Buyers come here to see the flowers and book supplies. That they keep coming year after year is an indication the show meets their expectations and ultimately, ours as the organizer since IFTEX is a buyers' show. On the other hand, growers have always put their best mix on show creating a sea of flowers not seen anywhere else under one roof. IFTEX is therefore an international show by any standards



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IFTEX 2017



and has become a “must do” in the floriculture activity calendar. Despite its being the youngest of global flower shows organized by HPP, IFTEX is now among the top five world’s most important industry events.

Although Kenya actively participates in our other international flower shows globally, IFTEX offers the largest number of growers sitting together showcasing the unique characteristics of flowers from the country’s various growing regions. Big heads, small heads, short stems, long stems as well as different varieties coming from the same country complete the picture of market diversity.

Kenya’s position astride the Equator and varying climatic conditions enables the country to grow flowers that compete with those from the other four countries in the world in the same horizon making the nations the top flower producing spots. These are Kenya, Ethiopia, Ecuador and Columbia. Kenya has a mix of low and high lands enabling production of the same variety in different region giving different characteristics for the diverse

markets. For instance, the same variety grown in Naivasha, Thika and Nanyuki gives three different shades of the same flower going into different markets, and this is unique to Kenya.

This year, over 5000 visitors and 250 exhibitors (growers, breeders, consolidators, products and service providers) are expected to participate in the expo, reaffirming the great importance of this annually held international flower trade exhibition. Last year over 1,500 key qualified trade visitors from over 50 countries visited the show, a big number for buyers.

The biggest representation in the show will be the Kenyan flower growers, but producers from other nations will present their products. Growers from Ethiopia, Uganda, Tanzania, Rwanda and South Africa will be exhibiting giving IFTEX a regional fair as well as a show for Africa, staged in Kenya, the continent’s leading producer, and the world’s third largest.

IFTEX was launched in Nairobi in 2012 and has been held every year since. It has made history, not only as the fastest

growing among industry exhibitions organized by HPP but has also the only event that has attracted growers from other continents to showcase their products in a non-consuming country.

The show has grown into a top Kenyan brand, strengthening the country’s position as a leader in global markets, while enhancing the image of Nairobi as the home from where 40 per cent of the flowers sold in Europe originate. IFTEX has come at the right time for the Kenya flower industry that is now in the process of market consolidation and retention by positioning its flowers as responsibly grown, and that picture can only be seen at a show of an international magnitude at home.

Currently, IFTEX is at par with other flower exhibitions organized by HPP which include World Flora Expo (Chicago, USA), Florecuador-Agriflor (Quito, Ecuador), Expo Flora Russia (Moscow, Russia) and International Floriculture and Horticulture Trade Fair (Vijfhuisen, Holland), all that are key activities in the flower industry calendar.

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Ethylene: the invisible killer

Ethylene causes ageing symptoms like wilting, bud and leaf drop with flowers and plants. Which flowers are sensitive to these invisible plant hormones and how can it be stopped?

The plant hormone ethylene stimulates ageing symptoms like leaf drop, flower wilting and fruit ripening on flowers and plants. Ethylene is also being produced in “stress situations” such as during dark transport.

Ethylene is a hydrocarbon and colourless, flammable gas with a faintly sweet smell. It is produced as a natural hormone by many different Flowers and plants to regulate internal processes, such as ripening. Although it also is released through cigarette smoke and vehicle exhaust fumes. Ethylene has, contrary to many other plant hormones, a very simple structure ($\text{CH}_2 = \text{CH}_2$).

Damage

Damage to flowers and plants caused by ethylene results in bud drop, flower drop, leaf drop and the wilting or shrinking of flowers.

The best known product used by growers to protect flowers against the negative effects of ethylene is Silver Thio Sulphate (STS). In

the market there are several STS-based pre-treatments and Chrysal has **Chrysal AVB + Booster**. After harvest, the flowers are put on a solution like AVB + Booster which they absorb. When the flowers are pre-treated correctly, they are protected against ethylene and the vase life is extended considerably.

Precautions

It is very important that growers rigorously pre-treat the ethylene sensitive flowers. When for example you notice in your vaselife room that after only a few days your Carnations / Roses shrink, you can take it for granted that they have not been pre-treated correctly.

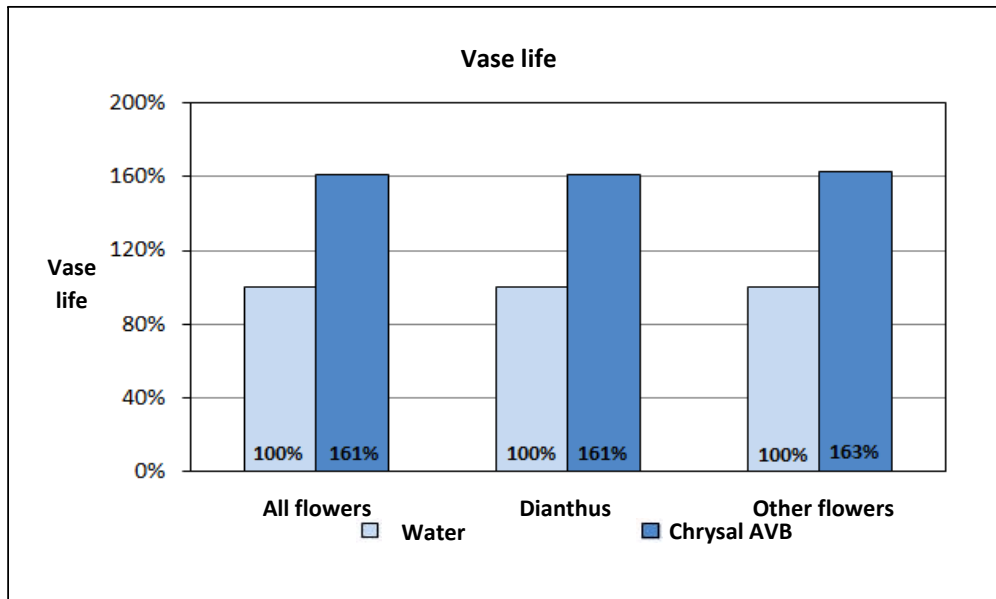
TIP

- Make sure your packhouse, cold room and vehicles are well ventilated. This way the ethylene gas cannot build up to harmful concentrations which will have a negative effect on the vaselife of the flowers.

The Beauty of Chrysal

Test Results

The following graph shows the effect of Chrysal AVB on the vase life of Dianthus and other flowers compared to water alone.



Vase life Alstroemeria



Treatment: water

Total vase life: 13 days

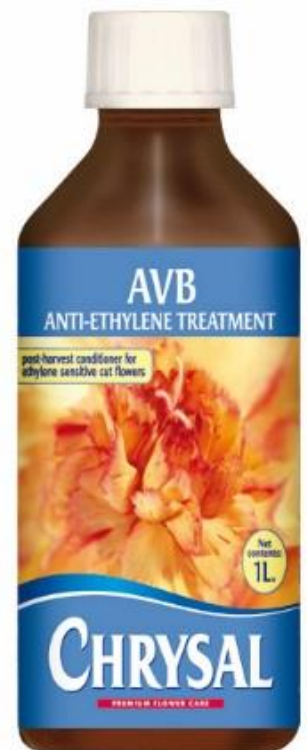
Photo taken: day 20



Treatment: Chrysal AVB

Total vase life: 19 days

Photo taken: day 20



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Arima is the new Tough but Friendly Miticide innovation from Syngenta

By VICTOR JUMA

S yngenta is committed to partnering with ornamental growers and professionals from an array of industries for insights that lead to the development of innovative solutions. The company's efforts goes beyond scientific pursuit to provide effective and economical solutions for controlling a variety of crop damaging pests and diseases to guarantee growers more marketable yield and quality produce.

The launch of Arima® miticide opens the door to a versatile solution that controls Tetranychid mites (spider mites), *Tetranychus urticae* and *T. evansi* on ornamental crops at low use rates of 600ml/ha. Cyenopyrafen, the active ingredient in Arima®, is classified in IRAC Group 25 and belongs to the beta-ketonitrile class of chemistry. Arima® safeguards against crop damage by controlling spider mites during all life stages – eggs, nymphs and adults in roses, carnations and other ornamentals grown in greenhouses or outdoors when used as foliar applications. Arima® has a favourable toxicological profile and is highly compatible with biological controls such as *Phytoseiulus persimilis* and *Amblyseius* spp. It has a proven high efficacy against spider mites due to its quick knockdown and long lasting activity.

“Growers in both Kenya and Ethiopia have a reliable and economical solution that will enhance quality and yield of ornamental plants for demanding markets”, these were remarks made by Mr. Victor Juma, Lawn and Garden Business Manager at Syngenta East Africa, during the successful launch of Arima in Naivasha. He added, “Several growers using biological control agents for spider mites control were yearning for additional solutions that are compatible with IPM programs to complement the current



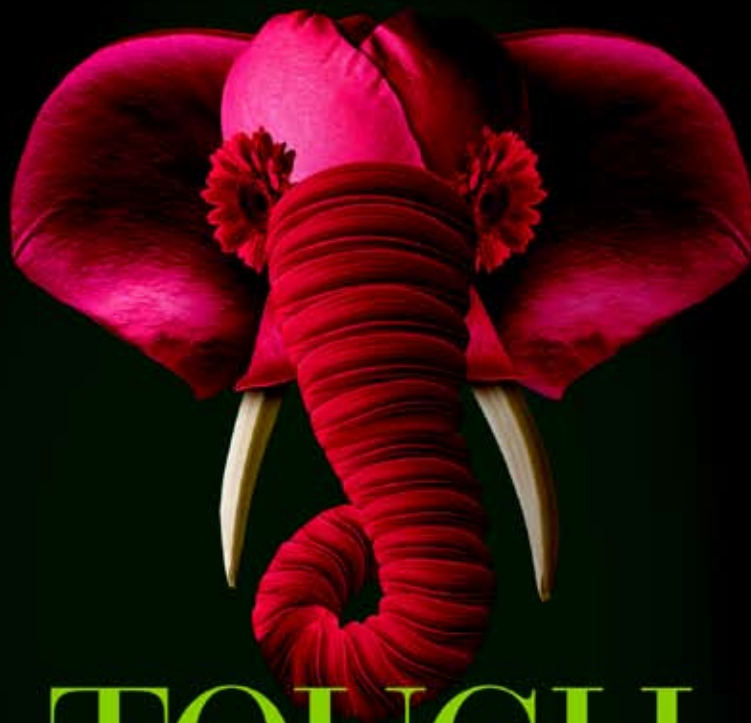
market”. Newer pesticide chemistries give growers an advantage in terms of rotation and resistance management.

More than 25 growers drawn from different agro-ecological zones participated in Arima® demonstration trials to test the product attributes first hand prior to product launch.



The comprehensive Trial results were presented by Ms. Margaret Njambi, Technical Manager, Lawn and Garden East Africa, during the launch events. The trial results indicated consistent results on diverse flower varieties - Roses, Carnations, Hydrangeas, Scaveolas and Hederas. Excellent knockdown effect was observed within 6 hours after application, long residual activity of more than 35 days, excellent crop safety, and compatibility with several biological control agents. In his speech, Mr. Marcel Bredeveld, Syngenta Lawn and Garden Development Team Lead for Europe, Africa and Middle East, advised growers to follow good application techniques to maximize the product activity and also emphasized on the need to rotate Arima® with miticides from different modes of action to manage resistance development of resistance.

The well-organized launch events in Nanyuki, Nairobi, Naivasha, Nakuru and Eldoret were well attended by growers and other industry stakeholders. “The market is ready for Arima”, these were the remarks made by one of the growers who attended the launch event in Nanyuki.



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Arima provides an effective and noble control of spider mites that guarantees high quality roses for demanding markets.

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Pioneer of the Kenya flower industry Johannes Ewaldus Maria Zwager

Celebration of the life of Hans Zwager, the Flowering Dutchman

Family, staff, friends and relatives gathered at the Oserian Stadium in Naivasha to celebrate the life of the pioneer of the Kenya flower industry Johannes Ewaldus Maria Zwager popularly known as Hans Zwager who has passed on at the age of 90.

Hans Zwager founded leading flower exporting farm, Oserian Development Company in the 80s marking the beginning of what has grown into one of the top export earners for Kenya, a key employer and driver of a major social-economic transformation. An estimated two million people depend on the flower industry through direct and indirect

employment at both the farm and across the value chain.

To celebrate the legacy left behind by Hans Zwager, an afternoon and evening of entertainment was organized by the Oserian family to give their hero a befitting send off, said Kirimi Mpungu, the firm's director of administration.

Speaking at the event, a former worker and sitting Narok East MP, Lemaken Aramat, said Oserian gave him the foundation he needed to be a lawmaker. The legislator served as the farm's Maasai Community Liaison Officer, a position that enabled him to create useful grassroots connection with people who voted him to Parliament in 2013.

Peter Zwager, Chairman and son of the late Hans Zwager said his father sowed the seeds of the flower industry from bare lands near Lake Naivasha to grow the beautiful flowers we are proud of today.

The workers children were entertained in the morning with bouncing castles and children's comedy to usher in an afternoon of songs by choirs and bands that culminated in the final salute of a magnificent display of fireworks. This was seldom method of a send off, viewed by the Oserian Community as the best way to recognize the efforts of a man whose foresight has touched the lives of hundreds of thousands, probably millions of others.

THE OSERIAN DREAM



Seated: Peter Zwager, Oserian Chairman and son of Hans Zwager, June Zwager, founder of Oserian and Lieniette Thomson-Zwager the youngest daughter of Hans and June Zwager with other family members (standing) during the celebration of the life of the family patriarch in December 2016 at the Oserian Stadium in Naivasha.

The pioneer of Kenya flower industry Johannes Ewaldus Maria Zwager popularly known as Hans Zwager passed on at the age of 90. Mr. Zwager, the founder of Kenya's leading flower exporting company Oserian Development Company Limited, was born in the Netherlands in 1926 but arrived in Kenya to start up ABN bank in Nairobi in the early 1950s. Here he met June Patricia Ashworth and after a short whirlwind romance, they married.

Hans and June started their own business of importing agricultural spare parts and chemicals for agricultural crops. Hans recognized that newly independent Kenya had a huge agricultural potential and would need support services, so he set up Kleenway Chemicals in Nairobi and Antipest Ltd in Mombasa in the 1960s.

Hans purchased Oserian Farm in 1969, which was a cattle ranch with 16 employees. Using his enterprise and his appetite for risk, Hans established a new concept – flowers for export. Later his pioneering work led him to develop Geothermal Energy at Oserian, which now provides electric power to the entire farm and uses geothermal heat to control diseases in the rose houses, which has greatly reduced the need for chemical fungicides.

In 1978 he built a factory that produced the first locally manufactured knapsack sprayers in Kenya. The Dutch designed Hobra Sprayers were enthusiastically welcomed by small-scale farmers as spare parts and repairs were now always locally available.

Hans was one of the leading entrepreneurial pioneers in Kenyan horticulture and Oserian soon became the model for flower export to the Dutch and EU markets. Hans started up the TFA (Tele Flower Auction) in the Netherlands, the first electronic flower auction in the world, designed to promote and support the Kenyan flower exporters. He also saw the opportunity to trade flowers directly to the UK supermarkets and established World Flowers in 1989, allowing Kenyan farmers to trade directly with the European High Street superstores.

As Oserian expanded and thrived, he encouraged the development of a social complex, which included housing for 6000 employees and their families. Today Oserian is one of the most socially conscious businesses in the Country with crèches, primary and secondary schools and health care for thousands of children and adults.

Hans was committed not only to business but had long sought for a sustainable harmony between agriculture and the environment. In 1995 he created a 20,000 acre sanctuary to protect the local wildlife and ecosystem. Today, Oserian Farm and its green houses are surrounded by wildlife, which Hans saw as a fitting tribute to the beauty of Kenya.

His zeal and dedication to the Kenya horticulture industry would not go unnoticed. In 1998, the former President of Kenya, the Honourable Daniel Arap Moi, presented Hans Zwager Kenya's Medal of Honour, the 'Moran of the Burning Spear' in recognition for his role in directly developing what had by then become a corner stone of the Kenyan economy.

Hans was also presented with The Order of Orange-Nassau by His Royal Highness King William Alexander of the Netherlands for his services to society. The medal, a Military and Civil Order of Chivalry, was founded in 1892 by the Queen Regent Emma of Netherlands. Then Ambassador for the Netherlands, Mr Joost Reintjes presented the medal at a prestigious ceremony hosted at the Royal Netherlands Residency in Nairobi.

Oserian signs up for Dutch health technology

Kenya's leading grower and exporter of cut flowers, Oserian Development Company, has signed its workers to a mobile health insurance scheme becoming the first flower firm globally and large employer in the agricultural sector in Kenya to embrace e-health.

The mobile health wallet solution will be run over M-Tiba, a Dutch platform developed by CarePay in partnership with Safaricom and PharmAccess Foundation. Dutch healthcare system is rated by Eurohealth Consumer Index as the best on the continent, for seven years in a row.

The development marks a key milestone for the welfare of over 4,600 workers at the expansive Naivasha-based flower farm and adds up to a host of staff programmes the farm has rolled out that have become the industry's benchmarks including a modern day care and breast feeding (crèche) center for staff children and wellness clinics for cancer screening.

"Our core business is production and daily supply of the best of Kenya flowers globally which wouldn't be possible without a healthy workforce. As we kept expanding, it was becoming more and more challenging to operate the staff outpatient scheme as we brought in more employees each year," said Kirimi Mpungu, the Director of Administration at Oserian.

"We needed a solution that was sustainable and manageable which could bring new insights into how to further improve staff health and wellbeing. We're pleased to be among those leading the way on mobile health innovation and we see M-TIBA as the future for the management of outpatient schemes by employers and insurers," Mr Kirimi said.



Kirimi Mpungu, Oserian Administration Director and Kees Van Lede, CEO, CarePay when the flower farm signed its workers to the mobile health insurance scheme.

Oserian, a high technology farm has developed a policy on health based on Sustainable Development Goal No 3 that is entrenched in Kenya's Vision 2030, placing health as a foundation for economic and social growth. It falls within the farm's Flori4Life pillar that seeks to make lives better for staff and surrounding communities.

Under the scheme, over 8,000 users made up of employees and family members will receive an M-TIBA wallet on their mobile phone, allowing them to get access to outpatient care at Oserian Health Centres. The medical data collected via the M-TIBA gives accurate insights into common ailments – and this allows for targeted interventions

to keep staff healthy and motivated, Mr Mpungu reiterated.

Kees Van Lede, CEO, CarePay says, "This is another first for the Kenyan floriculture sector. Oserian was the pioneer in exporting flowers from Kenya. Now global buyers and consumers know that there is world-leading mobile technology enabling the people behind the flowers to access the best possible health care."

Mary Kinyua, Human Resource Manager at Oserian, adds, "Employee health is very important to us. We have free outpatient scheme for all employees, spouses and four children at our Health Centers. From a business perspective, we needed to move to paperless management of medical scheme benefits to make this important benefit more efficient and get real-time information that helps us take better care of staff."

With M-TIBA, large employers report double-digit percentage savings on outpatient schemes delivered through real time access to data enabling targeted interventions.

"We needed a solution that was sustainable and manageable which could bring new insights into how to further improve staff health and wellbeing."



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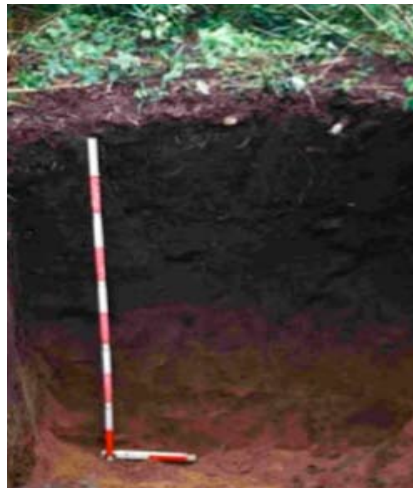
The Bountiful Benefits of Biochar

By RUTH VAUGHAN

Biochar is the new buzz word in farming. What is it? Biochar is basically 'charred' agricultural waste created through slow burning of organic matter in the absence of oxygen (pyrolysis). This creates a porous, high carbon, stable material that can be added to the soil to improve soil properties.

The claims for the benefits of biochar are many:- larger crop yields, healthier crops, decreased fertilizer requirements, greater soil water holding capacity and drought mitigation, improved soil texture, greater microbial activity and diversity and increased soil organic matter. Biochar is being explored as a solution to carbon sequestration and global warming.

A good example of positive use of biochar is terra preta – a 'man made' Amazonian dark earth that is highly fertile, and is thought to rebuild itself by a huge 1 cm a year. Terra preta was created by Amazonian Indians around their settlements. It contains large amounts of biochar, from slash and char farming, forming a low temperature, porous, very stable charcoal. The charcoal remained in the soil for thousands of years, binding and retaining minerals that would otherwise have leached out. In addition to the biochar the soil contains large amount of pottery shards, plant waste, fish, animal and human waste that support large, diverse populations of soil microbes. These re-cycle and capture nutrients, keeping the soil alive and growing. Terra preta was a deep, highly productive soil that sustained a large population of people in one area, feeding them and getting rid of their waste sensibly, and allowing them to settle in civilized groups. Terra mulaga, terra preta's baby brother, is a lighter soil, created further away from the settlements, contains only biochar and is less fertile than terra preta, but still much more fertile than the parent soil. The original soils were infertile,



Deep, dark, productive Terra Preta on the left, vs the original infertile oxisol on the right.

and only able to support small groups of farmers for a short time, so farmers were constantly having to move on, using slash and burn farming techniques.

What are the benefits of biochar?

Soil pH adjustment. Biochar is alkaline and raises soil pH in acidic soils. This increases the availability and efficiency of use of nutrients and mineral fertilizers. Studies of the effect of biochar on the pH of alkaline soils are in progress.

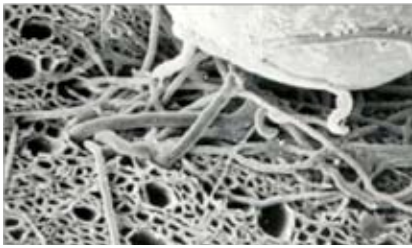
Soil CEC increase. Biochar has a large surface area to volume ratio and is highly negatively charged. This holds onto positively charged cations in the soil, increasing the cation exchange capacity (CEC) and soil fertility. This, in turn, holds more anions, thus dramatically increasing the retention and reducing leaching of nutrients from the soil. In the hot humid tropics, where organic matter decomposes fast and high rainfall leaches sandy soils, biochar can make the difference between subsistence farming and productive farming.

Biochar adds nutrients to the soil depending on the nutrient content

of the materials used, 'feedstock', and techniques used in its creation. Like manure & composts, biochar should be tested for its nutrient content before application, nutrient content is very variable and biochar applications tend to be bulky. Biochar should also be tested for toxic ions.

Increase in soil water holding capacity. Studies have shown that the addition of biochar to soils can greatly increase its water retention capacity. This is due to the high surface area and porosity of the biochar. Soils with increased water holding capacity produce higher crop yields and require less irrigation. In rain-fed crops, increased water holding capacity can make the difference between producing a crop or not. Soil water enhancement depends on soil type, biochar properties, and application rates.

Increase in soil carbon content. Biochar contains up to 80% carbon black. Adding biochar into the soil raises the carbon content and the C:N Ratio. The carbon % of the biochar depends mainly on the pyrolysis process and the carbon content of the feedstock. Beware! Adding large amounts of carbon black into the soil



Biochar promotes microbial activity by supplying support, nutrients, moisture and gaseous exchange.



Healthy soils = healthy water ways. Eutrophication in Mississippi River due to leaching and run-off of fertilizers.

without due analysis and planning can create a very high C:N ratio, which results in nutrient lockup, yellowing crops and negative effects on crop

yields. Biochar can be pre-weathered and loaded with microbes & nutrients by adding into compost/biogas sludge.

Increase in microbial activity and diversity.

The high porosity of the biochar, combined with its water and nutrient holding capacity, means that it creates a safe haven for microbes in the soil and allows them perpetuate through fallow and drought periods. Biochar can also supply a suitable energy source for some microbes. Increase in microbial activity has so many benefits to plants:- increased nutrient re-cycling reduced leaching, making nutrients more available to plants, capture of nitrogen from the air, retention and addition of carbon in the soil, reduction in pests and diseases. This manifests as a general reduction in the requirements for synthetic fertilizers and pesticides, with knock-on commercial and environmental benefits.

Bioremediation by reduction of toxins in the soil.

Increased microbial activity breaks down toxins and pesticide residues in the soil. Biochar ‘chelates’ certain pesticides, de-activating them so that they can be digested by microbes.

Improvement of soil structure. The increased CEC, microbial and root activity that occur in biochar-amended soil help form soil aggregates and a more stable permeable physical structure. This increases water infiltration and storage which is good for drought mitigation. A porous soil allows for better gas exchange, with carbon dioxide moving out, oxygen moving in and better nitrogen exchange and promotes root growth.

Agricultural pollution reduction.

Increased nutrition retention in the soils results in less leaching of soluble fertilizers and chemicals into ground water. Increased microbial activity and chelation deactivates pesticides.



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NUTRIENT CONTRIBUTION PER TON					
N	P	K	Ca	S	Mg
kg/Ha	kg/Ha	kg/Ha	kg/Ha	kg/Ha	kg/Ha
3.32	2.58	16.23	5.27	0.5	2.11

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Richard Gitonga, Regulatory and Development Manager East Africa Arysta LifeScience and Innocent Anunda Sales and Marketing Manager Flori and Horticulture.

Arysta LifeScience introduces new crop biostimulant, fungicide and nematicide

By JOYCE KIMANI

In a bid to boost farmers' yields Arysta LifeScience Kenya has introduced three new products in the country. Siapton 10 L, Fungaflor 100 EC and Metafur 900 EC are distributed by Elgon Kenya Limited. They are available in 5 litres, one litre and 20 litres respectively.

Siapton 10L

Siapton with a composition of natural hydrolyzed proteins is ideal for tropical fruits, citrus, tea, coffee, vegetable, industrial and ornamental crops, cereals, fertigation and rooting treatment of the cutting of trees. Speaking during the launch, Richard Gitonga, Product Development, Regulatory and Marketing EA, said the bio stimulant was ideal for rooting, flowering, fruit sizing, stress recovery and suppression of nematodes.

"It helps improve yield in quantity and quality with a great post transplanting starter effect. It also helps mitigate yield losses under stress conditions," said Mr Gitonga adding that genes induced by

stress conditions are boosted by Siapton for quicker recovery from stress. "It is composed of key enzymes involved in nitrogen metabolism which in turn leads to improved growth and yield." He added.

Mr Gitonga said Siapton is ideal for organic farming as farmers had become keener to healthier and better crops. "It is applied either by foliar or root application at 7 – 15 days interval or during critical crop development stages including the rooting, flowering and fruit sizing. It can be done before and following stress situation of plants," he said.

Mr Gitonga added that they had conducted test on various farms and Siapton did not present any observable crop injury to orchid plants at all tested dilution rates in the three trials conducted. Eric Mutua, from Everest Farm, said that they had carried out various tests using the stimulant and had experienced its benefits.

He added that the crop appearance was substantively affected by the different level and all the treatment plants resulted in higher percentage of flowering compared to the ones that were not. "We also had higher length of flowering shoot and a higher number of flowers. The bud size was also improved in some of the varieties," he said.

Fungaflor 100EC

The introduction of Fungaflor, a fungicide with curative and protectant properties is also targeting flower growers in a bid to improve production by mitigating losses due to Powdery mildew and Botrytis both at field level and through the cold chain.

Fungaflor is a high quality emulsifiable concentrate formulation that contains imazalil making it one of the best cures at the onset of the disease. Mr Gitonga said that it's ideal for protection against botrytis and powdery mildew for roses in small and large scale farming. "It is also useful in the control of alternaria, downey mildew and rust as it is fully systemic. This means that all active ingredients will target all plant parts when sprayed," he said.

He pointed out that it has no side effects on beneficial insects and bees.

According to Maurice Muok from Oserian Development Company which carried out the tests, the farm had witnessed the benefits of Fungaflor 100EC on plants. "Control against botrytis and Powdery mildew was amazing," he said.

Metafur 900EC

Metafur is manufactured from bagasse, the fibre of sugarcane waste after sugar extraction. It is a powerful nematicide against a wide range of parasitic nematodes, it moves only within the root system. The product has flexible application patterns and it can be applied at planting and post planting phases of the crop cycle. "The greatest advantage is that it can be applied throughout the growing season and it's also less toxic compared to the other common nematicides," said Mr Gitonga.

It's an organic and biodegradable product that leaves no harmful residue in the plant or in the soil. "The product is unique as multiple applications are possible," he said.



Flower farm of many firsts commissioning multi-million shilling solar energy plant developed by Urba Solar of France.

cultivation with full recycling of irrigation water, hence the use of many pumps. We also recycle the harvesting water solution. With this photovoltaic project coupled with our soilless growing system and other water recycling systems, our carbon footprint has reduced tremendously,” said Mr. Spindler. The farm hopes to get payback in about six years.

He further says that while the development resonates with the farm’s environmental innovations it has been founded on from the beginning, it is a response to the new energy approach that is encouraging efficiency in power usage to reduce carbon emissions to tame global warming, not to mention the frequent interruption of electricity provided by Kenya Power, posing a threat to smooth operation and integrity of electrical systems and apparatus.

The project resonates with an initiative started by the Kenya Association of Manufacturers in conjunction with the Ministry of Energy under the Centre for Energy Efficiency and Conservation (CEEC).

The centre runs various energy efficiency and conservation programs designed to help

companies identify energy wastage, determine saving potential and give recommendation on measures to be implemented. These programs include energy audits, specialized trainings, Energy Management Award (EMA and energy accord.

According to Mr Spindler, the farm is putting in place all the recommendations by CEEC, among them developing solar energy.

The Red Lands Roses solar power comes in the wake of the farm’s pioneering the postharvest water ultra-purification system developed by Pure Water Solutions a technology that promises massive savings on energy, post-harvest chemicals, time, water and money. The post-harvest

treatment saves cold energy instead of its being thrown away together with chemicals, and water by recycling it within a short time and returning it to the post-harvest system when it is still cold reducing the overall cost of production, according to Brandon Barbour, the Marketing Director of the water technology firm.

“The positive impact on the environment, cannot be quantified, it is worth the initial capital injection”, said Mr Spindler.

He is happy that Red Lands Roses is yet again at the forefront of technology, having been the first to grow flowers on hydroponics from the start in 1996 making it possible to put murram land into productivity.



The Red Lands Roses Solar energy plant



Primarosa Flowers moves to Nyahururu after Athi River farm dries up

Primarosa Flower Limited has moved all its operations to its Nyahururu firm even as it projects a 20 percent growth year on year.

According to the company's Chief Executive, Virag Joshi, the move has been influenced by the recent drought situation that has seen the company suffer from acute water shortage, thus

increasing the operational expenditure of buying water to sustain production of roses.

We are moving our Athi-River operations to Nyahururu as a result of the recent drought that has witnessed an increase in the spend on water since it is very crucial for the production of our roses. Moving to our Nyahururu farm will, therefore, enable us to increase our

production by over 20 percent because of the favourable climatic conditions necessary for growing roses," said Joshi.

The company says the farm's water reservoir in Athi River has been completely depleted.

For the last few months, the company has been sustaining the flower farm by purchasing borehole water to sustain the production. The company has been operating on its six reservoirs and underground tanks combining a collection capacity of over 380 cubic meters of water which is now exhausted.

"However, the borehole water poses a threat to the quality and quantity of flowers being produced, risking our sustainability as expenses rise towards tedious water fetching and transportation processes," said Joshi.

Meanwhile, as part of its expansion plan, Primarosa will also be looking at new farms around Nyahururu to increase its current export of over 100 million roses which is achievable due to favourable weather conditions, around the region.

Joshi said that the company will not be laying off any of its staff during the transition process to Nyahururu:

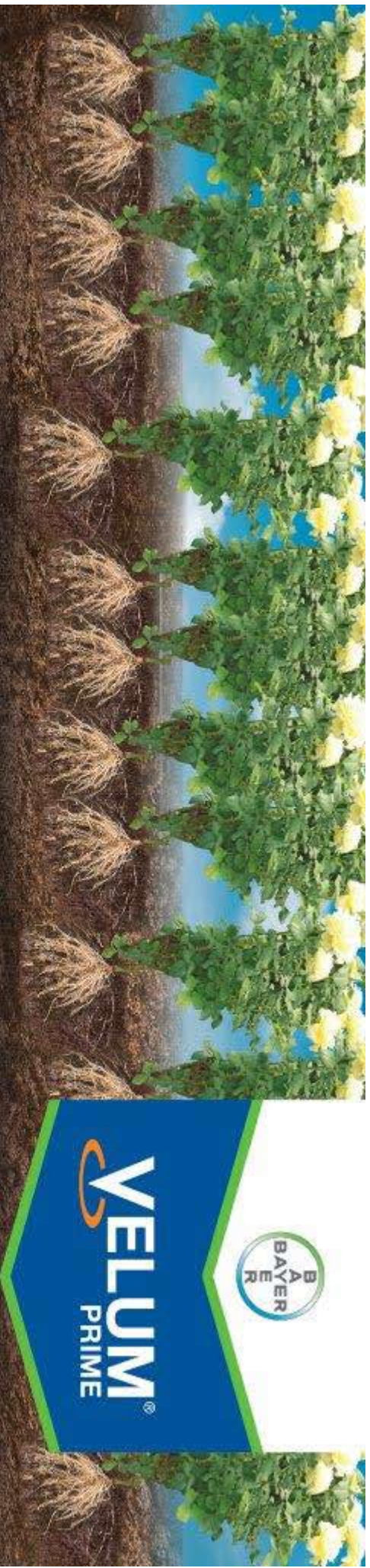
"We adequately gave a one-month notice to our staff in March, informing them about the relocation of our operations to Nyahururu. None of them will be laid off. Those who will voluntarily not move with us will be sufficiently compensated according to the terms of their contracts."

He also stated that the company requires more employees during this expansion process and that more people will have an opportunity to earn a livelihood as the company progresses towards growth and expansion.

"We are currently employing over 1500 employees in all our farms and with this expansion process, we will employ another 20 percent."

Early this month, Seychelles President, His Excellency Danny Faure visited Primarosa in a move that will see Seychelles import roses from the firm in a trade agreement with Kenya.

Source: Capital FM.



Put nematodes where they belong: In the history books.

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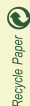
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BANANA new planting		Mix 10 - 20g with soil per planting hole	Nematode : 2L Solution per plant (8ml / 1L water)	Mix 40g with soil per planting hole	Drench seedlings at 5ml / 1L water one day before transplanting. Follow with 2 foliar at 2-3 week intervals 2 weeks after transplanting at 3ml / 1L water
BANANA established		NIL	Nematode : 2L Solution per plant (8ml / 1L water)	Apply 20 - 40g as top dressing	Drench 2L Solution at 5ml / 1L water per plant
CABBAGE		½g per planting hole at transplanting	Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Drench seedlings at 5ml / 1L water before transplanting. Follow with 2 foliar at 2-3 week intervals 2 weeks after transplanting at 3ml / 1L water
CARROTS		NIL	Nematode : Drench 10-14 days after germination at 1ml / 1L water by opening knapsack nozzle Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Foliar at 3ml / 1L water after germination and repeat after 3 weeks
CHILLIES / CAPSICUM		½g per planting hole at transplanting	Nematode : 100ml Solution per plant (1ml / 1L water) Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Drench seedlings at 5ml / 1L water one day before transplanting. Follow with 2 foliar at 2-3 week intervals 2 weeks from transplanting at 3ml / 1L water
COFFEE		Nursery : 1g / 1L soil Field : Mix 10-20g per planting hole	Insects : Foliar 1ml / 1L water	Field: 10g per planting hole Fertilizer coating: 1-2kg per 50kg of fertilizer Mature trees: 10-50g per tree	Newly transplanted : Drench seedlings at 5ml / 1L water one day before transplanting. Follow with 2 Foliar at 4 week intervals 4 weeks after transplanting at 3ml / 1L water
FRENCH BEANS		NIL	Nematode : Drench 10-14 days after germination at 1ml / 1L water by opening knapsack nozzle Insects : Foliar 1ml / 1L water	Coat 1kg Earthlee with 50kg granular fertilizer	2 foliar at 2 week interval at 3ml / 1L water starting at trifoliolate stage
FRUIT TREES / FORESTRY - mangoes, avocados		Nursery : 1g / 1L soil Field transplanting : 2-20g per planting hole	Insects : Foliar 1ml / 1L water	Nursery : 1g / 1L soil Field transplanting : 2-20g per planting hole	Drench seedlings at 5ml / 1L water one day before transplanting. Follow with 2 foliar at 2-3 week intervals 4 weeks after transplanting at 3ml / 1L water
GRASS (LIKE CAPE ROYAL, KIKUYU, MADDI RIVER, ZIMBABWE, ETC) new planting		At time of planting 20-40g / m² soil	NIL	At time of planting 20-40g / m² soil	Dip grass at 5ml / 1L water for 15 minutes before planting. Follow with 3 Foliar at 2 week intervals at 3ml / 1L water
GRASS maintenance		NIL	NIL	Coat 1Kg Earthlee with 50Kg granular fertilizer	Foliar at 3ml / 1L water after cutting and when new growth emerges. Spray 6 - 8 times per year
SHRUBS / SMALL PLANTS		Planting : 2 - 10g per planting hole	NIL	Planting : 2 - 10g per planting hole Top dress : 2 - 10g per plant	Drench plants at 5ml / 1L water after transplanting. Follow with 2 Foliar at 3 week intervals at 3ml / 1L water. Spray 4 - 6 times per year at 3ml / 1L water
NAPIER GRASS		½g per planting hole at transplanting	NIL	Coat 1Kg Earthlee with 50Kg granular fertilizer	Dip planting material at 5ml / 1L water for 15 minutes before planting. Follow with 2 Foliar at 2-3 week intervals at 3ml / 1L water. After every harvest spray on new shoots at 3ml / 1L water
ONIONS		NIL	Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Drench seedlings at 5ml / 1L water one day before transplanting. Follow with 2 foliar at 2-3 week intervals after transplanting at 3ml / 1L water
PEAS		NIL	Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	3 foliar at 2 week intervals at 3ml / 1L water starting at trifoliolate stage
POTATOES		NIL	Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Dip tubers in 2ml / 1L water for 15 minutes prior to planting. First foliar at 21 days after emergence followed by second foliar after 14 days at 3ml / 1L water. Do not spray after flower initiation
SUGAR CANE		10 - 20 Kilo per Ha. applied in the furrows	NIL	Coat 1Kg Earthlee with 50Kg granular fertilizer	Dip sets in 5ml / 1L water before planting. Repeat foliar at 60cm height at 2L / Ha. For ratoon apply foliar at 60cm height at 2L / Ha.
SUKUMA/ KALE/ SPINACH		½g per planting hole at transplanting	Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Drench seedlings at 5ml / 1L water before transplanting. Follow with 2 foliar at 2-3 week intervals after transplanting at 3ml / 1L water
TEA		Nursery : 1g / 1L of soil Field : 2-5g per planting hole	Insects : Foliar 1ml / 1L water	Field : 2-5g per planting hole Fertilizer coating : 1Kg / 100Kg fertilizer to be mixed with top dressing fertilizer	Newly transplanted : Drench seedlings at 5ml / 1L water one day before transplanting. Follow with 3 foliar at 2-3 week intervals 4 weeks after transplanting at 3ml / 1L water *
TOMATO		½g per planting hole at transplanting	Nematode : 100ml Solution per plant (1ml / 1L water) Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Drench seedlings at 5ml / 1L water before transplanting. Follow with 2 foliar at 2-3 week intervals after transplanting at 3ml / 1L water
WATERMELON		½g per planting hole at transplanting	Nematode : 100ml Solution per plant (1ml / 1L water) Insects : Foliar 1ml / 1L water	Coat 1Kg Earthlee with 50Kg granular fertilizer	Drench seedlings at 5ml / 1L water before transplanting. Follow with 2 foliar at 2-3 week intervals after transplanting at 3ml / 1L water
WHEAT MAIZE		NIL	NIL	Coat 1Kg Earthlee with 50Kg granular fertilizer	Foliar at 2ml / 1L of water at 3-5 leaf stage **



* 3 foliar at 5ml / 20L water at monthly intervals. Commence spray before dry spell.



** Mix 100ml / 10kg of seed thoroughly.

Elgon Kenya launches first of its kind information Centre to bridge knowledge gap



Hundred of farmers thronging a past Farmers Clinic in search of knowledge

By NELSON MAINA

Elgon Kenya Limited has unveiled a first of its kind information center where farmers can obtain the necessary assistance on farming.

The centre seeks to bridge the gap between production and knowledge that has been cited as a missing link in agricultural development the world over and a contributor to low uptake of innovations for improved productivity.

The service is born out of realization that farmers are hungry for information that is not always readily available when needed. After we kicked off the Farm Clinics last year and noticed that farmers attended the events looking for immediate answers as others carried sick

plants seeking for diagnosis from the experts, it dawned on us it was important to set up a centre from where timely responses would be delivered.

According to research by the Food and Agriculture Organization (FAO), up to three quarters of Kenyan farmers have reported being stuck to age old farming practices while relying on seeds from the previous harvest for subsequent planting Yet Kenya continues to play host to some of the most globally recognized seed companies that have continued to produce groundbreaking innovations including stress tolerant crop varieties, pest control products and technologies that are billed to transform lands and farmer earnings.

The disconnect between transformative innovations and farmer practices is attributed to lack of information dissemination channels from researchers on one hand to the users on the other. It is for this reason that farmers troop to venues where they can get exposure to new things as well as information on underlying challenges.

At every farming workshop, lack of information is always cited as a key obstacle to improved farming practices.

At the Farm Clinics we have realized that there are so many problems farmers are grappling with some of which could be solved by access to information. After realizing we couldn't tackle all the answers in a day of a Farm Clinic it dawned on Elgon Kenya that creating



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an information platform would be of great help in creating an informed farming community. Selling products to an enlightened grower was more sustainable for food security and better livelihoods.

So the information center was born. Located in the company's headquarters, the hub is manned by agronomists who address farmers' concerns, while answering their questions and advising them on the best options in their venture based on the farmers' descriptions.

If a farmer comes to our warehouse to buy say for example a certain seed variety, we take it upon ourselves to talk to them about their farming venture and offer them agronomic support for free before selling them their inputs. We feel this is very crucial if we are to help our smallholder farmers who form the bulk of food producers, improve yields at a time when the global population is

projected to increase, creating demand for food.

And in a world where information has gone digital, Elgon Kenya has positioned itself to reap from the digital divides.

Elgon Kenya has also unveiled an online portal that enables farmers to place orders at the convenience of their farms. The portal, www.elgonkenya.co.ke is interactive and easily navigable giving users easier access to the company's products. The online shopping portal is paired with other services like delivery of inputs to the farm regardless of the quantity, cutting out middlemen and lengthy logistical constraints.

The online forum also allows customers to chat anytime with experts who will offer them advice before placing orders. This consultancy is equally free.

We are living in interesting times and

as a company are thrilled by the powerful role of technology in shaping key aspects of our lives. Agriculture has become a major beneficiary of this revolution so we have to position ourselves to see how to tap into technology to assist our farmers

The new development also means that farmers can now order for single units, say a single sprinkler or a packet of seeds and have them easily delivered, which was traditionally tough due to logistical constraints.

The information centre will come in handy to alert our partners on new developments, products, services and activities undertaken by the company to improve farming.

At the same time, we will relay useful information on factors affecting farming such as weather patterns and outbreak of pests and diseases as well as recommended mitigation measures.

Elgon Kenya to distribute Dudutech IPM products



By **BOB KOIGI**

Leading agro inputs dealer Elgon Kenya Ltd has entered into a strategic partnership for distribution of Dudutech's respected Integrated Pest Management products that are globally recognized.

The two firms have billed the arrangement as a game changer in the country's horticulture industry.

The partnership is part of Elgon Kenya's business model that is anchored on collaboration with likeminded players with a view to availing to its customers trusted brands that transform farms and lives.

The deal will set Elgon Kenya to distribute eight products from Dudutech which have been highly acclaimed world over for prowess in tackling some of the most notorious pests and diseases while enriching the soil and ultimately boosting yields. The products are environmental friendly and have no known harm to beneficial organisms.

"This is a landmark partnership and we are proud to be collaborating with Dudutech on this initiative. It ties with our mantra of finding innovative solutions for our farmers and walking with them

in their food production process. The products have been tried and tested world over returning impressive results," said Dickson Macharia a senior agronomist at Elgon Kenya.

Elgon Kenya enjoys a countrywide network of stockists and agrovets making it easier to get the products to farmers across the country. Elgon Kenya also prides itself in having a team of agronomists spread across the country's major food producing zones to assist farmers with any information.

"We have positioned ourselves as a company to provide products that tackle farmers' greatest threats while protecting our environment. We are proud to partner with Elgon Kenya who shares in our philosophy and are looking forward to transforming the agricultural sector with this partnership," Barnaba Rotich, Commercial Manager, Dudutech

The Dudutech products available at Elgon Kenya include;

BEAUVITECHTM WP

A biological insecticide containing *Beauveria bassiana* a naturally occurring entomopathogenic fungus that is used in the control of whiteflies, Thrips and

Aphids. It is known to cause the white muscadine disease in insects.

Fungal conidia become attached to the insect cuticle and, upon germination; the hyphae penetrate the cuticle and proliferate in the insect's body. Relative humidity of above 70 per cent and temperatures of between 18 to 30 degrees Celsius are essential for conidial germination. Infection establishes between 24 and 48 hours. The infected insect may live for 3-5 days after hyphal penetration and, after death conidia are produced on cadaver. Best results will be obtained when treatment starts early before pest populations become heavy.

Beauvitechtm WP is compatible with most Biopesticides and insecticides; however it is generally recommended that the grower refer to the Dudutech pesticide side-effects compatibility guide since some chemicals may have detrimental effects to *Beauveria bassiana*, as it is a living organism. Avoid chemical fungicide spray at least 3 days before and after using Beauvitechtm WP.

HYPOTECH

Hypothech contains the predatory



mite *Hypoaspis miles* used for the management of Thrips, fungus gnats, Leaf miner, Sciarid flies and shore flies.

The adults of *Hypoaspis* are about 1mm in size and normally beige in colour. The larvae and first nymphal stages are white in colour. The *Hypoaspis* are normally dispersed on to a growth media before or after planting or later on in the early growth period of the crop. Mixing of the *Hypoaspis* into the growth media is not recommended. Best results are realized when *Hypoaspis* is applied before the target pest is well established.

LECATECH WP

Lecatech WP is a biological insecticide containing (*Lecanicillium lecanii*), a naturally occurring Entomopathogenic fungus that is effective against whiteflies.

Upon germination of the spores of *Lecanicillium lecanii*, the germ tubes penetrate the cuticle of the insect by enzymatic and mechanical actions eventually infecting the insect. The fungus then destroys the internal body contents resulting in mortality of the insects. Larvae and pupae die before the fungus is visible. Dead larvae and pupae of infected insects have a wrinkled non-shiny surface with a light to dark yellow colouration. Under favourable conditions white fluffy fungal mycelium appears on the infected organism growing best at 18 to 30 degrees Celsius and relative humidity of above 65 per cent.

Lecatech WP is compatible with most Biopesticides and insecticides; however it is generally recommended that the grower refer to the Dudutech pesticide side-effects compatibility guide since some chemicals may have detrimental effects to *Lecanicillium lecanii*, as it is a living organism. Avoid chemical fungicide spray at least 3 days before and after using Lecatech WP.

METATECH WP

Is a biological insecticide containing *Metarhizium anisopliae* a naturally occurring entomopathogenic fungus that is used in the control of Thrips and weevils. It is known to cause the green muscadine disease in insects.

Fungal conidia become attached to the insect cuticle and, upon germination; the hyphae penetrate the cuticle and proliferate in the insect's body. Relative humidity of above 70 per cent and temperatures of between 18 to 30 degrees Celsius are essential for conidial germination. Infection establishes between 24 and 48 hours. The infected insect may live for 3-5 days after hyphal penetration and, after death conidia are produced on cadaver. Best results will be obtained when treatment starts early before pest populations become heavy.

MYTECH WP

Mytech WP is a biological Nematicide based on *Paecilomyces lilacinus* a naturally occurring Nematophagous

fungus for control of plant parasitic nematodes that include Root knot nematodes, Cyst nematodes, Root lesion nematodes, Burrowing nematodes and Reniform nematodes amongst others. *P. lilacinus* parasitizes and subsequently kills eggs, juveniles, and adult females of various plant parasitic nematodes.

TRICHOTECH WP

Trichotech WP contains spores of *Trichoderma asperellum* an antagonistic fungus that is used globally for control of soil borne fungal diseases including *Fusarium* spp., *Rhizoctonia* spp., *Sclerotinia* spp., and *Pythium* spp. In addition, this strain is known to have the ability to increase plant growth vigour.

Apply pre-plant, as a seed coat or every two weeks to one month depending on the disease pressure. It is recommended to apply Trichotech at 125g per hectare.

VERMITECH

Vermitech is compost manure produced using worms thought to belong to the species *Eisenia andrei*, a well known species used worldwide for vermicomposting. Vermicompost is used for soil amendment, as a fertilizer and especially as a component of propagation media. It may also be used for control of soil borne pests and diseases, as well as some other non-conventional applications on both Vegetables and flowers.

Vermitech is high quality vermicompost made of stabilized organic matter obtained from a process of digestion carried out by the worm *Eisenia andrei*.

ECOTECH™

This product contains 99.9 per cent garlic concentrate. It has a pungent smell and masks preferred hosts. It is effective against all soft bodied insects. Farmers should apply it at 5 litres per hectare in a 3 to 4 treatment sequence spaced at 3 weeks between each treatment. It is always encouraged to keep the product constantly agitated and in a cool ambient temperature out of direct light.



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Water harvesting lessons from Magana Flowers



Nicholas Ambanya, CEO Magana Flowers Limited

By BOB KOIGI

When it rained for two days in the middle of sweltering February heat, Maganaflowers Limited was able to collect enough water that was able to take care of its operations for fourteen days which saw its water reservoirs overflowing. It is one of the many aspects of the flower farm's elaborate water collection system that offers the country a lesson on water harvesting at a time when depressed rainfall has taken a toll on water availability.

Magana's water collection and conservation model is being chaperoned by its CEO, Mr. Nicholas Ambanya who believes it is the little things that matter. "I am a huge fan of water harvesting and it has been my pleasure overseeing that at Magana we tap into any avenue we can to collect water. But while we can

do everything to harvest water, it makes no sense if we misuse it, that explains why I am very strict on how water is used around here," Mr. Ambanya said.

Such measures include use of mops to clean the packhouse as opposed to pouring water on the floor and scrubbing.

At the heart of this water collection scheme are three dams that cumulatively hold 240,000 cubic metres of water which is harvested from the rain through gutters installed in every greenhouse. The dams can comfortably supply the farm with water for four months even without rain or pumping from any other source.

The damming system includes utility dams which are the main reservoirs which feeds other dams. The main utility dam holds on average 36,000 cubic metres of water. Once water is used in the greenhouses, through the irrigation

system, the excess is recycled and mixed afresh with fertilizer ensuring no loss at any given time.

The collection system at Magana also has five functioning boreholes capable of producing 600 cubic meters per day from the nearest springs which form the source of Nairobi river. "Even though we have the water from the river, we endeavor to use that as the last resort. Our primary focus is on harvesting as much water as we can from the rains and play our part as custodians of the river by conserving it, especially now when rainfall is sporadic," added Mr. Ambanya.

To further tame wastage Magana monitors daily use of water through a computerized water system that is capable of identifying even minute leakages across the farm.

The flower farm comfortably manages to quench its operations and even share



Magana flowers Limited collected enough water from greenhouse rooftops to take care of its operations for fourteen days when it rained for two days in February

water with the surrounding community through a water drawing board scheme as part of its social responsibility. “We have an initiative where we have taps strategically located near the border with our neighbours and we allow them to draw water from these taps. We believe in the sharing of resources with the local community and also know that water is vital for peaceful co-existence. It has been a smooth operation, with members of the community expressing satisfaction especially during these dry spells. The water we serve them is clean,” said Mr. Ambanya.

And as the company mulls expanding flower production area from the current 18 hectares to 25, it already has a plan to tap into every rooftop to collect water. “We want to ensure that even with the expansion, we do not struggle with water capacity. This means installing more gutters in every greenhouse we erect. Every drop of water to us means everything,” he added.

Such low cost yet effective and sustainable water sourcing and management scheme offers vital lessons

to a country classified as water depressed by World Resource Institute where stable freshwater supplies are not guaranteed.

“We work with flowers that are water guzzlers but still we are able to easily grow them and have enough water to even share with our neighbours. The greatest lesson here is that it is possible to have ample supply of water if we only invested in harvesting it. And water collection and harvesting doesn’t need to be a laborious and expensive affair. If every roof in this country invested in tapping rain water we would have no need worrying about scarcity,” said Mr. Ambanya.

It is a gospel he holds dear to his heart, which has seen him institute collection and conservation measures in workplaces and even encouraged his peers to embrace. “I visit homes and hear them complain about lack of water despite having had rains. Simple harvesting techniques are lessons we have refused to learn, and they will cost us,” he added.

The flower farm comfortably manages to quench its operations and even share water with the surrounding community through a water drawing board scheme as part of its social responsibility. We have an initiative where we have taps strategically located near the border with our neighbours and we allow them to draw water from these taps



Horticulture under the fall army worm invasion

By CATHERINE RIUNGU

Although the fall army worm invasion intervention has focused more on the cereals sector notably maize, the country's staple crop, the horticulture industry has been put on the alert of crops listed as highly susceptible to the pest. "Other susceptible crops include kales, cabbages, legumes, bananas, tomatoes, capsicums, ginger, spinach, amaranths, onions, sugar beet, citrus, cucumber and sunflower", an statement from the Ministry of Agriculture, Livestock & Fisheries indicates.

Since these crops are at the center of food security being among the most consumed vegetables, the government says, the country is ostensibly staring at a major food security crisis in the face of

an invasion by the devastating fall army worms that are devouring maize crops in 13 counties and spreading. The Ministry has sounded the alarm and advised farmers to take immediate action to combat the pest that has capacity to cause up to 100 per cent crop destruction.

Said the Ministry in an alert, "The pest causes massive losses in maize and attacks other cereals crops like sorghum, rice, millet, wheat, barley. Pastures grasses like Bermuda, hay and nappier grasses are not spared while other susceptible crops include kales, cabbages, legumes, bananas, tomatoes, capsicums, ginger, spinach, amaranthus, onions, sugar beet, citrus, cucumber and sunflower".

The invasion complicates a situation already compounded by a prolonged drought as the weatherman warns

the long awaited long rains will not be enough. By mid-April the rains were yet to fall as expected. The drought and the army worm are a double tragedy to our food security that's also taking a knock from skyrocketing prices of basic commodities like Unga and suga, said leading agriculture chemicals distributor Elgon Kenya head of communications Nelson Maina.

The Ministry's Crops Division has notified all county directors of agriculture on the presence of the worm in the South Rift counties namely;- Baringo, Trans Nzoia, Bungoma, Kakamega, Narok, Uasin Gishu, Nandi, Kericho, Baringo, Nakuru, Busia and Siaya, through Crops Director, Johnson Irungu. The pest is said to be spreading fast across other counties requiring rapid response to keep it at bay.

The Ministry has consequently recommended a list of nine insecticides for the management of the fall army worms. These include;- Vantex, Belt, Coragen, Avaunt, Orthene, Marshall, Fastac, Voliam Targo and Match.

Elgon Kenya says it distributes four of these products - Coragen and Avaunt from Du Pont, Fastac from BASF and Vantex from.....In that order, the products range from A-D and any used interchangeably with the other will prevent resistance, added Mr Maina.

“At Elgon Kenya, we have partnered with multinational agriculture science companies to avail original molecules in the country which makes the nation ready to combat pest invasions like the fall army worm”, he said in an interview with HortiNews.

He added the regiment of products should be used interchangeably to avoid resistance to the fall army worm. Coragen, Avaunt, Fastac and Vantex range from A-D in that order, and any used interchangeably with the other will prevent resistance.

Elgon Kenya has a countrywide stockists network from where the agrochemicals can be purchased, while farmers can also buy online and make inquiries through the company's information centre. “ Through our online shop Hyperlink <http://www.ElgonKenya.co.ke> farmers can buy and we will deliver to their doorstep through courier. Through our online farm clinic farmers can ask any question and our agronomists will respond immediately and give guidelines on management of the army worm. They can also visit our Information Centre at our offices for assistance”, he said.

The worm

It is a migratory pest which undergoes a full egg-larva-pupa-adult metamorphosis. The female lays tiny eggs in masses of 150-200 which are covered in a protein sheath to protect them from attack by natural enemies and pesticides. The larvae is the most destructive phase, feeding on soft plant tissues. Adult moths are most active at night and mates in the evening. The caterpillars are green, brown or black in colour depending on development stage.



Agriculture Cabinet Secretary Willy Bett inspect the army worm damage.

A mature caterpillar has a distinct white line between the eyes, which form an inverted ‘Y’ pattern on the face (This is seen when the worm is placed facing you. In addition, they are pronounced four black spots aligned in a square on the top of the eight segment near the black end of the caterpillar.

Farmers are encouraged to use a combination of practices as management options;-

- For early warning and detection of low numbers, farmers should mount at least one pheromone trap per hectare
- Scouting for signs and symptoms should start one week after crop germination
- Deep ploughing exposes the pupae to predators and solar heat
- Planting varieties with hard husk cover provides a physical barrier
- Use hands to squash the caterpillars when infestation is in smack farm plots. In addition, collect and drop caterpillars in hot water to drown them (killing one caterpillar prevents multiplication of more than 1,500 new caterpillars after a period of less than 4 weeks.
- Plant early and adhere to regional planting calendar avoid late off-season planting
- Avoid planting new crop near

infested plants

- Use recommended fertilizers and keep fields weed-free to boost plant vigor
- Set up fall army worm pheromone traps per Ha to catch adult male moth, prevent mating and ultimately suppress population build-up
- For effective control (Maize), spray at least three times starting at two weeks after emergence, knee high and just before tussling. Spraying should be done late in the evening when caterpillars are most active.

Spread

The adult moth has capacity to fly over 30km in one night drifting through air current. The female lays 1500 -2000 eggs in her lifetime, enabling the pest to quickly establish in new areas, Movement of infested plant materials aid transferring the different stages within the same farm or to distant locations. In Kenya, movement of green maize across locations poses the biggest threat in spreading the pest.

Dr Irungu said in a letter to the affected counties the fall army worm was first reported in September 2016 in West Africa and as spread as far as South Africa where reports indicated it has destroyed more than 100,000 hectares of maize in three African countries.



Fruit Fly Protein Bait Facility

By CHRIS KOLENBERG

Fruit production offers one of the most important opportunities for income generation, employment creation and improvement of food and nutritional security in Africa. However, the sector is significantly constrained by a variety of factors particularly insect pests, many of which are considered of quarantine importance, resulting in the rejection of produce from Africa in export markets. Most fruit growers are smallholders who often lack access to effective pest control tools. They usually rely on synthetic insecticides that are often ineffective, eliminate natural enemies of the pests, exceed the maximum residue level (MRL) legislation set by the European Union, and are detrimental to the health of growers, consumers and the environment. Over the years, icipe in collaboration with partners from Africa, Asia, Europe and USA, has developed and disseminated integrated pest management (IPM) packages for fruit flies, the key pests of fruits. Fruit flies cause annual losses to fruits and vegetables estimated at more than US\$ 2 billion in Africa, with 30–100% due to direct damage of fruits, and indirect damage associated with quarantine restrictions on

trade resulting in loss of export opportunities. The icipe fruit fly IPM packages include use of: fungi-derived biopesticides; protein food bait; male annihilation technique; biological control with parasitoids; cultural control through field sanitation and use of an augmentorium; minimal use of pesticide in localised bait stations or spot sprays, and proper postharvest treatment to assure quarantine security.

The icipe fruit fly IPM technologies are aimed at reducing yield losses and the huge expenditure incurred by growers to purchase pesticides. They are also intended to mitigate the health and environmental risks associated with the use (and misuse) of such chemicals. Impact assessments have shown that use of icipe fruit fly IPM packages can result in 46% reduction in insecticide use and up to 40% net income increase for growers. Overall, icipe's goal is to increase the competitiveness of fruit from sub Saharan Africa (SSA) in local and international markets, and to elevate the income and livelihoods of people involved in the fruits value chain, especially women and the youth. The IPM packages have undergone field and laboratory trials and are now ready for commercialisation.

Protein food bait strategy for fruit fly control

Protein food bait strategy for fruit fly control Protein is an important component of fruit fly diet of adult females: it promotes growth, sexual maturity and development of eggs. As such, female, as well as male fruit flies, are attracted to the nutrient. Once young fruit flies emerge, the females in particular, actively seek out and feed on protein. Therefore, protein used in lure or bait sprays laced with an appropriate killing agent can provide an environmentally friendly strategy to control fruit flies. The protein bait attracts flies to the spot of application; the flies feed on the bait, ingest the toxicant and die, or if the bait is in a trap, the flies drown in the bait, providing an 'attract and kill' management method. Protein bait is safe to humans, animals and other beneficial insects such as pollinators. However, it is important that the killing agent that is combined with the bait is also safe. icipe research has shown that a protein bait extracted from brewer's yeast, an industrial by-product from a local brewery, is capable of controlling fruit flies that infest mango, and compares favourably with commercial protein baits on the Kenyan market. These findings have led to the development of a protein bait known as Fruitfly Mania™ which will be produced commercially in the Fruit Fly Protein Bait Facility.

Key facts

1st

protein bait factory in sub-Saharan Africa. Despite high demand for such products, the absence of a local producer means that protein baits have to be imported and retailed at exorbitant prices, which are usually prohibitive to smallholder farmers.



The facility will be located on the premises of Kenya Biologics Ltd in Makuyu, Muranga County, about 80 kilometres from Nairobi.

2,000

litres of fruit fly protein bait production capacity.



70%

less: The cost of the locally produced Fruitfly Mania™ will be lower than that of other commercially available products.

229,000

households in Kenya depend on mango production for their livelihoods. The facility's production capacity can sufficiently meet their fruit fly protein bait needs.

400,000

additional mango growers will benefit once Fruitfly Mania™ is registered across East Africa (to include Uganda and Tanzania).

Technical and financial support

has been provided by Elephant Vert; the German Federal Ministry for Economic Cooperation and Development / the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (BMZ/GIZ); Biovision Foundation for Ecological Development, Switzerland; the European Union; UK Aid from the UK Government; the Swiss Agency for Development and Cooperation (SDC); the Swedish International Development Cooperation Agency (Sida); Food and Agriculture Organization of the United Nations (FAO); International Atomic Energy Agency (IAEA) and the Government of Kenya.

icipe

will provide technical backstopping to the facility, and continue to advance research on more efficacious and eco-friendly alternatives as killing agents for use with the bait spray.

icipe's mission is to help alleviate poverty, ensure food security and improve the overall health status of peoples of the tropics, by developing and extending management tools and strategies for harmful and useful arthropods, while preserving the natural resource base through research and capacity building.

Kenya Biologics Ltd's mission is to provide green, safe and cost-effective farm inputs that help to grow and protect the farmer's crops in a responsible manner. By doing that we actively support sustainable food production and improve the safety of food and drinking water in Africa.

The 'rechargeable water battery' set to redefine farming

BY BOB KOIGI

Kenya's smallholder farmers are grappling with the worst climate since records began, with depressed rainfall taking a toll on yields. Industry players have fronted irrigation as an alternative to curb the weather vagaries and guarantee year round food production. However, the cost of installing irrigation materials remain prohibitive for majority of small scale farmers. Yet demand for food has continue to soar with reports and analysts warning it could be recipe for chaos.

But in the midst of the tough situation farmers find themselves in, a revolutionary technology is promising to redefine agriculture. Dubbed Zeba, the innovation now in Kenya has been made possible thanks to a partnership between leading agro input company Elgon Kenya Limited and with global plant health and seed company UPL.

Zeba is a soil enhancer, in form of granules, which expands when it detects water or moisture in its surrounding. It is capable of extending more than 400 its size, trapping water and nutrients which it then releases only when the plant needs them. It is capable of giving back to the plant, up to 95 per cent of the water it holds and remains effective for over a year.

"This is one of the most transformatory technologies we have had in the market. It allows farmers to save water while ensuring that no nutrients are lost through for example leaching. And at a time when water conservation means everything to farmers, this technology couldn't have come at a better time," said Mr. Bimal Kantaria, Elgon Kenya Director.

With water readily available to the plant, heat and water stress is reduced, allowing the plant to devote its energy to producing larger fruit, vegetables and blooms. Zeba's 'bound water' does



not cause an oversaturation of water around the root structure, which can be damaging to plant roots.

"Zeba gives crop growers the ultimate benefit, allowing them to save water and key nutrients which would ordinarily be lost through for example leaching. Growers are therefore able to utilize two key aspects of plant growth without having to spend more," said Nishant Pahuja the UPL Business Head for Africa.

Repeated independent testing over seven years has shown Zeba significantly accelerates seedling emergence and strengthens stand establishment, resulting in consistent growth and higher-quality plants with less water and reduced inputs. The expansion and contraction of each particle in response to water availability and demand helps

aerate the soil, providing more oxygen to the plant's root system. Zeba also helps thicken lawns while minimizing dry, brown spots.

The nontoxic and biodegradable product has been trialed on a host of crops including onions, dry beans, snap beans potatoes and flowers with growers recording between five and 10 per cent increase in yields and doubling their returns on investment.

This new partnership is one of the many that Elgon Kenya continues to foster with likeminded partners as it seeks to look for smart and productive ways of producing food especially at a time when changes in weather is altering how farmers grow food.

Zeba can be found at Elgon Kenya head office and in all Elgon Kenya stockists across the country.

Over 300 avocado farmers receive GlobalG.A.P. Certification

By BOB KOIGI

More than 300 Kenyan farmers drawn from nine farmer groups in Murang'a have received GlobalG.A.P. Certification – opening the door to the European market – with support from the International Trade Centre (ITC).

The certification was achieved under the Netherlands Trust Fund (NTF) III Kenya Avocado project, implemented by ITC and the Dutch Centre for the Promotion of Imports from developing countries (CBI) and funded by the Dutch Ministry of Foreign Affairs.

The benefits of having GlobalG.A.P. certification include access to new business opportunities, especially in the European market, and the ability to earn higher incomes through price increases for their now-certified products.

GlobalG.A.P. stands for Global Good Agricultural Practice and is a private standard that sets out requirements for farming processes and food safety. As one of the most prevalent certifications for the European market, GlobalG.A.P. opens doors for Kenyan exporters to build more long-term relationships with European buyers and generate higher incomes.

The first step to achieving certification was the establishment of one-to-one linkages facilitated by the project between the farmers groups and exporters in 2015. The approach included localization and identification of farmers groups, as well as identification of individual farmers and the varieties and quantities of their avocado trees.

Based on that, the farmers' capabilities of meeting the needs of Kenyan exporters in terms of volume and quality were analysed. Contractual agreements were signed and hence fixed prices and terms of delivery for each group were set.

Throughout 2016, the farmers groups and technical advisers of each



exporting company received training on compliance with GlobalG.A.P. audit requirements. This included activities such as the development of individual quality management systems and the implementation of internal audits.

In each farmers group, harvesting and hygiene supervisors were selected and trained on specific aspects, such as recordkeeping and post-harvest handling, as well as Hazard Analysis Critical Control Point (HACCP).

These follow-up activities have led to job creation: farmers are now taking on more responsibilities along the avocado value chain. Previously, they worked with middlemen who harvested and collected avocados, leading to unreliable practices and prices.

Now, using this new model supported by the NTF III Kenya Avocado project and the GlobalG.A.P. certification, farmers are earning on average two times more

than what they used to earn through middlemen.

After receiving the GlobalG.A.P. certification, a representative of Harir International, one of the beneficiary companies, said: 'I would like to thank ITC for the support that we have received.'

We highly appreciate the whole team that made this journey worth it. We will strive to make this sustainable and impactful for our smallholders.'

Exporters supported the farmers groups by investing in infrastructure, including collection sheds, first aid boxes, offices and hygiene facilities that are required for GlobalG.A.P. certification. They are planning to invest in additional groups in coming years to increase their volume of GlobalG.A.P.-certified avocados and tap into the increasing demand for avocados in the European market.



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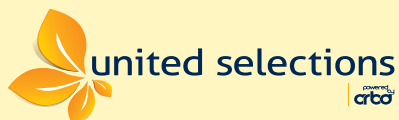
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Exporters Fruits & Vegetables

NO.	ORGANISATION	LOCATION	PRODUCT	CONTACT PERSON	PHONE	EMAIL
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2	Jefer Enterprises Limited			Felix Muia	+ 254 733 551 037	info@afyafresh.com
3	AgriFrwsh Ltd			Mr.W.A.Dolleman	020-8560650	
4	Ansa Horticultural Consultants				020-3750348	ansa@icnnect.co.ke
5	Athi Farm Exporters Ltd			Eunice Mwikali Mutune	+254 722 815 652	info@athifarmexporters.com
6	Avenue Fresh Produce			Mr.C.Muchiri	020-825342/020-820015	avenue@avenue.co.ke
7	Belt Cargo Services Export Ltd	Nairobi	French Beans	Mr.J.Muigai	020-4448821	bcs@beltcargo.com
8	Benvar Estates Ltd			Robert Muchoki	+ 254 20 233 7095	farm@bcf.co.ke
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10	Brandon Enterprises			Ms.Grace Nyokabi	020-242090	Brandon@springs.com
11	Canken International Ltd	Eldoret	Chillies And Fruits	Mr.Mohamed	020-222736367	canken@cankencargo.com
12	Chirag Kenya Ltd	Nairobi	Spice & Herbs	Sales Team	254-20-3573000	naturesown@swiftkenya.com
13	Continental Fresh Produce Ltd			Allan Simiyu	0722 809 344	info@continentalfresh.co.ke
14	Darford's Enterprises Ltd	Athi River	Vegetables	Mr.Abdul	254-206622857	abdulkarim@darfords.co.ke
15	Delmonte (K) Ltd	Thika	Fruits	Sales Manager	020-672141600	nanasi@freshdelmonte.com
16	Dominion Vegfruits Ltd	Nairobi	Fruits & Vegetables	Mr.John Mwaura	020-823356	vegfruits@wananchi.com
17	Doralco (K) Ltd			Ms.Christina Chenet	020-521833	doralco@samnet.com
18	East African Growers	Nairobi	Fruits & Vegetables	Mr.Peeush Mahajan	020-822034/25	peeush@eaaga.co.ke
19	Emke Commodities (K) Ltd			Bijot	+ 254 736 997 777	emkevegkenya@gmail.com
20	Everest Enterprise Ltd	Timau & Narumoru		Mr.J.Karuga	020-824141	jdkaruga@everest.co.ke
21	Everest Enterprise Ltd	Nairobi	Fruits & Vegetables	Mr.John Karuga	020-3542009	smuhoho@everest.co.ke
22	Everfresh Produce Ltd			Irene Wanjiru	+254 722 496 836	admin@kenyafresh.co.ke
23	Evergreen Crops Ltd			Arun Singh	+ 254 722 205 108	arun@evergreencrops.com
24	Farmland Express			Mr.Ali Rashid	020-749314	Rashid@arcc.or.ke
25	Fian Green Kenya Ltd	Nairobi	Fruits & Vegetables	Mr.Francis Thuita	020-826157	info@fiangreens.co.ke
26	Fishier Industries Ltd			Mr.Kahara	0722-983304	
27	Forever Green Growers Ltd				+ 254 724 319 254	info@forevergreengrowers.com
28	Fresco Produce Ltd	Nairobi	Vegetables	Mr.Charles Mbugua	254-0722-764395	mbugua@frescoproduce.co.ke
29	Fresh An Juici Ltd	Embakasi	Fruits & Vegetables	Ms.Farida	020 -826090/3	farida@freshanjuici.co.ke
30	Fresh Approach Ltd			David Muya Wambua	+ 254 20 23 37 475	freshapproach@kenyaweb.com
31	Freshken Agroducers			Elizabeth Mnasya	+254 724 306 279	mail@freshken.co.ke
32	Freshpak Horticultures Ltd			John G. Ngigi	+ 254 733 762 191	freshpak@freshpak.co.ke
33	Frigoken Ltd	Babadogo		Mr.Nasoor Verjee	020-860096	frigoken@frigoken.com
33	From Eden Ltd	Nairobi	Vegetables	Mr. Zulfikar Jessa	020-8562203	rajeev@from-eden.com
34	G.N Farm			Mr.Joseph Mungai	0733-949696	
35	Gekins Exporters			Mr.Geoffrey Kingau	020-240715	
36	Global Fresh Lts	Nairobi	Fruits & Vegetables	R.Chaudhry	020-827549/50	info@globalfresh.co.ke
37	Green Kenya Organisation	Luansa	Onions & Tomatoes	Charles Butiko	0723 119111	greenkenya28@gmail.com
38	Green Ventures				020-728724/725739	
39	Greenlands Agro Producers	Timau & Makindu		Mr.Njoroge	020-827079	geoffrey@greenlands.co.ke
40	Haraf Farm Ltd			Alfred Sikuku	+ 254 723 280 000	harafkenyafarm@gmail.com
41	Highlands Cannners Ltd	Nairobi	Fruits & Vegetables	Sales Manager	020-8564048	info@highlandcannners.co.ke
42	Hillside Greengrowers Ltd			Ms.Eunice Mwangera	020 2397353	eunice@hillsidgreen.com
43	Homegrown Kenya Ltd			Mr.Evans	020-3873800	hgkadmin.nbohq@f-h.biz
44	Indu Farm Epz Ltd	Nairobi	Vegetables	General Manager	254-20-550215/6	info@indu-farm.com
45	Interveg Exports Ltd			Purity T. Naisho	+ 254 20 244 57 56	operations@interveg.co.ke
46	Jakal Services Ltd	Mombasa	Fruits&Spices	Mr.Bandali	254-7412229435	jakal@ikenya.com
47	Jetlak Foods Ltd	Ruiru	Fruits & Vegetables		254-722754181	mail@jetlak.com
48	Jungle Macs Epz Ltd	Thika	Fruits & Vegetables	Sales Manager	020-2451841	info@junglemacadamias.com
49	Kakuzi Ltd	Thika		Mr.R.Collins	(060)-33012/31393	rcollins@kakuzi.co.ke
50	Kandia Fresh Produce Suppliers Ltd			David Mulwa	254 722 350 552	perations@kandia.co.ke
51	Keitt Exporters Ltd	Nairobi	Fruits & Vegetables	Ashif Amin	+ 254 722 344 899	info@keitt.co.ke
52	KENANA FARM				0722-725002	pkenana@africaonline.co.ke
53	Kenya Fresh Exporters Ltd			Priscilla W. King'angi	020-826267/8	kenyafresh@swiftkenya.com
54	Kenya Fresh Produce Exporters Ltd			Priscilla Kingangi	0202107232	info@kenyafresh.co.ke
55	Kenya Horticultural Exporters (1977) Ltd			Manu Dhanani	25420650300	info@khekenya.com
56	Kenya Horticultural Exporters Ltd			Mr.Manu DhanaNI	020-650300	
57	Kenya Orchard	Nairobi	Fruits & Vegetables	Sales Manager	254-2054161	
58	Krin Agribio (K)			Mr.Karima/Fransisco	0161-30776	krinken@africaonline.co.ke
59	La Pieve			Mr.Peter Zwager	020-30210	



Exporters Fruits & Vegetables

NO.	ORGANISATION	LOCATION	PRODUCT	CONTACT PERSON	PHONE	EMAIL
60	Mace Foods Ltd	Eldoret	Vegetables	Sales Manager	254-720391290	info@macefoods.com
61	Makindu Growers & Packers Ltd			Bij Kamal	+ 254 20 82 28 12	info@makindugrowers.co.ke
62	Makindu Growers & Packers Ltd		Passion Fruits	Mr.Kamal Bij	020-822812	info@makindugrowers.co.ke
63	Mboga Tuu Ltd	Isinya		Mr.J.Kent	020-566497	mtl@wananchi.com
64	Meru Herbs		Organic Products	Marketing Manager	254-20-4442081	meruherbs@meruherbs.com
65	Migotiyi Plantations Ltd	Nakuru	Herbs	Mr.B.K.Rao	051-2214898	alphegasisal@wananchi.com
66	Mixa Foods & Beverages	Kisumu	Fruits&Milk	Charles O.Odira	254-733-714584	info@mixafoods.co.ke
67	Mosi Ltd	Juja	Fruits	Rose Wahome	254-722204911	mwaiwahome@mosiflowers.com
68	Mount Elgon Orchard Ltd	Kitale	Orchards	Bob Andersen	254-205431352	info@mtelgon.com
69	Mugama Farmers Co-Op Union	Murang'a	Vegetables	Sales Team	254-728-358211	mugamaunion@yahoo.uk
70	Muzuri Growers Ltd			Mr Jignesh Desai	020 3664503	muzurigrowers@gmail.com
71	Myner Exporters			Mr.S.Maina	020-607997	maner@spacenetonline.com
72	Namelok Exotics (K) Ltd			Mr.D.T.Sinkeet	0724-743258	info@namelokexotic.com
73	Nicola Farms Ltd	Nanyuki	Fruits & Vegetables	Ms.Grace Wanjiku	020-2048874/76	marketing@nicola.co.ke
74	Njambiflora Ltd		Vegetables	Ms.Marie	020-822506/7	njambiflora@yahoo.co.uk
75	Olivado Kenya Epz Ltd	Nairobi	Avocado	General Manager	254-710535303	gh@tanlay.com
76	Pino Agencies			Merab Ogola	020 2215519	pinoagencies@gmail.com
77	Premier Fresh Ltd				020 3546364	premier@premier-fresh.com
78	Raayan Exporters Ltd			David Musyoka	+ 254 721 853 604	raayanexporters@gmail.com
79	Rea Vipingo Plantations Ltd	Kilifi	Sisal	Managing Director	254-721465035	info@reavingo.co.ke
80	Reap Horticultural Exporters			Samuel Gichane Warui	+ 254 722 973 206	reap@swiftkenya.com
81	Rubi Ranch Fresh Exports Epz Ltd			Charles Kamutu	+ 254 020-2329888	info@rubiranch.co.ke
82	SACCO Fresh Ltd			Jonathan Mwai Muia	+ 254 20 82 4887	info@sacco-fh.com
83	Saipei Foods Ltd				+ 254 723 416 457	Person: Lucy Njeri Kuria
84	Saw Africa Epz Ltd	Thika		General Manager	254-722531106	wainana_patrick@yahoo.com
85	Shree Ganesh Fruits and Vegetables Ltd				Mr. Kanji Kalyan Patel	020 - 80243645
86	Sian Exports (K) Ltd			Swati Sharma	+ 254 20 822 831	info@sianexports.com
87	Six Square Ltd			Ajay Saini	020 5227423	info@sixsquare.co.ke
88	Spring Green Ltd			Patricia Githegi	+254 700 298 220	sales@springgreen.co.ke
89	Sunmango Ltd			Mr Kushal Patel	067-5854406	sunmango@dmbgroup.com
90	Sunripe (1976) Ltd			Mr.Hasit Shah	020-822518/822879	info@sunripe.co.ke
91	Super Veg Ltd			Mr.R.Kachela	020-63820	superveg@net2000ke.com
92	Superfresh Kenya Ltd			Mahesh Patel	0710 821092	superfreshkenyald@gmail.com
93	Syngenta Ea Ltd	Nairobi	Seeds	Sales Manager	254-203222800	syngenta.east_africa@syngenta.com
94	Valentine Growers Co Ltd	Kiambu	Vegetables	Sales Team	254-720203765	info@valentine-flowers.com
95	Value Pak Foods Ltd			Mr.Roy	020-823438/39	value@wananchi.com
96	Veg Afric Ltd			Mr.Chawdry	0733-747859	
97	Vegmon Agencies			Mr.Ndungu	020-247420	vegmon@insight.com
98	Vegpro Group			Dipesh Devraj	0722 204391	ddevraj@vegpro-group.com
99	Vert Ltd			General Manager	254-020-4451489	info@vertfresh.co.ke
100	Victoria Import & Export Co. Ltd					Okisegere Ojepat + 254 20 4409947
101	W.M.C			Mr.Daniel Kibe	0722-924638	
102	Wamu Investments Ltd	Nairobi	Fruits & Vegetables	Mrs Peris Muriuki	020-822441	peris@wamu-investments.com
103	Wesyways Ltd			Dr.Solomon Karanja	0722-341968	skaranja@yahoo.com
104	Wilham (K) Ltd			Mrs. Mamta Mahajan	+ 254 20 827 488	info@eaga.co.ke
107	Woni Veg-Fru Exporters			Mr.Mutiso/Jane Mutiso	020-545303	woni@swiftkenya.com

GLOWERS AND EXPORTERS

	ORGANISATION	LOCATION	PRODUCT	CONTACT PERSON	PHONE	EMAIL
1	AAA Roses	Rumuruti	Roses	George Hopf	Tel:+254 733746737	George@aaagrowers.
2	Africa blooms	Rumuruti	Roses	samir chandokrk	0735-384552	samir.chandokrk@xflora.net
3	Africalla	Nairobi	Zantedeschia	Mr. Rob Holtrop	Tel:+254 721-837968	
5	Afriscan Kenya Ltd	Naivasha	Hypericum	Reuben kanyi	0723 920237	
6	Agriflora	Njoro	Flowers	Clement Kipngetchi		cngetich@sianroses.co.ke
7	Alani Gardens		Roses	Mrs. Judith Zuurbier	0722 364943	alani@alani-gardens.com
8	Altitude Flowers		Flowers	Dominic Koeh	0722 364943	
9	Aquila Flowers	Nairobi	Roses	Mr.Yogesh	050-506609	info@aquilaflowers.com
10	Baraka Flowers	Ngurika	Roses	Mr.Peter/Lucy	0720 976900	peter@barakaroses.com
11	Batian Fowers	Timau	Roses	Mr.G.Muriungi	0720 102237	dirk@batianflowers.com
12	Beauty Line	Naivasha	Gypsophila	Mr.Peter Gathiaka	0722 676925	peter@beautyline.com
13	Bekya Floriculture				0722 311468	admin@bekya.com



Flower Growers and Exporters

COMPANY	LOCATION	CONTACT PERSON	PRODUCT	TELEPHONE	E-MAIL ADDRESS
14 Benev Flora Ltd			Mr.John Ndungu	0722 318793	benevflora@gmail.com
15 Big Flowers			Mr.Gordon More	0723 473585	gordon.more@bigflowersltd.com
16 Bigot Flowers	Naivasha	Roses	Mr.Jagtap K	0722205271	jagtap.kt@bigotflowers.co.ke
17 Bila shaka	Naivasha	Roses	Ms. Judith Zuurbier	04787898169	bilashaka.flowers@zuurbier.com
18 Bondet	Nanyuki	Erygium	Richard Fernandes	5232 1/2	
19 Black Petals Ltd.	Limuru	Roses	Mr.Nizra Junder	0722848560	nj@blackpetals.co.ke
20 Black tulip flowers			Deepali gupta	0722 825429	gardenflora@swiftkenya.com
21 Bliss flora Ltd.	Nakuru	Ocean Song	Mr.Shivaji Wagh	Tel:+254-720-895911	shivaniket@yahoo.com
22 Bloomingdale Roses	Timau	Roses	Mr.Sunil Chaudhari	0732 373322	sunil@bloomingdaleroses.com
23 Bogmack farm	Timau	Roses	MR.Anderson	0722 350020	kathendusn@yahoo.com
24 Blue Sky Ltd		Roses	Mr.Mike	0720 005294	info@blueskykenya.com
25 Branan & Mosi Ltd.	Thika	Roses	Mr.Anthony Wahome	Tel:+254 722 204911	mwaiwahome@mosiflowers.co.ke
26 buds&blooms-bliss flora	Nakuru	roses	mr.shivaji	0720 895911	shivaniket@yahoo.com
27 Caly Flora Ltd .	Nairobi	Cut Flowers	Mrs.Catherine Gichungu	0725456930	info@calyflora.co.ke
28 carnation plants ltd	Athi River	carnations	Mr.E.fieldman	254-2045162	evi@exoticfields.com
29 cartesian blooms international		exporter	mr.patrick ndei	0721 629769	sales@cartesiabloomsint.com
30 Carzan Flowers	Naivasha	Carnations	Mrs.Carol Manji	0 707110030	info@carzankenya.com
31 Celinico Flowers	Limuru	Roses	Mr.Chris Shaw	254-066721710	celinico@nbinet.co.ke
32 Charm Flowers	Kitengela	Roses	Mr.Ashok Patel	0202222433	info@charmflowers.co.ke
33 Colour Crops	Timau	Summer Flowers	Mr.Simon Baker		simon@siluba.co.ke
34 Colour Vision Roses Ltd	Naivasha	Rose Breeders	Mr.Peter Vandemeer	254-05050310	petervandemeer@terranigra.com
35 Credible Blooms	Nairobi	Roses	Mr.Francis/ Ms.Nancy	020 2102019	info@credibleblooms.co.ke
36 De Ruiters	Naivasha	Roses	Mr.Sebasten Alix	254-720601600	info@drea.co.ke,
37 Desire Flora K.Ltd.	Isinya	Roses	Mr.Rajaat Chaohan	Tel: +254 0724264653	info@desireflora.com
38 doralco kenya ltd			mrs.c.chenet	020-7122179	info@doralco.co.ke
39 dummen orange				0733 609863	s.outram@dummenorange.com
40 Elbur flora	Elburgon	Roses	Mr.Peter Kagotho	Tel:+254 724722039	eflora@africaonline.co.ke
41 Elpis arm ltd	Nairobi	Summer flowers	Mrs.nimo kimwaki	0722 738988	nimo@elpisfarms.com
42 Enkasiti Flowers	Thika	Roses	Mr.Thambe	Tel:+254 724722039	enkasiti@gmail.com
43 Esmeralda breeding	naivasha	Summer flowers	Mr.loui hooyman	31-297-385444	loui@esmeraldafarms.nl
44 Equator Flowers	Eldoret	Roses	mr.charles	0721 311 279	info@sianroses.co.ke
45 Equinox	Timau	Roses	Mr.Tom Lawrence	Tel:0722312577	tom@equinoxflowers.com
46 Ever Flora Ltd.	Juja	Roses	Mr.Khilan Patel	Tel:0675854406	everflora@dmbgroup.com
47 Exotic(Tegmak Blooms)	Geta,Kipipiri		Mr.Edward Kagachu	0722 292242	tegmakblooms@gmail.com
48 Fantasy Flora Ltd		Exporter,Cut Flower	Mr.Henry Onyango	020 2352813	henry@fantasy-flora.com
49 Fides Kenya Ltd	Embu	Roses	Mr.Francis Mwangi	254-06830776	info@fideskenya.com
50 Finay's Siraj	Timau	Carnations,Roses	Mr Paul Salim	Tel:0722470717	paul.salim@finlays.net
51 Finlay Chemirel	Kericho	Roses	Mr.Aggrey Simiyu	Tel:0722601639	aggrey.simiyu@finlays.co.ke
52 Finlay' Lomotit	Londian	Carnations	Mr.RichardSiele	Tel:0721486313	Richard.siele@finlays.net
53 Finlay's Flamingo	Naivasha	Roses,Fillers	Mr.Peter Mwangi	Tel:+254 722204505	peter.mwangi@finlays.net
54 Finlay's Kingfisher	Naivasha	Roses	Mr. Charles Njuki	Tel: +254-724391288	Charles.njuki@finlays.net
55 Finlays Sirimon	Timau	Lilies	Ms.Purity Thigira	Tel:0733606411	purity.thigira@finlays.net
56 Flamingo Flora	Nairobi	Roses	Sam	Tel:0721993857	s.ivor@flamingoflora.co.ke
57 Flora Delight	Limuru	Summer flowers	Mr.Hosea Andanyi	Tel:0724373532	hosndai@yahoo.com
58 Flora Kenya	Nairobi	Roses	Mr.Jack Kneppers	Tel: +254 0733333289	jack@maridadiflowers.com
59 Flora ola	Solai		Mr.Wafula	0708382972	floraolaltd@gmail.com
60 Florema(K)Ltd	Naivasha	Begonia	Mr.Perter Maina	050-2021075	info@floremakenya.co.ke
61 Florensis Hamer	Naivasha	Cuttings	Mr.Edyy Verbeek	02050010	verbeek@florensis.co.ke
62 flower connection ltd			Arun Mushra	0710625484	arun@eaga.co.ke
63 Fontana Ayana	Nakuru	Roses	Mr.Gideon Maina	0721178974	Gideon@fontana.co.ke
64 Fontana Ltd		Roses	Mr.A.C.Achaiah	051-343156	kakul@fontana.co.ke
65 Fontana Ltd-Salgaa	Salgaa	Roses	Mr.Girish Appana	073433313	girish@fontana.co.ke
66 Fontana-Akina	Nakuru	Roses	Mr.Girish Appana	0 722728441	girish@fontana.co.ke
67 Fourteen Flowers			Mr.A.C.Achalia	051343322	sarju@fontana.co.ke
68 Gatoka Farm	Thika	Roses	Mr.M.K Gacheru	0733619505	gatoka@swiftkenya.com
69 Golden Tulip	Olkalau		Umesh	0739729658	
70 Greystones Farm			Mr.Silas Mbaabu	0722312316	mbaabu@greystones.co.ke
71 Groove	Naivasha	Roses	Mr.John Ngoni	0724448601	groovekenya@gmail.com
72 Hamwe Ltd.	Naivasha	Hypericum	Mr.Adrew Khaemba	0722431170	hamwe.production@kariki.biz



Flower Growers and Exporters

NO.	COMPANY	LOCATION	CONTACT PERSON	PRODUCT	TELEPHONE	E-MAIL ADDRESS
73	Harvest (K) Ltd.	Atthi River	Roses	Mr.Farai Madziva	0722849329	farai@harvestflowers.com
74	Hatabor Rainbow Blooms	Limuru		Mr.John Ndungu	07213850959	
75	Highlands Plants	Olkalau	Outdoors	Mr. Leonard Kanari	0721345829	sales@highlandplants.co.ke
76	Interplant Roses	Naivasha	Breeders	Mr.Geofrey Kanyari	0712215419	info@interplantea.co.ke
77	Isinya Roses	Isinya	Roses	Mr.Yash Dave	0 721403175	info@isinyaroses.com
78	Jedini Ventures Co Ltd	Thika	Exporter	Mr.Nicholas Mwaniki	0727 237354	info@jedini.co.ke
79	Jatflora	Gilgil	Summer flowers	James Oketch	0 724418541	jatflora@gmail.com
80	Kabuku Farm			Mr.S Thirumalai	020 822025	info@eaga.co.ke
81	Kalka	Isinya		Mr.Shiva	0715 356540	shiva@kalkaflowers.com
82	Karen Roses Ltd	Karen	Roses	Mrs.R Kotut	020-2078270	karen@karenroses.com
83	Kariki Limited	Juja	Hypericum	Mr.Samuel Kamau	0722 337579	samwel.kamau@kariki.co.ke
84	Karuturi Flowers	Naivasha	Roses	Mr.Sylvester Saruni	0722873560	henry.muller@karuturi.com
85	Kenflora	Kiambu	Roses	Mr. Aleem Abdul	0722311468	info@kenflora.com
86	Kentalya	Naivasha		Mrs.Lynette	0733 549773	lynette@kentalya.com
87	Kenya Cuttings	Thika	Cuttings	Mr.Martin Kolvenbach	060-2030280/81	martin.kolvenbach@syngenta.com
88	Kimarflowers	Outering Road	Exporter	Margret Joseph	0721 974596	
89	Kongoni Farm	Naivasha	Roses	Anadpatil	0728 608785	anad.patil@vegpro-group.com
90	Kimman Roses Ltd.	Nairobi	Catch,Versilia	Mr. Daniel Moge Maina	Tel: +254-721734104	kimmanexp@gmail.com
91	Kisima	Timau	Roses	Mr.Martin Dyer	0722 593911	flower@kisima.co.ke
92	K-Net Flowers Ltd			Mr.Mike King'ori	020-3875662/3	info@k-netflowers.com
93	Kreative Roses Ltd.	Nairobi	Roses	Mr. Bas Smit	Tel: +254 733501640	info@kreative-roses.com
94	Kudenga Flowers	Mau Summit	Hypericum,Erygiums	Mr. Joseph Juma	0725 643942	kudenga.fm@kariki.biz
95	Lafto Roses Plc	Holland	Roses	Gerard Van Der Deijl	Tel: +31-71-3660605	sales@vanderdeijlroses.nl
96	Lakshmi Group Ltd.	Nairobi	Roses	Mr. Serghei	Tel:+254 714551969	serghei.lakshmi@group@gmail.com
97	Larmona	Naivasha	Roses	Mr. Peter Mureithi	254-722238474	lamonaaccounts@africaonline.co.ke
98	Lauren International Flowers Ltd			Mr. Joseph Tawk	020-2358119	laurenflowers@accesskenya.co.ke
99	Lex + Rose Creators	Naivasha	Roses	Mr. Steve Outram	Tel: +254-733609863	steve@lex-ea.com lex@lex-ea.com
100	Leekem Holdings Ltd	Nyandarua		Mrs. Margaret Muthoni	0720 267004	leekement@gmail.com
101	Liki Riverfarm	Nanyuki		Mr. Madhav Lengare	0722 202342	madhav@vegpro-group.com
102	Live Wire Ltd	Nanyuki	Hypericum,Lilies	Mr. Esau Onyango	0728 606872	info@livewire.co.ke
103	Lobelia Farm	Timau	Roses	Mr. Peter Viljoen	254-06241060	info@lobelia.co.ke
104	Loldia Farm	Naivasha		Mr. Rotich/Gary	0721 237936	locland@bidii.com
105	Longonot Horticulture	Naivasha	Roses	Mr. Shando Rai	254-050501473	longonot@vegpro-group.com
106	Maasai Flowers	Kitengela	Roses	Mr. Alis Muruyao	254-725848912	wmunyao@sianroses.com
107	Magana Flowers Kenya Limited.	Kiambu	Roses	Dr. Magana Njoroge	Tel: +254 202017651	mnmungai@maganaflores.com
108	Mahee Flowers Ltd	Olkalau	Roses	Vijay Kumar	254-020822025	info@eaga.co.ke
109	Mahee Flowers Ltd	Olkalau	Roses	Mr.T .Srinivasan	020-827488	peesh@eaga.co.ke
110	Maridadi Flowers Ltd	Naivasha	Roses	Jack Kneppers Md	07-33333289	jack@maridadiflowers.com
111	May Flowers Ltd			Mr. Maarten Brusse	050 21174	cuttings.ke@royalvanzanten.com
112	Mau Agritech	Isinya	Roses	Mr. Kori	254-722206318	Gm@Mauaagritech.Com
113	Molo River Roses	Muserechi		Mr. Alice Mureithi	0724 256592	andrewwambua@yahoo.com
114	Mosi Ltd	Thika	Roses	Ms.Alis Murugi	254-722204911	alicemurugi@mosiflowers.co.ke
115	Morop	Bahati	Summer Flowers	Wesley Tonui	0720 983945	wesley@moropflowers.co.ke
116	Mount Elgon Orchards Ltd	Kitale	Roses	Bob Andersen	07-35330592	info@mtelgon.com
117	Mukungu(Tegmak Blooms)	Kipipiri		Mr.Patrick Chege	0720 663625	tegmakblooms@gmail.com
118	Mweiga Blooms Ltd	Mweiga	Roses	Marketing Manager	07-33741203	info@mweigablooms.com
119	Multigrow Investments		Summer Flowers	Mr.Peter Murimi	0724 977259	5growers09@gmail.com
120	Mzurrie Flowers			Mrs.Irene Njeru	0722 203630	irene@winchester.co.ke
121	Nathe Enterprises	Naivasha		Marketing Manager	254-722526959	www.natheenterprises.co.ke
122	Nature Grown Flowers Ltd			Mr.W.Kamani	020-2152176	naturegrown@mbambu.com
123	New Hollands Flowers	Olkalau	Roses	Mr. Francis	Tel:700718570	guna@bth.co.ke
124	Ngong Roses	Ngong	Roses	Mr. Charles Maina	Tel:0202700660	maina@aricanonline.co.ke
125	Nini farm	Naivasha	Roses	Mr. Philip K	Tel:05050406/50161	philipk@ninitd.com
126	Nirp EA Ltd.	Naivasha	Rose Breeder	Mr. Alessandro Ghione	Tel:203563141	info.ke@nirpinternational.com
127	Ol Njorowa Ltd.	Naivasha	Roses	Mr. David Mousley	Tel:0722 833 122	mbegufarm@iconnect.co.ke
128	Olij Rozen	Naivasha	Rose Propagator	Ms. Sally Nicholias	Tel:735338062	s.nicholias@olijrozen.nl
129	Omang-Africa Blooms-Xpressions Flora	Nakuru	Roses	Mr.Inder Nain	Tel:+254 733724029	flowers@xflora.net
130	Oserian Development Company	Naivasha	Rose,Fillers	Mrs.Dorcas Ngure	Tel: +254738700048	dngure@crs.co.ke
131	panacol international Ltd	kitale		mr.paul wekesa	0722 748298	paul.wekesa@panacol.co.ke
132	panda flowers	naivasha		mr.richard	050 50046/50198	info@pandaflowers.co.ke
133	penta flowers	Thika		mr.tom ochieng	0723 904006	penta@kenyaweab.com
134	pj thande			ms.elizabeth thande	0722 380358	elizabeth@wefarm.co.ke
135	P.J.Dave Group	Nairobi	Cut Roses	Mr. Niall Deacon	Tel: +254 732205577	niall@pjdave.com
136	P.P flora	rongai		Robert Rukingi	254-1890087	ppflora02@gmail.com
137	Panda Flowers Limited.	Naivasha	Roses	Mr.Wanderi Kariuki	Tel: +2545050046	wanderi@pandaflowers.co.ke



THABITI Fertilizers

• UREA 46%N • DAP 18:46:0 • CAN 26%N

Flower Growers and Exporters

NO.	COMPANY	LOCATION	CONTACT PERSON	PRODUCT	TELEPHONE	E-MAIL ADDRESS
138	Panocal International	Kitale	Roses	Mr. Paul Wekesa	Tel: +254 722748298	pwekesa@africaonline.co.ke
139	Penta Flowers Ltd.	Thika	Roses	Mr. Tom Ochieng	Tel: +254 733625297	tom@pentaflowers.co.ke
140	PJ Flora	Isinya	Roses	Mr. Absalom O	Tel: +254 721423730	pjdaveflowers@wananchi.com
141	Plantations Plants	Naivasha	Geraniums	Mr. William Mumanyi	Tel: 723622456	pplants@kenyaweb.com
142	Pollen Sygenta Ltd.	Ruiru	Cuttings	Mr Daniel Kisavi	Tel: 733603530	Daniel.kisavi@sygenta.com
143	Porini Farm	Keringet	Roses	Pitamber Ghahre	Tel: 0726774955	porine: isinyaroses.com
144	Preesman Kenya	Nakuru	Roses	Michael Kikwai	Tel: 0720574011	kikwai1980@yahoo.com
145	Primarosa Flowers Ltd.	Athi River	Roses	Mr. Santosh	Tel: 0712030610	santosh@primarosaflowers.com
146	Primarosa Flowers Ltd.	Athi River	Roses	Mr. Dilip Barge	Tel: 0733618354	dilip@primarosaflowers.com
147	Primarosa Zuri Flowers	Nyahururu	Roses	Mr. Vijav	Tel: 0721823675	vj@zuri.co.ke
148	Protea Farm	Timau	Roses	Mr. Philip		info@lobelia.co.ke
149	Racemes	Naivasha	Gypsopilla/vegs	Mr Bonny	Tel: 0721938109	bonny@kenyaweb.com
150	Ravine Roses Ltd.	Eldama Ravine	Roses	Mr. Peter Kamuren	Tel: 722205657	pkamuren@karenweb.com
151	Redwings	kabarak		mr.sayer simon	0722 578684	sayer@redwingltd.co.ke
152	Redlands Roses	Ruiru	Roses	Ms. Isabelle Spindler	Tel: 733609795	gm@redlandroses.co.ke
153	Rift Valley Roses	Naivasha	Roses	Mr. Peterson Muchiri	254-721216026	rvr@livewire.co.ke
154	Riverdale Brooms Ltd.	Yatta	Roses	Ms. Zipporah Mutugi	Tel: 733722180	rdale@swiftkenya.com
155	Rose plant	kitengela	roses	Mr. Atenus		
156	Rosepath petals ltd		roses	Director	254-51-2216400	sales@rospathroses.com
157	Roseto Ltd.	Nakuru	Roses	Mr. Yogeesh	Tel: 0737453768	roseto@megaspingroup.com
158	Savannah International	Naivasha		Mr. Ignatius Lukulu	0728 424902	l.lukulu@savannahinternational.com
159	Schreurs EA Ltd.	Naivsha	Roses	Mr. Haiko Backer	Tel: +2545050203	sales@schreurskenya.com
160	Selecta Flora	Nairobi	Summer flowers	Mrs. Mary Mwangi	Tel: +254725075569	sales@floratrends.co.ke
161	Shade Horticulture	Isinya		Mr. Ashutosh Mishra	0722 792018	mishra@shadehorticulture.com
162	Shalimar Flowers (K) Ltd	Naivasha	Roses	Export Manager	254-722811832	info@eaga.co.ke
163	Sececta Kenya/Kpp	Juja		Mr. Wilson Kipketer	020 352557	w.keter@selectakpp.com
164	Sian Agriflora (Sian Roses)	Nakuru	Roses/Lilie	Mr. Jos Van Der Venne	Tel: +254722203630	info@sianroses.co.ke
165	Sian Maasai Flowers	Kitengela		Mr. Andrew Tubei	254-722728364	atubei@sianroses.co.ke
166	Sian Roses	Kitengela	Roses	Mr. Jos van der venne	Tel: 0202170540	info@sianroses.co.ke
167	sierra Roses	Njoro		Sharrif	0787 243952	farm.sierra@megaspingroup.com
168	Simbi Roses Ltd.	Thika	Roses	Ms. Pauline Nyachae	Tel: +254204448230	Pauline@sansora.co.ke
169	Sirgoek Flowers	Eldoret		Mr. Andrew Kosgey	0725 946429	sirgoek@africaonline.co.ke
170	Solo Plant Kenya Ltd	Kiambu	Roses	Mr. Haggai Horwitz	254-732439942	hagai@soloplant.co.ke
171	star flowers	Naivasha		mr. sailesh kumar	0722 203750	sailesh@vegpro-group.com
172	Subati Flowers	Subukia & kinangop	Roses	Mr. Ravi Pate	Tel: 726657448	info@subatiflowers.com
173	Suera Flowers Ltd.	Nyahururu	Roses	Mrs. Susan Muriithi	Tel: 724622638	sueraffarm@suerafarm.sgc.co.ke
174	sugutu flowers			Mr. Yabesh Marga	254-733719053	sugutugrowers@yahoo.com
175	Sun Buds	Naivasha	Hypericum	Mr. Paul Kamau	Tel: +254 728339953	sunbudsLtd@gmail.com
176	sunrose nurseries	Athi River		Mr. Nehemiah.A.	254-0203586939	info@sunrosenurseries.co.ke
178	Tambuzi flowers	narumoru	roses		254-0623101917	info@tambuzi.co.ke
179	Terra Nlgra	Flower park	roses	Mr. Peter Vandemeer	254-722926588	petervandemeer@terranigra.com
180	terrafleu			mr.chris kaluku	67 30063	chris@terrafleu.com
181	Terrasol	Limuru	Cuttings	Mr. Sjaak Nannes	Tel: 0722387943	info@terrsolkenya.com
182	Timaflor Ltd.	Timau	Roses	Mr. Julius Kinoti	Tel: 06241263	timaflor@wananchi.com
183	Timau flair	timau	roses	MR. Philip Ayiecha	254-723383736	
184	Transebel ltd	thika	roses	Mr. David Muchiri		admin@transbel.co.ke
185	Tropiflora	Limuru	Carnations	Mr. Krasensky	Tel: 724646810	tropiflora@tropiflora.net
186	tsara rozen kenya ltd			mr.jan molenoer	0734 417157	jan@tsararozen.com
187	Tulaga Flowers	Naivasha	Roses	Mr. Denis Wedds	Tel: 724819377	tulagaflowers@africanonline.co.ke
188	Twiga roses	naivasha	roses	Mr. pius kimani	0721 747623	pius.kimani@gmail.com
189	Uhuru Flowers	Timau	Roses	Mr. Ivan Freeman	Tel: +254722863252	ivan@uhuruflowers.co.ke
190	Kibubuti	Kiambu	Roses	Mrs. Suzan Maina	Tel: 0203542466	info@valentineflowers.com
191	van den berg roses	Naivasha	roses	Mr. johan Remeus	254-0505050439	johan@rosekenya.com
192	vegpro-k ltd	timau	roses	Mr. vivek sharma		vivek@vegpro_group.com
193	Wac international	naivasha		mr.richard	0722 810968	richard@wac-international.com
194	waridi ltd	Athi River	roses	Mr. PD kadlag	254-724407889	kadlag@waridifarm.com
195	windsor ltd	thika	roses	mr. Pardeep	254-0674208	farm@windsor-flowers.com
196	wildfire flowers	naivasha		mr.p kadlag	0722 780811	peterszapany@wildfire-flowers.com
197	wilmar agro			mr.w.kimani	067-30176	wilmar@bidi.com
198	Xpression Flora Ltd.	Njoro & Saalga	Roses	Mr. Mangesh	Tel: 720519397	info@xflora.net
199	Zena Roses	Thika	Carnations, Roses	Mr. Rakesh	Tel: 0724631299	info@zenaroses.com



UREA 46%N • DAP 18:46:0 • CAN 28%N

Flower Growers and Exporters

ETHIOPIA

NO.	NAME	PRODUCT	LOCATION	CONTACT PERSON	PHONE	EMAIL
1.	Lisen Flowers	Roses	Holeta	Peter Linsen		elinsenroset@ethionet.et
2.	Hanja	Roses	Holeta	Holeta		peter.pardoen@karuturi.com
3.	Alliance Flowers	Roses	Holeta	Navale		navele@nehainternational.com
4.	Ethio Dream Rishi	Roses	Holeta	Holeta	011 23 72335	holeta@jittuhorticulture.com
5.	Holeta Roses Navale	Roses	Holeta	Holeta		navele@nehainternational.com
6.	Supra Flowers	Roses	Holeta	Kaka shinde	0911 353187	kakashind@rediffmail.com
7.	Agriflora	Roses	Holeta	M.Askokan	0922 397760	flowers@ethionet.et
8.	Ethio-agricerft	Roses	Holeta	Alazar	0910 922 312	alazar@yahoo.com
9.	Addis Floracom p.l.o	Roses	Holeta	Kitema Mihret	0912 264190	tasfaw@addisflora.com
10.	Enyi-ethio	Roses	Hebata	Teshale	0911 464629	enyi@ethionet.et
11.	Lafto Roses	Roses	Sebata	Andrew Aanjala	0922 116184	irrigation@laftorose.com
12.	Eden Roses	Roses	Sebata	Vibhav Agarwal	0930 011228	vaibhavaggarwal1@hotmail.com
13.	Ethio-passion	Roses	Sebata			roshanmuthappa811@gmail.com
14.	Golden Rose	Roses	Sebata	Sunil		
15.	E.t Highlands	Roses	Sebata		0911 502147	bnf2etf@ethionet.et
16.	Sharon Flowers	Roses	Sebata			saronfarm@ethionet.et
17.	Selam Flowers	Roses	Sebata			etsgshita@yahoo.com
18.	Joy Tech	Roses	Debra zyeit	Etsegenet Shitaye	0913 198440	etgshita@joytechplc.com
19.	Dugda Froliculture	Roses	Debra zyeit	Mulugeta Meles	0911 302804	mulugeta@joytechplc.com
20.	Minaye Flowers	Roses	Debra zyeit	Sayalfe Adane	0911 504893	general@dugdaflo.com.et
21.	Bukito Flowers	Roses	Debra zyeit	Eyob Kabebe	011-9728667/8/9	minayefarm@ethionet.et
22.	'Oilij	Roses	Debra zyeit	Anteneh Tesfaye	0911 615571	
23.	Yassin Flowers	Roses	Debra zyeit	Bas van der Lee	0911 507307	b.vanderlee@oilijethiopia.com
24.	Z.k Flowers	Roses	Debra zyeit	Tesfaye Gidisia	0911 897856	kamevision@yahoo.com
25.	Friendship Flowers	Roses	Debra zyeit	Abebe Mamo	911526529	abemic/2006@yahoo.com
26.	Evergreen Farm	Roses	Debra zyeit	Edwin	(251) 911304967	friendship.flowers@yahoo.com
27.	Rainbow Colours	Roses	Debra zyeit	Hiwot	0912 125065	Hiwot.Ayaneh@yahoo.com
28.	Sher	Roses	Ziway	Tedessa Kelbessa	0911 389729	rainfarm@yahoo.com
29.	Braam Farm	Roses	Ziway	Ramesh Patil	0912 131940	braam.roses@hotmail.com
30.	Sher Koka Farm	Roses	Ziway	Ben Braam	0920 746270	
31.	Ziway Roses	Roses	Ziway	Alemitu Biru	0912 097824	
32.	Herbug	Roses	Ziway	Ermiyas Solomon	0921 094373	ermiasziwayroses@yahoo.com
33.	AQ	Roses	Ziway	Hubb		hubb@herbugroses.nil
34.	Margin Par	Hypericum	Ziway	Wim		wimjr@aqroses.com
35.	Tal Flowers	Gypsophila	Ziway	Hayo Hamster	251 911505845	marginpar@ethionet.et
36.	Ewf Flowers	Hydragium	Ziway	Uri		uridago@walla.co.il
37.	Red Fox	Pelargoniums	Ziway	Humphrey	0920 351931	production-manager@ewf-flowers.com
38.	Abssinia Flowers	Hypericum	Ziway	Michael Zevenbergen	0911 490023	m.zevenberge@ethiopia.redfox.de
39.	Ethiopia Cuttings	Geraniums	Koka	Sendafa		ggh_link@ethionet.et
40.	Florensis Ethiopia	Guding plants	Koka	Scoff Morahan		scott.moharan@syngenta.com
41.	Maranque	Crysenhemums	Merjetu	Netsanet Tadasse		firdnsis@ethionet.et
42.	Freesia Ethiopia	Freesia and statice	Sebata	Mark Drissen	(251) 221190750	md@maranqueplants.com
43.	Yelcona	Hypericum	Sebata	Ronald Vijverberg	(251) 115156259	freesia@ethionet.et
				Andreas	0921 146930	Andreasndieolens@hotmail.com

TANZANIA

NO.	NAME	PRODUCT	LOCATION	CONTACT PERSON	PHONE	EMAIL
1.	Kilifi Flora	Roses	Arusha	Jerome Bruins		jbruins@habari.co.tz
2.	Mt.Meru	Roses	Arusha	Tretter	255 27 2553385	office@mtmount-meru-flowers.com
3.	Tengeru Flowers	Roses	Arusha		255 27 2553834	teflo@africaonline.co.tz
4.	Hortanzia	Roses	Arusha	Michael Owen	255 784 200 827	hortanziagm@cybernet.co.tz
5.	Kilimanjaro Flair	Hypericums	Arusha	Greg Emmanuel	255 784 392 716	greg@kilimanjaroflair.com
6.	Kulti flower Ltd	Crysenhemums	Arusha	Tjerk Scheltema	255 27 255 3138	
7.	Fides	Crysenhemums	Arusha	Greg Emmanuel	255 27 255 3148	fides@habari.co.tz
8.	Dekker Bruins	Crysenhemums	Arusha	Lucas Gerit	255 27 255 3138	info@tfl.co.tz
9.	Arusha Cuttings	Crysenhemums	Arusha	Tjerk Scheltema	255 27 250 1990	tjerk@arushacutting.com

UGANDA

NO.	NAME	PRODUCT	LOCATION	CONTACT PERSON	PHONE	EMAIL
1.	Rosebud	Roses	Wakiso	Ravi Kumar	0752 711781	ravi.kumar@rosebudlimited.com
2.	Maiye Estate	Roses	Kikwenda Wakiso	Premal		premal@maiye.co.ug
3.	Jambo flowers	Roses	Nakawuka Sisia Wakiso	Patrick Mutoro	(254)726549791	pmutoro80@yahoo.co.uk
4.	Pearl flowers	Roses	Ntemagalo Wakiso	Raghbir Sandhu	0772 725567	pearl@utlonline.co.ug
75.	Aurum flowers	Roses	Bulega-katabi wakiso	Kunal Lodhia Shiva	0751 733 578	kunal@ucil.biz
6.	Eruma roses	Roses	Mukono	Kazibwe Lawrence	0776 049987	kazibwe@erumaroses.com
7.	Uga rose	Roses	Katabi Wakiso	Grace Mugisha	0772 452425	ugarose@infocom.co.ug
8.	Kajjansi	Roses	Kitende Wakiso	K.K Rai	0752 722128	kkrai@kajjansi-roses.com
9.	Uganda hortech	Roses	Lugazi Mukono	Hedge	0703 666301	mdhedge@mehtagroup.com
10.	Fiduga	Chrysanthemums	Kiringente, Mpingi	Jacques Schrier	0772 762555	jschrier@fiduga.com
11.	Royal van zanten	Chrysanthemums	Namaiba Mukono	Jabber Abdul	0759 330350	j.abdul@royalvanzanten.com
12.	Wagagai	Impatiens-poinstia	Iwaka Bufulu Wakiso	Olav Boender	0712 727377	olav@wagagai.com
13.	Xclusive cuttings	Chrysanthemums	Gayaza-zirobwe Road	Peter Benders	0757 777700	pbenders@xclusiueuganda.com



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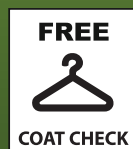
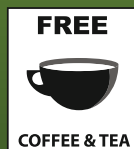
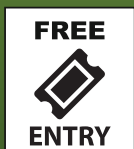
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