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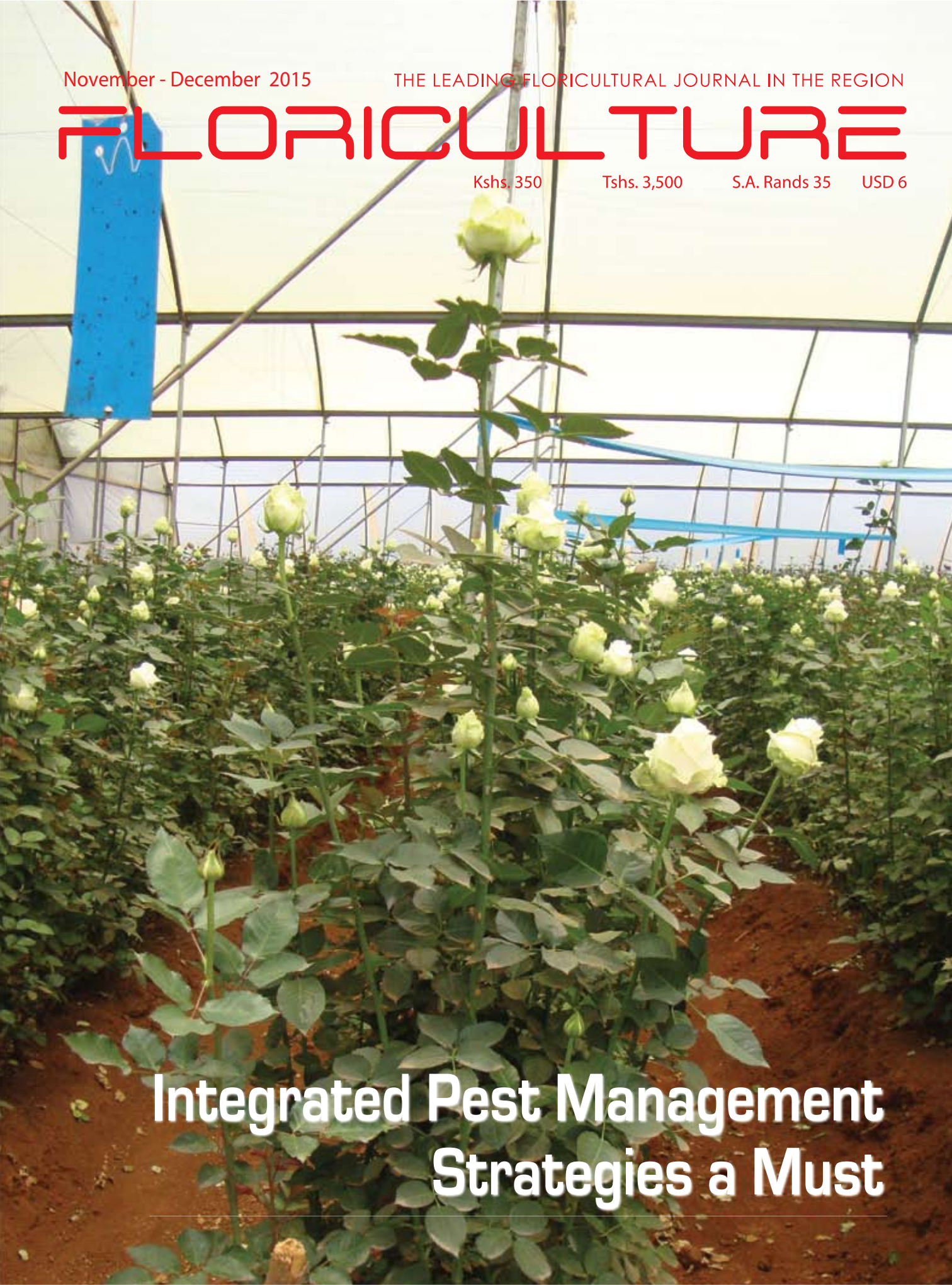

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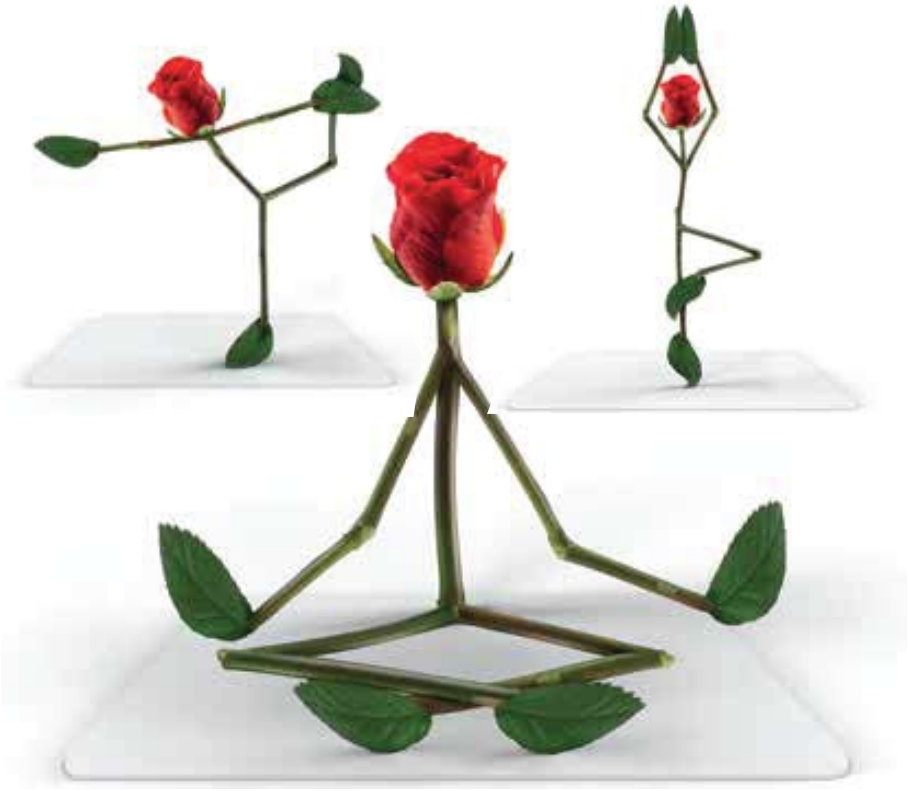

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Contents

Inside

The Leading Floriculture Magazine

Contributions to Floriculture are welcome. Although every effort will be made to return manuscripts and photographs, these are submitted at owners' risk. Opinion expressed by contributors are not necessarily the views of Floriculture.

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

Editorial

This is going to be a sort of trite editorial because I (and others) have written about this truism and often and in ways. Yet it intrigues me so much that I must write about it once again.

I am deeply fascinated by numerous utterances from a number of key global leaders. To kick start was the Republican presidential candidate Mr. Ronald Trump. He said Kenyans are thieves; they steal everything in their country and bank itin offshore accounts. I will chase them from America; this is not a hiding place for thieves in pretence of higher learning. They need to go back to their home", he said. He went on and on... Kenyans on twitter (KOT) ran amok hurling all sorts of abuses to the man who spoke what he had seen.

Near home the president of Zimbabwe, Dr. Robert Mugabe has launched a verbal attack. While presiding over a funds drive he said, "Kenyans are the most arrogant thieves in the world because they steal with high degree impunity. These people go to their schools and read good courses but they qualify as thieves. You can even think that there is a subject in their universities called Bachelor of Stealing". He went on to urge his people to be careful if they visit Kenya lest they be infected. This time round, he got a number of supports from KOT and radio talk shows.

Is this what we are, or the mirror is wrong? Our lives are the exact reflection of our own selves. When one goes through the daily newspapers or even listens to news channels, he gets exact what Mr. Trump and Dr. Mugabe are saying. We steal with impunity not caring on the effect of our actions. Life is a mirror which always reflects what we think, how we feel, what we do and-especially-what we really are.

This is a sobering thought. It should cause us to pause in our day's mood to witness our reflection in the mirror of our lives. Are we happy to be addressed as the global thieves? But not all of us are, so this should be directed to the right people.

The farmers whom I represent are slowly been anaesthetised. Recently announced tax measures hit them directly. They use cars, their supervisors use motorbikes, their children take sodas and juices etc. These measures are coming up at a time when the dollar is unpredictable and above all interest rates are skyrocketing due to internal borrowing. They do not control the markets, they compete with growers from countries whose governments are subsidizing their growers.

Honestly we cannot go deeper than that. If we do not like what we see in life's mirror-we can always change it. Simply by changing us. Will we?

Masila Kanyingi

FLORINEWS

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Floriculture Team

New 10 Ha Sized Farm For Mzurrie Flowers

Mzurrie Flowers is expanding their business with a new 10 ha sized farm. This farm will be added to their three existing farms which are all located at different altitudes in Kenya. The new farm is the highest og all located at an altitude of 2,160 meters which will enable them to grow bigger headed varieties. The new farm will not only increase their annual production by 15%, but also their product range.

"We will better satisfy the needs of our customers, who are mainly situated in the United Kingdom, Russia, the Netherlands, Australia, and the Middle East among other countries," says Irene Njeru, Sales and Marketing Manager at Mzurrie Flowers.

Planting already started

Currently, the new farm which is located in Bahati is under construction with each greenhouse being of 1ha size. Eight greenhouses have already been constructed with 2ha having been planted already. "In February 2016, we hope to have full production for the 10ha. And when there is a good demand for the products from this farm, we have the possibility to gradually expand it to 30ha or even more," says Raphael Mulinge, General Manager Winchester Farm.

Four farms in total

The new farm will be the fourth farm of Mzurrie and is called Winchester Farm Bahati. The three other farms are: Winchester Farm Karen, Maji Mazuri Flowers and Molo River Roses. Mzurrie will showcase their products at the IFTF in Vijfhuizen, the Netherlands, from 4-6 November 2015 and can be visited at stand number C2.16.

KENYA: Third Globally in Flower Production

Kenya ranks third in the world in flower production after Colombia and Ecuador.According to the Kenya Flower Council, the country's production now accounts for seven per cent of global production. CEO Jane Ngige said the sector has grown in a few years, despite problems. "The country's flower growth has risen from zero to seven per cent in the global market in 15 years," she said. Ngige said in 2014, flower production rose to 130,000 tonnes worth Sh54.6 billion from 120,000 tonnes worth Sh46 billion in 2013. She attributed this to good farming practices.
Ngige said the image of the flower sector has improved in a few years. The CEO spoke at Simba Lodge in Naivasha during the launch of a new fungicide, Luna Tranquility, by Bayer company. Despite the rise in flower production, Ngige said the future is gloomy due to a projected drop in production. She said the markets excess and the fluctuation in currencies, mainly the dollar, hurts flower farmers. "Flower farmers procure through the dollar, which is not stable, but we get the returns through the euro which is currently relaxed," Ngige said.

The high tax regimes from the county and national governments are a challenge, she said. The expected El Niño rains might damage infrastructure and lead to an increase in flower diseases, Ngige said. "The coming year will be a difficult one... If we can hit last year's target, then we shall be comfortable," she said.

Bayer head of marketing in East Africa John Kanyingi said the new fungicide will contain mildew disease, which is responsible for 40 per cent of the cost of production. With the chemical's use, production costs could drop to around 20 per cent, he said. "The mildew disease was developing resistance but Luna Tranquility will address that as flower farmers spend 70 per cent of their budget in dealing with diseases," Kanyingi said.

Horticulture Focused too Much on Cost

Many entrepreneurs of medium-sized businesses in the greenhouse sector are primarily concerned with lowering the cost of their product instead of innovation of their business model. According to research by Erik de Rooij, business consultant DLV Plant.

He interviewed fifteen growers on the development of their business model and during a session on dynamic entrepreneurship. De Rooij quizzed traders about the structure of their business, the mode of management, production and technology companies, markets, the level of cooperation and how they interact with their environment and business strategy.The characteristic of mid-sized businesses is that entrepreneurs are mainly operational. "The cultivation and the technology companies focus on a lot of weight and low cost."

FLORI BRIEFS

Calcium chelated with amino acids improves quality and postharvest life of Lisianthus

Lisianthus is one of the most important specialty cut flowers in the world. Various greenhouse conditions and inadequate evapotranspiration can disturb the transport of calcium and impair its uptake by plants. A study aimed to compare the effects of calcium amino acid chelates and calcium chloride (CaCl2) on flower production, quality, and postharvest life of cut 'Cinderella Lime' lisianthus.

Therefore, nutrient solutions containing calcium amino acid chelates (1%) were prepared using calcium and equal concentrations of lysine, threonine, or methionine. The control treatment was a solution without amino acids and calcium. Calcium concentrations of flowering stems were significantly higher in plants treated with calcium amino acid chelates than those treated with amino acids or the control treatment.

Treatment with calcium methionine chelate led to significantly higher flower numbers compared with treatment with free amino acids and the control treatment. Moreover, calcium amino acid chelates effectively improved the fresh and dry mass of the flowering stems in comparison with the control plants. In summary, among all calcium sources, calcium lysine chelate could most effectively enhance the postharvest life of lisianthus cut flowers.

Netherlands: Air France-KLM-Martinair Cargo present at IFTF

When shipping perishables in general and flowers in particular, you need a cargo partner that will keep them cool and fresh. Air France-KLM-Martinair Cargo is the dedicated air cargo business of the AIR FRANCE KLM Group. AFKLMP Cargo offers a wide range of air transport services, providing seamless connections throughout the world, with more than 250 destinations in 116 countries.

With their vast experience in servicing top flower markets like Kenya, Ecuador, Colombia, and of course, the Netherlands, they have been a constant presence at the IFTF for years.

Kenya: 4,000 Visitors at Naivasha Horticultural Fair 2015

NH Fair ended on a high note," says Richard Marconell of the Naivasha Horticultural Fair. This two-day event, held from the 18th till 19th of September 2015 in Kenya, attracted about 4,000 visitors.

On the final day of the show, four companies and three sponsors were awarded. Amiran Kenya Ltd received the award for Best Stand Overall, Specialised Fibreglass Ltd for Most Innovative Stand, KCC for Best Charity Stand and Preesman Kenya Ltd for Best Flower Stand. The sponsors' awards went to Nation Media Group, CFC Stanbic Bank, and Greenlife Ltd.

On behalf of Preesman, Jeroen van Marrewijk and Emeritus Kasee received the award for the best stand from Sally Share. "A lot of visitors visited our stand on both days and we received a lot of positive comments and compliments for the wide and nice assortment." 185 exhibitors from all over the world showcased their products and were pleased with the amount and quality of visitors. According to Wout Oor of Olij Breeding, one of the exhibitors, the fair was visited by many and high quality people. Parallel to the Fair, Olij Kenya Roses also organized an open house. "Also the open house attracted many visitors," said Wout Oor.

Zimbabwe: Fresh produce exports grow

Zimbabwe has recorded massive growth in fresh produce exports to the European Union

Zimbabwe's horticultural industry has been on a rebound since 2010 following successive years of recession, which started on the turn of the millennium. Air cargo exports have been rising since 2012 mainly driven by vegetables and flowers. and with the continued growth in exports, Zimbabwe, has started sea freight shipments, Mr. Moyo said.

At FHTF and IFTF 4-6 November, the Netherlands: De Ruiter celebrates 100 years of breeding

In over one hundred years of existence De Ruiter has been continuously working on the development and improvement of the product rose. Started as a family

business, the company has grown into an organization with national and international reputation in the field of processing of all types of roses for the world market.
The more than 100 year dynamic history of De Ruiter connects the knowledge and experience to modern know-how and thus an excellent breeding ground for the future.

"We celebrate this history of 100 years of breeding activities and our existence, the more reason to "unpack" our stands at the trade fair Aalsmeer and the IFTF in Vijfhuizen. On November 4th we pay attention to the past and the future of De Ruiter by an evening party for invited guests."

During the three exhibition days the De Ruiter Innovations team present products, along with the knowledge of the players from both backward integration and forward integration, who have been the basis for these new developments.

'We look forward to meeting you at the Trade Fair Aalsmeer booth # 6.20 and the IFTF in Vijfhuizen show booth # B2.17.'

New promising codes at Olij East Africa

Naivasha was abuzz with floral activity and more on the weekend of 18th & 19th September; this was during the Naivasha Horticultural Fair. On the days before, during and after the fair, Olij East Africa held open days where rose growers from Kenya and the larger East African region visited to see the breeder's assortment.

Check out for two new codes with very good growth and potential trade attributes. Two commecially succesful pink Olij roses were displayed at the show and the breeder's showhouse in Naivasha.

Jan Spek at Naivasha Horticultural Fair 2015

During the just concluded Naivasha Horticultural Fair, Jan Spek Rozen showcased their assortment at the fair as well as at the Olij breeding showhouse during open days that ran concurrently with the show.

Speaking to Philippe, he felt very confident about this code with a lemony yellow colour saying it has already attracted quite some interest from a good number of rose growers in the East African region. Code 12 1195-03 is currently under trials at various farms as it is poised to be introduced commercially in the coming days. With its qualities, this might just be the yellow variety to look out for in future.

Kordes Roses Evita; a premium white

Kordes Roses East Africa is based in Karen Nairobi and serves as the hub for new variety selection and sales in the East African region. Commercial testing of new varieties in East Africa is facilitated at Kreative Roses. At Kreative Roses new variety selections are planted in commercial trials in order to prove technical characteristics and market potential, offering customers reliable information as basis for new variety decisions. Evita® one of their 2015 novelties noted to be similar yet more productive than their well known winning variety, Athena®. The medium sized Evita is a premium white with good production, a long stem and other notable growing and trade characteristics.

Evita at a glance
Production of stems/m²/a 240-280
Stem length 40-60 cm
Vaselife 18 days

All Breeders briefs and Photos courtesy of flowerweb. For more details visit : www.flowerweb.com

The Dummen Orange style at Naivasha Horticultural Fair

Earlier in the year, Dümmen Orange unveiled their new brand which brought under one umbrella several companies in more than 16 countries around the world. Known for their distinct orange look, the company took part in this year's Naivasha Horticultural Fair for the first time as Dummen Orange.

White city (picture above) is one among other varieties in Dummen's city range which is specially bred for the direct retail market. The entire rose assortment from Terra Nigra is also now available at Dümmen Orange in Naivasha.

"We are seeing quality roses from East Africa" - Fresco Flowers

Kenyan rose growers and breeders have earned a pat on the back from one of the utmost authorities in floriculture trade. Gerjan Telleman, Founder Director of Fresco Flowers says there has been great improvement in quality of cut roses coming from the East African region.

"Kenyan and Ethiopian rose growers enjoy a relative advantage compared to their South American and European peers since they are able to achieve large-scale production of good-quality flowers for competitive prices," said Gerjan during an exclusive interview with Flowerweb.

"The quality and level of production of cut roses from East Africa is getting better and better," he adds. "Rose breeders are coming up with good new roses while growers are using more innovative methods in rose growing. We are now witnessing roses with good color, bigger head-sizes and commendable vaselife."

On the impending El Niño rains expected in Kenya later this month, Gerjan says prices of roses might shift significantly owing to an inevitable reduction in volumes.

"We hope to work with our growers and see how to best achieve consistency during the El Niño period," says Gerjan. Some of the rose growers represented by Fresco Flowers include Timaflor, Lolomarik, Kisima, Ol-Njorowa, Mt. Kenya flowers, Rift Valley Roses, Nirp East Africa, Alani and Linssen Roses. Fresco Flowers uses channels of FloraHolland; the auctions clocks and direct selling. Fresco Flowers will be present at the FloraHolland Trade Fair Aalsmeer set for 4-6 Nov 2015 booth nr: 15,5 and is also one of the key partners at the special florist event, IFTF World of Flowers in Vijfhuizen.

Plantas Continental showcase their assortment at Naivasha H Fair 2015

Spanish rose breeders Plantas Continental have a show/trial house located at the slopes of Mount Kenya in Timau within the confines of Uhuru Flowers. The company was present at the Naivasha Horticultural Fair 2015 where they displayed a splendid array of their varieties.

Schreurs Rose Double Date! Unveiled in partnership with TIMAFLOR

Timaflor chose the rose Double Date! especially because of her attractive and catchy bi-color, good production figures as well as classic shape and headsize. The Timaflor Double Date! stems are being sold through the Aaalsmeer auction under the watchful eye of Gerjan Telleman and his team at Fresco Flowers BV. Timaflor Farm is located on the fringes of Mount Kenya in Timau area, and sits at an altitude of 2,400 m ASL. Timaflor farm is a family business headed by a formidable father & son team of Simon and Simon jr V/D Burg. The farm currently has 96ha under roses.

Panalpina To Acquire Airflo From Dutch Flower Group

International freight forwarding and Logistics Company Panalpina is to acquire a majority stake in Airflo, a company based in Kenya and the Netherlands specialized in the export handling of flowers and vegetables. Airflo is part of Dutch Flower Group (DFG), the world's largest flower and plant trader. The acquisition reflects Panalpina's continued expansion in Africa and its increasing focus on the perishables business.

Panalpina World Transport Ltd. will acquire a majority stake in Airflo from DFG, subject to conditions. The two companies reached a respective agreement on November 4, 2015.

Airflo is Kenya's second largest air freight forwarder, specializing in the world-wide export of fresh cut flowers, plant cuttings and vegetables, with a focus to the Netherlands and the UK. The company employs a total of 167 staff in Nairobi and Aalsmeer. It organizes up to 1,500 temperature-controlled shipments per week from Kenya, totalling more than 40,000 tons of fresh cut flowers, especially roses, each year.

"The acquisition of Airflo further expands our presence in Africa and makes us an important player in the Kenyan flower market," says Peter Ulber, Panalpina's CEO. Kenya, where Panalpina set up its own operations at the beginning of the year, is one of the world's key export markets for food and floral products. Fresh cut flowers accounted for more than 60% of Kenya's total air freight exports in 2014.

Dutch Flower Group consists of 30 companies, which generated total revenues of € 1.3 billion in 2014. Airflo is the group's only company involved in the transport and logistics of perishables. "Our core business is the global trade of fresh cut flowers and plants. We have therefore decided to divest a majority share in Airflo," explains Marco van Zijverden, CEO of DFG. "However, managing the cool chain for fresh cut flowers is a crucial component of our success. By going together with a strong global player such as Panalpina, we can ensure that all customers – growers, importers and retailers – will continue to receive the quality service that they are used to. We will further strengthen the supply chain and benefit from Panalpina's global expertise."

Airflo's services in Kenya include quality control after products have been delivered to its Nairobi warehouse by growers, palletizing and delivery of the secured goods ready-for-transport to the ground handling agent at Jomo Kenyatta International Airport. This all happens in a temperature-controlled environment, including the use of a vacuum cooler to cool fresh cut flowers down to 4 °C in a matter of minutes. Airflo coordinates its shipments with the airlines, takes care of customs clearance at Amsterdam Airport Schiphol and onward distribution.

"We are excited about this acquisition," adds Colin Wells, global head specialty vertical perishables at Panalpina. "Kenya's flower business is literally flourishing, with expected annual export growth rates of around 5%. While it is seasonal, it is also characterized by substantial air freight volumes on routes from South to North, counterbalancing the flow of dry cargo, which is typically flown the other way."

DFG and Panalpina have agreed not to disclose any financial details of the deal. The acquisition is subject to approvals by the Kenyan and Dutch authorities.

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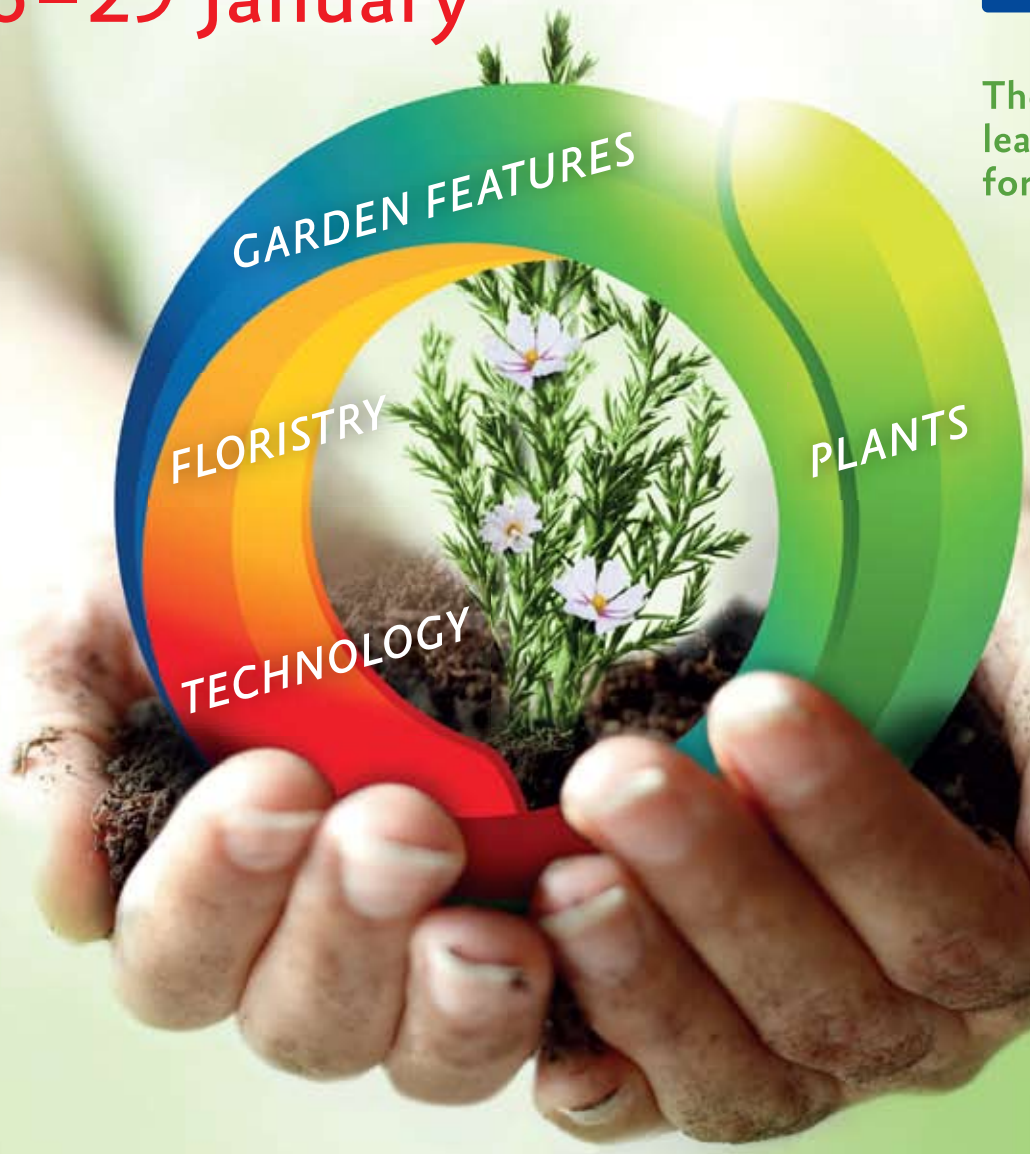

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MESSE ESSEN

Integrated Pest Management Strategies A Must

By George Mosingi

IPM Strategies

To address an actual or perceived pest problem, one must first develop a strategy. An IPM strategy is a plan for management that uses a particular type of approach to address the pest problem. Tactics are the methods used to achieve the goals of your strategy. The strategy should try to embrace all three principles of IPM if possible. Upon discovering a pest in your cropping system, the IPM strategies that you may employ can be part of three possible responses:

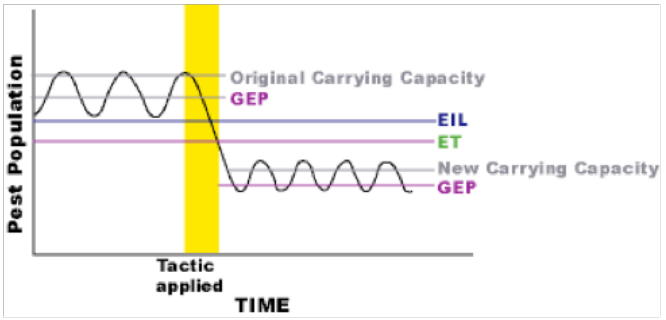
1) No action,
2) Reduction of the pest population, or
3) Reduction of the host crop's susceptibility.

No action is obviously the plan of action when there are no potentially damaging pests in fields. It can also be used as a strategy when pests are present, but their injury is not resulting in damage or damage is below the EIL. This management option requires diligent scouting and considerable amounts of sampling. The "no action" management option is a sound practice provided your scouts are attentive to changes in pest populations and the crop environment, and are prepared to respond to pest populations approaching the EIL..

Reduction of the pest population is employed when pest numbers exceed the ET or show potential to rapidly reach this action threshold. This can be accomplished by changing the pest's potential reproductive rate and/or its potential survival rate. The general equilibrium position (GEP) of a pest species is relative to the long-term average density of the pest population. If the GEP of the pest is typically considerably lower than the EIL, then management tactics need only be applied to dampen peaks in the pest population that may exceed the EIL. Traditionally, these peaks have been dampened through the use of pesticides. The pesticides reduce the population spikes through outright mortality or reduced fitness and reduce the potential survival rate of the pest. This tactic will lower the pest's GEP in a location where this tactic is consistently used, but the repeated applications can be detrimental to the environment and greatly increase the potential for resistant biotypes.

IPM tactics include the prudent use of pesticides, but they also include a battery of other tactics that can decrease existing pest populations and/or reduce their reproductive potential. If a pest population's GEP is consistently near or above the EIL for a given variety, then strategies that lower the pest's GEP should be employed. By lowering the overall GEP of the pest, peaks in the population are less likely to exceed the EIL. Non-pesticidal approaches to lowering GEP include three main strategies:

1) Reduction of the field's carrying capacity,
2) Reduction of the pest's reproductive potential, and
3) Reduction of the pest's survival rate.



The above Graph represents a management tactic that lowers the carrying capacity of a host crop and effectively lowers the pest's GEP. EIL, economic injury level; ET, economic threshold; and GEP, general equilibrium positions are shown.

The general goal in reducing the carrying capacity of a field is to make the environment less favorable for the pest to complete its life cycle. This can be accomplished in a variety of ways. Planting of resistant varieties, rotation with non-host crops, crop sanitation, tillage practices, and other manipulations of the field environment can affect the field's carrying capacity for a pest. The reduction of carrying capacity automatically lowers the position of the pest's GEP. The amount the GEP is lowered is relative to the efficacy of the strategies used to lower carrying capacity.

Using strategies that reduce the pest's reproductive rate or efficiency can lower the GEP without lowering the carrying capacity of the field. These strategies include sterile insect release and chemicals that interfere with normal reproduction in the pest species. The result is suppression of new generations of the pest without affecting the favorability of the environment for the pest.

Reduction of the crop's susceptibility is a highly effective strategy, but is limited by the development time of breeding efforts and the speed at which pest populations overcome host resistance. Here, the crop's properties are modified so that the crop plant is not as favorable a host to the pest. These alterations or modifications in the plant's phenotype or growing environment usually inhibit at least one stage in the pest's life cycle. Selecting crop varieties that possess resistance or tolerance to a pest is an effective strategy, provided it is alternated with other tactics. Consistently using one resistance mechanism against a pest population leads to heavy selection pressure and the evolution of resistant populations of the pest. If a crop variety possesses tolerance, the plant is usually able to withstand moderate to high pest populations without the resultant injury resulting in economic damage. Tolerance does not typically lower the GEP of the pest. Resistance is an inheritable factor that when expressed, interferes with the feeding

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preferences or life cycle of a pest. A resistance factor that is uniform in the crop plant population will usually lower the GEP of the target pest. Combining more than one of these strategies can greatly enhance the effectiveness of your pest management system. Using multiple tactics is an important part of IPM and typically provides more consistent pest management. Other tactics in a multi-tactic strategy may compensate for failure of an individual tactic and prevent severe losses. Alternating or rotating tactics within these management strategies will further improve your program by preventing the evolution of resistance to a single pest management tactic. Multiple tactics may also impart a synergistic effect that provides added suppression of pest numbers and injury.

Most crop pests fall into four major categories: Sub-economic, Occasional, Perennial and Severe pests.

Sub-economic pests have a low GEP and they do not exceed the EIL. Their damage does not usually warrant action (no action tactic), but if other sub-economic pests are present at the same time, action may need to be taken against the pests.

Occasional pests have a GEP that is significantly below the EIL, but they can develop population peaks that exceed the EIL. These peaks are sporadic and are driven by favorable environmental factors and host susceptibility. Reduction of the pest population is the management strategy most often used. Management of occasional pests requires routine scouting of crops to detect problem populations that may only be present every few years or at various growth stages of the crop.

Perennial pests have a GEP that is relatively close to the EIL and pest populations often, with favorable conditions, exceed the EIL in most years.

Severe pests have a GEP that is constantly above the EIL. As soon as a population of a severe pest is noticed, economic damage is usually occurring. Reasons for the GEP being higher than the EIL include dense spatial populations of the pest, high market value of the host crop, high (often lethal) injury by the pest, and other host-pest interactions that are unacceptable in the cropping system.

Management strategies for the control of pest populations are governed by the biological principles of the pest. Understanding all aspects of a pest's biology (biochemical, morphological, reproductive, ecological niche, etc.) will help you understand how existing management strategies work and how to troubleshoot a system that is not giving acceptable results. A key concept to learn for any pest you wish to control, is the organism's life cycle.

Prevention Tactics

Curative Tactics

Curative tactics are applied when a pest has already established itself in a field and the damage or potential for damage indicates action should be taken. This action, or "curative tactic", usually involves significantly reducing pest numbers in order to lower the GEP of the pest population.

The four groups of curative tactics are as follows:

Physical Intervention by Humans

This type of curative tactic may well have been the first used by pioneer agrarians. Physically removing or crushing pests as they were encountered in crops may or may not have had a dramatic effect on their populations, but early agronomists recognized that allowing them to feed and reproduce could mean even greater losses to their food crops. Today, this type of tactic is still used on specialty crops or where the pest is easily recognized upon introduction to the crop. For diseases, this usually encompasses rouging of diseased plants during the season or excising (pruning) diseased organs from affected plants. For insects, this includes hand removal of insects, larva, and pupae as well as mechanical sweeping, and trapping of insects. Weeds are represented in this category by hand weeding, and mechanical cultivation.

Biocontrol/Natural Enemies

Biocontrol is basically managing pests with the use of biotic factors. These biocontrol factors often consist of pathogens and parasites or other natural enemies of target pests. Many pests and pathogens that we consistently see in our fields would be much worse if it were not for natural enemies of the pests that provide a dampening effect. This dampening effect on pest populations is almost always present in some form, but with the use of biocontrol agents the dampening effect can be enhanced. This enhancement of mortality and/or loss of fitness can be implemented so that its effects occur throughout the season, or with some biocontrol agents the impact is sudden and can reduce population peaks with timed application. Biocontrol organisms can help manage pest populations by competing with the pest for resources, or by parasitism or predation of the target pest species. Specific biocontrol strategies for crop pests will be presented in subsequent materials.

Chemical Control

Once considered the "cure-all" for pest problems, chemical control has come under much scrutiny by environmental regulating agencies. Consistent with the goal of reducing chemical inputs and protecting the environment, IPM strategies try to minimize the amount of chemicals applied per application and also the frequency of applications. For many pest problems, chemical control is the most practical and cost effective approach to bring population peaks back down below the EIL. In these cases, pesticides (chemicals toxic to the pests) are applied in a prudent and timely manner.

Volatile chemicals with pesticidal action are used against a variety of pest types in a process known as fumigation. Fumigation is widely used in crop storage areas and greenhouses, but it is also used to rid soil of pests. Fumigation can be quite effective for pests within the soil, but the expense of treatment usually limits its use to high value horticultural crops. Many of the volatile pesticides used in fumigation are effective on more than one pest group.

Specific chemical types in each pesticide group will be discussed as we cover management strategies for crop pests. Regardless of the chemical used, there are several considerations that need to be addressed before application begins.

- **Mode of action (MOA):** The general MOA needs to be selected so that the pesticide can target an appropriate weak point in the pest's life cycle and/or general physiology.
- **Delivery:** How the pesticide is delivered to the target pest and how it interacts with the immediate environment must be determined.
- **Selectivity:** Will the pesticide only affect the target pest, or will other organisms at the site be negatively affected?
- **Resistance:** How many times has the pest population been exposed to this pesticide before? How effective has the response been over time? Is there strong potential for the buildup of resistance in the pest population to the pesticide?

Part 2 of this article to be continued in the next issue

The Writer is an IPM consultant
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Mitey Revolution

By Henry Wainwright
Real IPM

If you asked a rose grower ten years ago what was their greatest pest problem they would immediately say red spider mite. A problem because of the challenge in controlling the pest and the cost, often more than 50% of the crop protection budget would be spent on spider mite control. However there has been a revolution in the strategies used and costs incurred for the control of mites in Kenyan roses. The new technologies involved are broadly three; the use of organosilicon sprays, the use of predatory mites and the application of biopesticides – insect killing fungi.

There are three main types of mites that attack crops in Kenya. *Tetranychusurticae* that is found on a wide range of crops in Kenya including roses and carnations. *Tetranychusevansi* whose origin was South America but was introduced into South Africa in the 1980s and is now a major mite of *solanaceous* crops (e.g. tomatoes and egg plant) in Kenya. Finally there are the group of mites known as broad mites or *Tarsonemid* mites which are tiny mites, less than 0.3 mm long and virtually impossible to see with the naked eye. These attack crops like strawberries, runner beans and passion fruit. However it is *Tetranychusurticae*, the red spider mite or two spotted mite that is the bain of the Kenyan rose grower.

Organosilicon spraying

The *organosilicon* products were originally developed as adjuvants, that is a substance that is mixed with a pesticide to enhance its effectiveness but is not a pesticide in its own right. For instance *organosilicons* will act as a spreader and enables greater retention of the pesticide on the leaf of the plant. However by increasing the concentration of organosilicons such as Silwet up to around 0.5 %, they could kill the spider mites when used alone. Their mode of action is to disrupt the cuticle of the spider mite causing the mite to dehydrate and die through desiccation. However the effect on mite eggs was minimal so repeated spraying is necessary. The low cost organosilicon wetters were rapidly adopted by growers for mite control as they were cost efficient, effective, had a rapid knock-down, left no residue and were entirely compatible with existing spray techniques. As a consequence conventional miticides were rapidly substituted with organosilicons. However the down side of their use was that plants reacted and closed down their stomata, transpiration was reduced and then growth. A consequence of frequent use in roses was that the stem length reduced and the quality of leaf declined.

Natural enemies

There are a large range of natural enemies of spider mite and many are produced and sold globally. However the star of these is the predator *Phytoseiulus persimilis*. This is another spider and only predates on spider mite and no other animal. The main advantages of using *Phytoseiulus* is that it consumes more spider mite than any other predator, reproduces quickly and can seek out the spider mite where they may be hiding in the crop. Once the sider mite has been finished, the predator either starves to death or becomes cannibalistic, the consequence is that the crop is left clean of mites and predators. The disadvantage of *Phytoseiulus* is that it likes humid conditions to flourish and needs to be re-introduced when the spider mite returns. However this predator is a world beater and is used globally in a huge range of crops from tomatoes, to cucumbers to roses.

The second group of spider mite predators are *Amblyseius* species, *A.californicus* and *A.andersoni*. These work as generalists as they can consume not only spider mite but other prey and even fungi and pollen on occasions to remain alive. Their combination with *Phytoseiulus* offer a good back-up as they are always present in the background. However they are not as efficient as *Phytoseiulus* and cannot cope with large populations or spider mite hot spots in a crop. *A.calcifornicus* seems to be suited to the warmer and drier climates whilst *A.andersoni* likes the slight higher altitude

An adult Amblyseius californicus attacking an adult two spotted spider mite.

cooler conditions. The main adva ntages of using predators are that the crop is cleaner as the predators seek out the pest, they eat all like stages of mites from eggs through to adults, the crop quality is improved as spraying harsh chemicals is reduced and

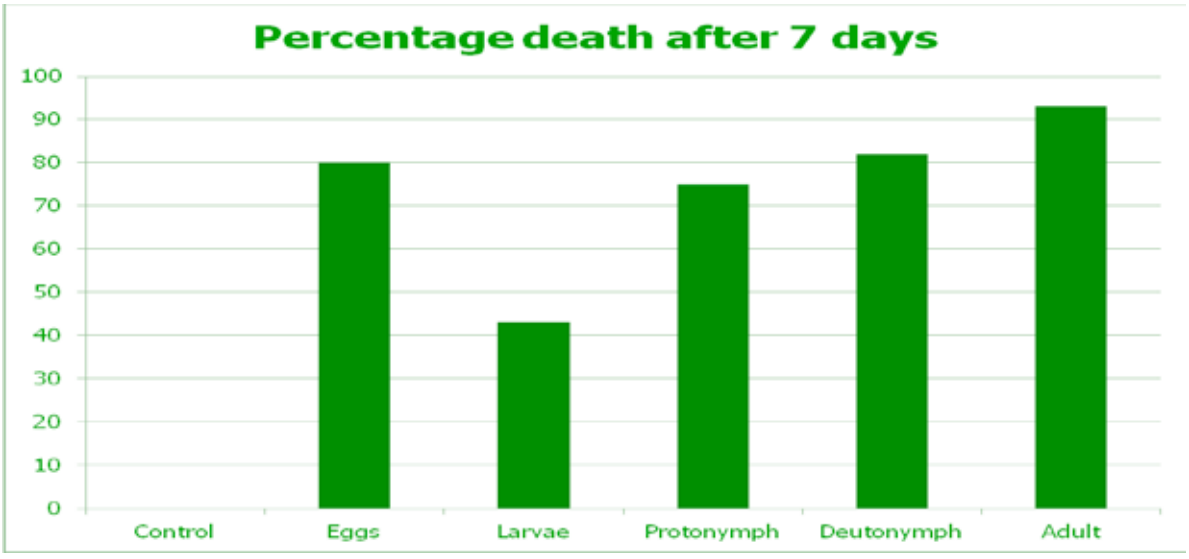
the plant's growth responds with longer stems and larger flowers. However crop scouting is critical to ensure hot spots are treated rapidly and knowledge of the compatible spray programmes is essential. Though not as cheap as an *organosilicon* programme the benefits of superior crop quality can be an advantage. *Organosilicons* can be used in combination with predators, and though they kill predator adults, they leave no residue and predators can be re-introduced immediately after an *organosilicon* application.

Biopesticides.

Biopesticides are mainly beneficial microbes, and mainly fungi and bacteria. These can be insect or disease killing microbes. Two widely available microbes for use on mites in Kenya are *Metarhiziumanisopliae* and *Beauveriabassiana* however they are strain specific and only certain strains of these fungi will kill mites. Like *organosilicons* these are sprayed onto the crop and rely on contact, as the spore lands on the mite, germinates and grows inside the mite hence killing them in three to four days. Another benefit is that they can kill all life stages of spider mite (Figure 1). However these biopesticides are very selective as they do not kill or affect the predators. Surprisingly not many fungicides will affect these biopesticides so they can be used when growers are using a fungicide spray programme that is not compatible with the predators, for instance in a high risk downy mildew period to hold the mite population until the predators can be re-introduced. Similarly biopesticides can be used when predator incompatible chemicals are usedfor thrip control.

The last ten years has seen a dramatic shift in control of spider mites in roses away from conventional chemistry, that is pesticides towards adjuvant based products like organosilicons and biological controls. An advantage of all three strategies is that spider resistance to these strategies is unknown unlike many conventional pesticides. By moving away from pesticides an additional benefit is that when needed the conventional pesticides works better as the spider mites are not resistant. Also safety for the operators, environment and consumer has been enhanced as the number of pesticides used has reduced. The cost of spider mite control for the growers has declined to well below 40% of their total crop protection budget. Clearly every grower has their programme and integrates the above technologies differently, however Kenyan growers have shifted their whole approach to spider mite control in the last ten years away from conventional pesticides to a softer and safer approach.

Figure 1. The percentage death of different stages of spider mites when treated with the biopesticide Achieve (a.i. *Metarhiziumanisopliae*)



The writer is a director with Real IPM

Biological Pest Control Products Help Farmers to Meet the Challenges of Producing for Export Markets

By Chris Kolenberg

Today's farmers face many challenges in protecting crops from fungal diseases, but especially problematic are insect pests. A manager of an export flower farm finds him or herself, as the case may be, often caught between a rock and a hard place. On the one hand there are rigorous sets of rules and regulations imposed by the European Union and other export destination countries regarding which pesticides may be used, how much of it, and when the last application may take place. On the other there is a pest multiplying at an exponentially rate in the flower crop causing losses that increase by the minute, it seems. Breaking the rules may endanger a whole shipment. It may be rejected in the destination country because of exceeding the maximum residue level (MRL) or because of the presence of a banned pesticide, detected either by government inspectors or during testing on behalf of consumer or retail chain organizations. In either case financial losses are severe and the manager's job may be in jeopardy. This is the situation faced not only by managers of flower, but also of vegetable export farms.

To make the right decisions on when and how to intervene is certainly not an easy task and farm managers look for all the help they can get. The manager usually has a team of scouts which report on pest and disease levels and either based on previous experience or in some cases based on established formulas regarding the economic damage threshold decides when to apply a pest control product. Biological control or bio-control products for short aid the farm manager by providing additional pest management options.

Bio-control products generally have the following characteristics: They are safe for the applicator, the consumer and the environment, they face no MRL restrictions and resistance development is unlikely. Chemical pesticides on the other hand vary strongly in safety; while some are quite harmless (and usually expensive) others possess high toxicity levels. Many of them, the broad-spectrum insecticides, kill the target as well as the beneficial insects, such as pollinators, parasitoids and predatory insects which play an important role in keeping the pest in check. Especially many of the older synthetic chemicals are no longer effective since target insects have developed resistance. Populations that are resistant against the new chemistry will also quite easily develop and therefore farmers are limited in the frequency of sprays and use rotations which incorporate often bio-control products.

Ten years ago there were only a handful biological products registered in Kenya. Now this number is more than fifty for agricultural use alone, which is far more than in most other sub-Saharan countries and even more than in some so-called developed countries. The vast majority of these are insecticides and they are primarily used in greenhouses. In certain cases biological control products act as a stand-alone solution, in other cases they are an integral part of a systematic approach to manage pests and diseases, integrated pest management or IPM for short. We at Kenya Biologics are proud to be playing a role in delivering pest control products that are safe and effective.

The following are a few examples may illustrate the increasing role of biological control in pest management in Kenya.

• Spider mites.
In roses and other crops spider mites have been a perennial problem. Large amounts of synthetic-chemical miticides have been used in the past, while currently several species of predatory mites on the market manage the problem quite convincingly. These predatory mites are successfully employed by almost all export flower farms.

• African bollworm (Helicorverpa armigera)
The caterpillar of this moth targets specifically the flower and the fruit and is a very serious pest in roses, French beans, tomatoes and a host of other crops. An insect-specific *baculovirus, Helicoverpa armigera* singly embedded nuclear *polyhedrovirus*, mouthful and therefore usually abbreviated to HaSNPV, controls the African bollworm. It is sold as HelitecTM, and selectively controls the African bollworm. It is completely safe for humans. To illustrate this fact a few years ago in the Ivory Coast a factory manager drank a pint of concentrated baculovirus suspension in front of his production workforce. Also beneficial insects and the environment are not all affected. Helitec may be applied up to the moment of harvest, and there are no MRL issues, it is used by flower growers, sometimes as a stand-alone product and sometimes in rotation with chemical treatments in order to avoid pest resistance.

• Tomato leafminer (Tuta absoluta)
This, for Kenya, new and emerging moth species has devastated tomato crops both in greenhouses and the open field in Kenya. Small caterpillars mine the leaves, fruit and stem of tomato plants leaving a crop that looks as if scorched by fire. A trapping system, TutracTM is available in Agrovets. It is based on attraction of male moths by the species-specific sex-pheromone of T. absoluta emitting from a lure above a sticky paper. Male moths which are ready to mate are trapped on the sticky paper. When *T. absoluta* pressure is heavy Tutrack efficacy may be increased by application of certain chemicals attacking the mining caterpillars in addition to control of the adults by trapping. However, practice has shown that chemicals alone cannot adequately control this pest.

We expect that the use of bio-control products will further increase in the future. The driver in this development remains the regulatory climate of importing countries, where MRL limits are often set at the detection limit of their equipment. Bio-control use in farming for the domestic market is still in its infancy, but we believe that it will be increasing faster in the near future as among Kenyans awareness of the importance of residue-free produce is growing.

The headaches of export farm managers are not over yet. Their job remains complicated, but with the additional tools to combat pests and diseases there is certainly less for them to worry about.

The writer is the CEO Kenya Biologics

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Fresh From Source: Fresh flowers from source to your doorstep!

Founded in January 2013, Fresh From Source (FFS) is becoming a well-known young company in the flower industry. With our experienced team based in the Netherlands with representativesin Kenya, (Nairobi) and Zimbabwe (Harare), we are able to supply fresh flowers from Africa all over the world.

Objectives

Fresh From Source is part of the Dutch Flower Group family. The company was founded with the objective of meeting the growing demands of customers wishing to get closer to the source. With FFS the customer is able to create the shortest supply chain possible. This trend, combined with the demand to meet the specific needs of the customers, led to the start of FFS. We now can conclude that we made the right step, customers as well as suppliers are happy with the concept of FFS!

Suppliers

Growers are carefully selected by FFS. The selection is based on quality, reliability, consistency and of course, social responsibility. FFS supports growers that are accredited with MPS, Fairtrade and Kenyan Flower Council.

The grower base of FFS is equally diverse. The different climates throughout the growing regions in Africa offer us the opportunity to supply very consistently throughout the year. With the wide range of flowers available in Kenya we are able to supply the annual buying requirements of our customers.

Customers

Meeting the needs of our customers is the highest priority for FFS. We are working very closely together with our local African growers to achieve this.

Our portfolio is globally spread with customers located in Russia (the ability of FFS staff to communicate in the Russian language is a distinct advantage), EMEA and Asian Pacific. We are able to supply according the customers wishes; on daily basis, weekly, on the spot or year-round contracts, everything is possible!

Partnerships

FFS is really focused on the creation of strong partnerships both with our growers and our customers. The aim is to source and supply only the freshest quality flowers as possible, and with an efficient, cost effective service. We are constantly looking to optimize this chain, therefore we also believe in partnerships across the whole supply chain. A good example is the close partnership we have with Airflo; together we make sure the flowers will arrive around the globe in the fastest, the freshest, most cost effective and reliable way.

Matching needs with supply

Matching the customer requirements with our grower base in Africa is the key role of FFS. Many customers mean many different preferences, our role is to find the best match between the needs and supply. The ability to offer the customer the full range of flowers from our selected growers is our main objective.

Consolidation and Supply chain

Our orders are planned with different growers in Africa, in order to make up the entire “basket” of fresh flowers as ordered by the customer. Our ability to consolidate shipments is a big advantage, in this way the customers are able to order a full assortment under one Airway bill which saves costs throughout the whole chain. Stringent quality control measures by dedicated technical teams at all points is integral part of our supply chain. We are offering efficient and total supply chain management, also facilitating the cold chain from the airport to our customers all over the globe. This includes temperature management at f.e. the airport, vacuum cooling and the handling of freight logistics.

Fresh From Source has a strong believe in the importance of East African growers and the role that we can play (today and in the future) in the worldwide floricultural industry.

With still an increasing number of customers wishing to purchase flowers directly from the source, FFS is ideally placed to bring the African quality growers together with the international market and vice versa.

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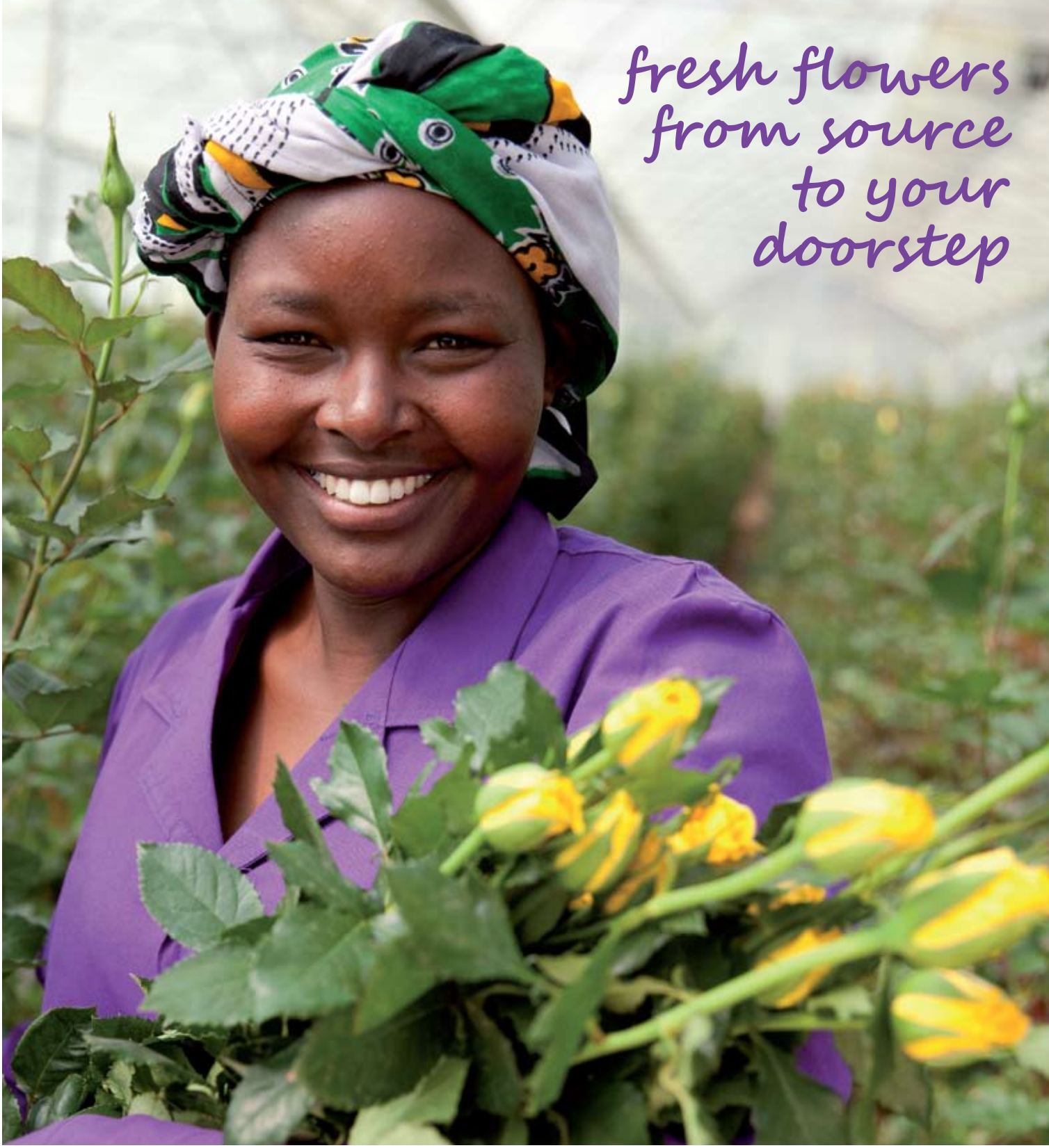

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Bayer Cropscience Launches Luna Tranquility

If You Love Life You Will Love Luna

After climbing one great hill, one only realizes that there are many more mountans to climb. This old adage attributed to one of African great rings true in agrochemicals. The past few decades have seen the rise and spread of different diseases in greenhouse farming. One man has seen it all, Mr. Anthony Songoro, Crop Manager, Floriculture and Industrial Crops Bayer Crop Science a trained horticulturalist with both agrochemical and production experiences. Before joining Bayer Crop Science two years ago, he was a grower for seven years. Mr. Songoro prides himself with a wealth of experience in biologicals. To many he is a guru in the flower industry. Recently, *Floriculture Magazine* caught up with him after giving the key presentation in Luna Tranquility Launch and in a relaxed atmosphere, he gave an interesting interview, Excerpts

Quality is never by accident; it is a result of high intension, sincere efforts, intelligent direction and skillful execution. It represents the wise choice of many alternatives, so why do you believe Luna tranquility should be that choice?

What you have seen today is all teamwork.It was executed by a team of professionals, skillful, competent and experienced who left memorable ideas, images and stories on Luna tranquility. Definite more understanding triumphed over information. It was a unique and pleasant spectacular on why Luna tranquility?

Luna tranquility is the climax of over 10 years research commitment in striving to satisfy growers by providing an outstanding new fungicide whose unparallled efficacy on powdery mildew and botrytis leads to improved produce quality, longer vaselife, outstanding disease control and increased marketability. This will be backed by an effective and efficient after sales technical services to walk the talk with our customers.

What is Luna Tranquility

Luna Tranquility is a WHO class III, broad spectrum foliar fungicide for control of Powdery mildew and Botrytis, two major diseases of flowers. The active ingredients of Luna Tranquility is a combination of Fluopyram 125g/l + Pyrimethanil 375g/l which offers unparalleled protection and control of in the field powdery mildew and botrytis and post-harvest control of botrytis.

Why do growers need Luna Tranquility?

Flower growers need innovations to manage resistance issues

due to misuse of existing molecules in powdery and botrytis management that have started exhibiting creaping resistance.

A Crop treated with Luna Tranquility has less disease pressure and a healthy and disease-free crop throughout its life will deliver higher yields and better quality enhancing flowers income and conferring to the flowers longer vase life.

A flower harvested at the right mature cut stage, is more sensitive to damage from weather, insects and in particular from botrytis. With Luna you have better control of pre and post-harvest botrytis

Full maturity and high yields are the most attractive attributes of fresh produce to the flower chain

Clean and healthy crops at harvest time are the key to growers' success

We all love open, fresh and good-looking flowers all year round an attribute Luna confers to your flowers.

What are the unique features that make Luna Tranquility such a promise to growers

Luna has unique properties:
Protects leaves and petals: Majority of active substance is on the surface for up to five days thereby protecting new infection

Continuous penetration: Small effective amounts of fungicide continue to penetrate the leaves over time thereby ensuring long curative activity

Acropetal (upward) systemicity: Redistribution of the active into

leaves by xylem ensures the young growing points that are most susceptible and covered from the disease.
Translaminar efficacy: Protection of non-treated surfaces ensuring points not sprayed are controlled by the trans laminar action.

Reduced no of sprays in wet season is something growers desire. How does Luna help in the achievement of this.

To start with a full luna spray ensures control of Powdery mildew, stem and petal botrytis. The other major problem during this period is downy mildew. Luna when tank mixed with Verita, Melody duo, or Infinito shows no antagonism and ensures all the three major fungal diseases are controlled with one cocktailed spray meaning in the high disease pressure period one can do a maximum of two fungicide sprays leaving the greenhouse more time to remaining dry and open to cultural disease control methords

What is the effect of Luna Tranquility on beneficial pests?

According to IOBC classification Luna Tranquility is harmless to most beneficial insects in flowers. These include *Phytoseilius Persimilis, Amblyseius swirskii, Encasia fomosa, Trichogramma petiosum, Aphidius colemani* among others.

Conclusion

Bayer Crop Science have not only succeeded in erecting an excellent business symbol in their local clientele but have done further to win trust among them. This was better portrayed by the hundreds who attended their lung tranquility launch.

Believably, they were not disappointed. It was a "must attend" occasion. Beside the pomp, colour and bounce the whole organization was a wholesome package of excellence. All efforts were channeled into ensuring a brief, crisp, penetrating, perceptible and above all, a creative insight into the minds of growers.

Ecuador and Colombia stood out at Moscow Fair

Fourty four flower growers from Ecuador and twenty four from Colombia were the center of attention at the international exhibition Flowers Expo Moscow 2015, which brings together major international growers and local buyers each year.

“We brought this large group to show how much the floriculture sector has grown in Ecuador. Russia is currently undergoing an economic crisis and the Russian market is in need of readjustment. That is why our growers and exporters came to talk directly with the buyers and look for alternatives for both parties to continue benefiting”, explained the ambassador of Ecuador in Russia, Julio César Prado Espinoza.

Ecuador became the main supplier of flowers (followed by Colombia) to the Russian market after Moscow banned the import of Dutch flowers in July.

Prado Espinoza says that Ecuadorian growers currently meet more than 50 per cent of the Russian market’s demand and aim to take up the space left by the Netherlands. “Holland has withdrawn its participation from the Russian market. We believe that this is the moment in which Ecuadorian flower growers can benefit by filling the space left by Holland. We are in a good position to increase our market share percentage”, he explained.

On the other hand, the Minister

Plenipotentiary of the Embassy of Colombia in Russia, Claudia Liliano Zambrano Naranjo, said during the opening ceremony that the large presence of Colombian exhibitors in this fair is due the great importance of the Russian market for Colombia.

“Our presence in Russia is a priority for us because it is the second most important market for the export of Colombian flowers. Colombia is currently the second largest flower exporter in the world and the first producer and exporter of carnations, making the flower growing sector the fourth largest source of revenue for Colombia”, she explained.

Negative Effects Of The Monetary Crisis

The withdrawal of Holland from the Russian market represents a great opportunity for growers from countries such as Ecuador and Colombia, but they have also been hit by the strong devaluation of the ruble and the economic problems that Russia is facing because of the drop of oil prices.

“Ecuador has a dollarized economy, so the cost of production of one of our roses is almost twice the cost than in Kenya, two thirds more than in Colombia and a quarter more than in Ethiopia. Thus, we don’t have competitive advantage. It’s up to each one of us because, unfortunately, our government cannot do much with a dollarized economy”, Gonzalo Luzuriaga, CEO of the Ecuadorian company BellaRosa, said.

Esteban Chiriboga, CEO of Ecoroses in Ecuador, also admitted that his company has been affected by the instability of the Russian currency.

“The devaluation of the ruble against the dollar has strongly hit the sector since October last year. Unfortunately, not only the price of the flower is fixed in dollars but also the cost of transport, which means that there was an increase of both costs for Russian consumers at the same level as the devaluation of the ruble”, he explained.

On the other hand, Tania Dolenko, business manager of the company Grupo Andes Farms, admitted that the economic crisis in Russia has also affected Colombian exporters. However, she showed optimism with regard to the recovery of the market.

“Russia is a country with a culture of flowers, so I do see a future. We will figure out how to cope with this crisis, but there is hope and we are going to get through it”, she said.

The international exhibition of flowers and plants of Moscow —FlowersExpo— was carried out for the first time in 2011. Since then, it has become an important business platform for international suppliers and local buyers.

Like every year, the exhibition was carried out at the international exhibition center Crocus Expo, located to the northeast of Moscow, and concluded on September 10.

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- Revus®
  For ornamental growers demanding high standards for control of downy mildew, Revus® guarantees more marketable stems through its unique LOK+FLO action.
- Ridomil Gold®
  To protect the quality and value of ornamental crops, growers trust Ridomil Gold® in adverse weather to control downy mildew. .
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No Contract? No Problem

How the Kenyan flower industry thrives in the absence of formal contracts. Based on the research of Rocco Macchiavello and Ameet Morjaria

Yevgenia Nayberg

Operating a business in a developing country is not always for the faint of heart. But new research suggests that long-term relationships between buyers and sellers can go a long way toward overcoming obstacles like political instability and weak governing institutions.

To build his case, Ameet Morjaria, an assistant professor of managerial economics and decision sciences at the Kellogg School, turned to the rose trade in Kenya—a thriving industry that he says has "managed to set up a supply line to the developed world. And they've achieved this in a relatively short period."

Just how healthy is the rose industry in Kenya? Today, an estimated 500,000 Kenyans on over 100 flower farms depend on the trade for their livelihood. The nation's flower exports have grown from about 11,000 tons in 1988 to more than 136,000 tons in 2014, making Kenya the third-largest exporter of cut flowers in the world. Many of these flowers head to the European Union, where they account for about a third of all flower sales.

The rose trade's rapid growth has been driven by Kenya's sunny climate, low labor costs, and strong air-transportation links to Europe. And this has all been done in the absence of formal contracts. Since flowers are highly fragile and perishable, contracts would be unenforceable, with buyers and sellers making claims that no court could verify.

So instead, buyers and sellers rely on longstanding relationships. Morjaria and his co-author, Rocco Macchiavello of Warwick University, examined these relationships, finding that despite their informal nature, some look much like successful long-term relationships in any commercial domain, with sellers willing to forgo even substantial short-term profit in order to maintain them.

Stress Test

In a contract-free industry, relationships offer stability and predictability for both sides of the transaction. Sellers are able to plan their production schedule in advance, while buyers have a reliable supply at a known price.

But buyers and sellers have another option: the flower auctions in the Netherlands. Here sellers are not obligated to deliver particular quantities of flowers, and buyers can purchase only the volume they need.

Generally, the Dutch auctions act as proving ground for fledging rose producers or as a safety valve when a seller's established customers cannot absorb its entire supply. (In addition, the auctions provide a reference price that helps buyers and sellers ground their relationship in a common understanding of the prevailing market conditions.) "If I'm in a valuable relationship, then I'm going to make an extra effort to protect it."

Cultures of Trust

The way countries view one another affects trade and investments. Morjaria and Macchiavello wanted to investigate just how committed rose growers were to their relationships with their regular buyers. In the years preceding Kenya's 2007 presidential election, the researchers observed the value of these relationships to be sizeable, with sellers often giving up short-term gains of up to 30% in order to keep their commitments. But what happened when extenuating circumstances made commitments especially difficult—and expensive—to honor?

A short period of violence followed the nation's contentious presidential election. Business operations in some regions remained unaffected by the violence, but in the areas directly affected by the unrest, workers either fled the region or were unable to move about safely. Rose-producing firms lost about half of their workforce for the duration of the violence (only about 5 percent of which they were able to replace). The loss of workers directly affected their output. It was, as the researchers put it, "a large, unanticipated, and short-run shock to the production" capacity of the affected firms.

Moreover, Kenya's electoral violence happened during one of the industry's busiest seasons—the run-up to Valentine's Day—and flower prices at auction were high. Since the basis for relationships between rose producers and buyers was trust, rather than formal contracts, the sellers who were impacted by the violence were free to squeeze as much profit as possible out of their reduced output by selling their flowers on the open market. The well-publicized violence also offered a "free pass" for sellers who wanted to renege on prior commitments.

Strategic Loyalty

Morjaria and Macchiavello predicted that sellers would nonetheless honor their direct relationships with buyers rather than exploit the short-term price spike. "If the relationships are valuable," Morjaria says, "you will see certain evidence in the data. If I'm in a valuable relationship, then I'm going to make an extra effort to protect it." Indeed, rose sales to the Dutch auctions in the regions affected by violence dropped about 50 percent from normal times, but sales to direct buyers dropped only 16 percent. "Sellers in the conflict region gave up profits from delivering to the auctions at higher prices to protect their direct relationships," the researchers write. (There was no observable effect on rose sales in the no-conflict region, where sellers had sufficient crop to honor existing relationships while still sending some flowers to auction.)

A model created by the researchers made a further prediction: that the sellers in the conflict region would not treat all customers equally—instead giving priority to buyers that they were trying to prove themselves to. In other words, when a rose-producing firm was still establishing its reliability with a buyer, that relationship would take priority over an older relationship, in which the seller was already a known quantity.

Sales data from 2004 to 2008 suggested that—as predicted—sellers prioritized relationships that were relatively young and still developing by holding to their delivery schedules as much as possible. They gave less attention to relationships that were either very new (and hence not yet valuable enough to focus on) or well established (in which the seller had already proved itself to be a reliable partner). "As the relationship evolves, you reach a point where you've put in a lot of effort and you can sort of take a step back and expect that your past interaction will serve you in the future," Morjaria says. "So you put in less effort as the age of the relationship grows. People have already made their impression of you."

The Reputation Dividend

Efforts to build and maintain a strong reputation appear to pay long-term dividends. Growers affected by the electoral violence lost half of their workforce overall—but this average obscures a key difference. Growers who had direct relationships with buyers, and thus wanted to build reputations as reliable partners, often took proactive steps to retain their workforce by setting up camps near the flower farms for workers threatened by violence. As a result, they were able to retain a larger share of their workforce than the growers who sold primarily to the Dutch auctions. They also, in some cases, extended the hours of workers and paid overtime wages.

Their efforts to keep to their delivery schedules seem to have paid off. The researchers found that, overall, 17 percent of relationships between buyers and sellers from the conflict region did not survive to the following season—a rate twice as high as in the no-conflict region. But this failure rate depended on the the seller's reliability. More reliable sellers lost fewer buyers, thus preserving their longstanding (and, over time, lucrative) relationships.

Morjaria's research demonstrates how, even in an environment highly inhospitable to contracts, buyers and sellers have found a way to form valuable partnerships. Of course, in other industries, and in other markets, contracts are far more enforceable. But it is rare, Morjaria explains, for there to be no contractual "pain points." He believes that firms new to an industry would do well to understand their particular contractual ecosystem, and to consider whether they, too, might need to prioritize relationships in times of scarcity—or even, he suggests, to "operate at initial losses in order to acquire a good reputation."

Finally, Morjaria's work offers an explanation for commonly observed practices such as certification programs and business associations. Longstanding relationships can offer considerable value, but by their very nature, they are time-consuming to form and maintain. Associations and certifications are proliferating—especially in developing countries—because they offer sellers a speedier way to signal their reliability and to generate positive perceptions in potential buyers the world over.

The Muse of Beauty and Convenience For the Grow

A sigh of expectation filled the air as one of the biggest chemical companies in the world, BASF, launched an innovative fungicide that combines well known active ingredient Dimethomorph with Initium to form a preventive shield against downy mildew in ornamentals.

Time almost audio recorded voice of Mr. Patrick Ngugi, Country Manager-Kenya, Crop Protection and public health asked, “Are you afraid of Downy mildew in your farm? Are you concerned by the ever increasing threat of resistance build up by fungicides? Are you afraid of scotching your flowers and leaving physical residue? Are you concerned about the cost of your choice product? Can you achieve your goals in farming without IPM? Is worker safety a priority for you? Each of the question received a resourcing ‘Yes’ from the over 150 growers in attendance. Today I stand in front you to offer your solution, Orvego 525 sc.

Launching the new product at a Naivasha Hotel, Mr. Ngugi assured growers that Orvego 525 sc is the versatile element for their Downy mildew spray program. Maximizing the marketable yields of their

er in the Control of Downy Mildew Launched.

crops for all markets worldwide.

Product Profile

Orvego has an excellent ecotoxicological profile being practically nontoxic to birds, earthworms, beneficial insects, honeybees and with a low toxicity to aquatic organisms. Additionally it ensures excellent user and consumer safety due to its combination of the very favorable profile of Initium® with the well-known favorable properties of dimethomorph.

Orvego offers a high margin of safety for users, bystanders, residents and workers. However, to ensure occupational hygiene, personal protective equipment should always be used. The product exhibits excellent consumer safety regarding Initium and dimethomorph. Residues from the use of Orvego are covered by the established MRLs. Orvego is very favorable in environmental terms with no risk of persistence of the active ingredient or metabolites, no bio accumulation, no critical toxicological or ecotoxicological potential of metabolites and has a Low volatility

Mode of Action

Initium stops the flow of energy in the fungus like a valve stops the flow of fuel in a pipe. Dimethomorph has a specific interaction -Single site biochemical mode of action, but multistage effects on the fungus. It has a fungicidal effect by interfering with cell wall-forming processes. Without cellulose deposition the cell wall cannot grow and the cell bursts

Benefits

Orvego® combines the well-known active ingredient dimethomorph with the new fungicide Initium® to form a premium preventive shield against DM.

Crops are effectively protected, stay healthy longer and are able to develop their full potential. It is a convenient tool for resistance management and does not cause phytotoxicity or leave physical residue on crops.

The product is cost effective for the grower and its IPM compatible hence safe to beneficials. Orvego also has an excellent regulatory profile, meeting not only Growers and workers needs but also those of consumers and the environment. This gives Confidence & Convenience FOR THE GROWER

Conclusion

As a reliable partner BASF creates chemistry to help its customers in virtually all industries to be more successful. With its high-value products and intelligent solutions, BASF plays an important role in finding answers to global challenges such as climate protection, energy efficiency, nutrition and mobility.

Growers preparing their spray programs for Downy mildew will have many options to choose including Orvego 525 sc. Distributed by Elgon chemicals, the product will offer the ever elusive solution

Prevent and Cure *Botrytis cinerea* through a simple 'Dipping Solution'

Everyone around the world knows the tender feel and sweet smell that comes when you get in contact with a flower. Maintaining the quality of these gentle plants that bring color to our lives is an important aspect in all in the flower business. Kenya's Floriculture Industry has currently embraced the importance of post harvest. A shift is noticeable from the perception that quality is only achieved from the field, with the current thinking being the need to maintain the quality even after harvest' which is helping farmers have a higher bidding price at the market level.

Losses at the post-harvest chain are more severe because they represent waste/loss of human effort, farm inputs and all other resources involved during production. Losses in postharvest range from 5 – 60% with occasionally losses at 100%, for example due to Botrytis Cinerea infection during the rainy season.

There are some 50 species of the fungus Botrytis, however, Botrytis cinerea has the largest host range. Botrytis is often referred to as gray-mold because it produces a crop of gray fuzzy-appearing spores on the surface of infected tissues. Several days of cool, cloudy or rainy weather creates an ideal environment for Botryis infections during production in a full greenhouse or out in the field. However this fungus grows on dead or dying plant tissue anywhere conditions are right; in greenhouses, the field, packing sheds, coolers or during shipping.

Preventive and Curative Measures

Through the dipping solution that has been adapted by many of the flower farms in Kenya, Botrytis cinerea is being controlled using ***Amiran's Dipnoy 60-V2***

Dipnoy works by forming a barrier between the flower petals and the outside environment thus any spores present cannot penetrate (preventative) and hinders germination of any spores on the petals (curative).

Speaking on the beneficial aspects of the product, Japheth Chelal from Kisima Farm states that, " Dipnoy has long persistence after use, customers complain on Botrytis has dropped by >95%; the molecule class of Dipnoy is safe- it has no harm, Dipnoy can also work in moist areas; when Dipnoy is used, the flowers can be packed in boxes without completely drying .i.e. Dipnoy dries fast unlike other products. The product has no residue effect on flowers after dipping. Dipnoy is readily compatible with other products e.g. Spinosad (control of thrips)".

Lilian Ouma, Amiran's Post Harvest Agronomists advices that for farmers to get the best outcome from the 'Dipping Solution', "After harvest, one should place the heads of the flowers into the dipnoy solution (in a rate of 4ml/litre) for 10 seconds. The spores that were present on the flower petals will dry and it will help prevent the germination of new spores" In addition to the dipping solution, growers are advised to carry out their sanitation program into post harvest handling. Clean and sanitize coolers and cool rooms. To prevent Botrytis infections on flowers, foliage and buds during shipping, avoid packing moist flowers and foliage after harvest. To prevent condensation of water droplets on flowers or foliage, avoid moving flowers directly from cool to warm rooms.

Amiran understands that post harvest systems play a critical role in enhancing the competitiveness of cut flowers which by nature are highly perishable. The company's goal is to help its farmers in delivering the produce to the final consumer as good as when harvested.

Dipnoy Control in Botrytis

Flowers with Botrytis

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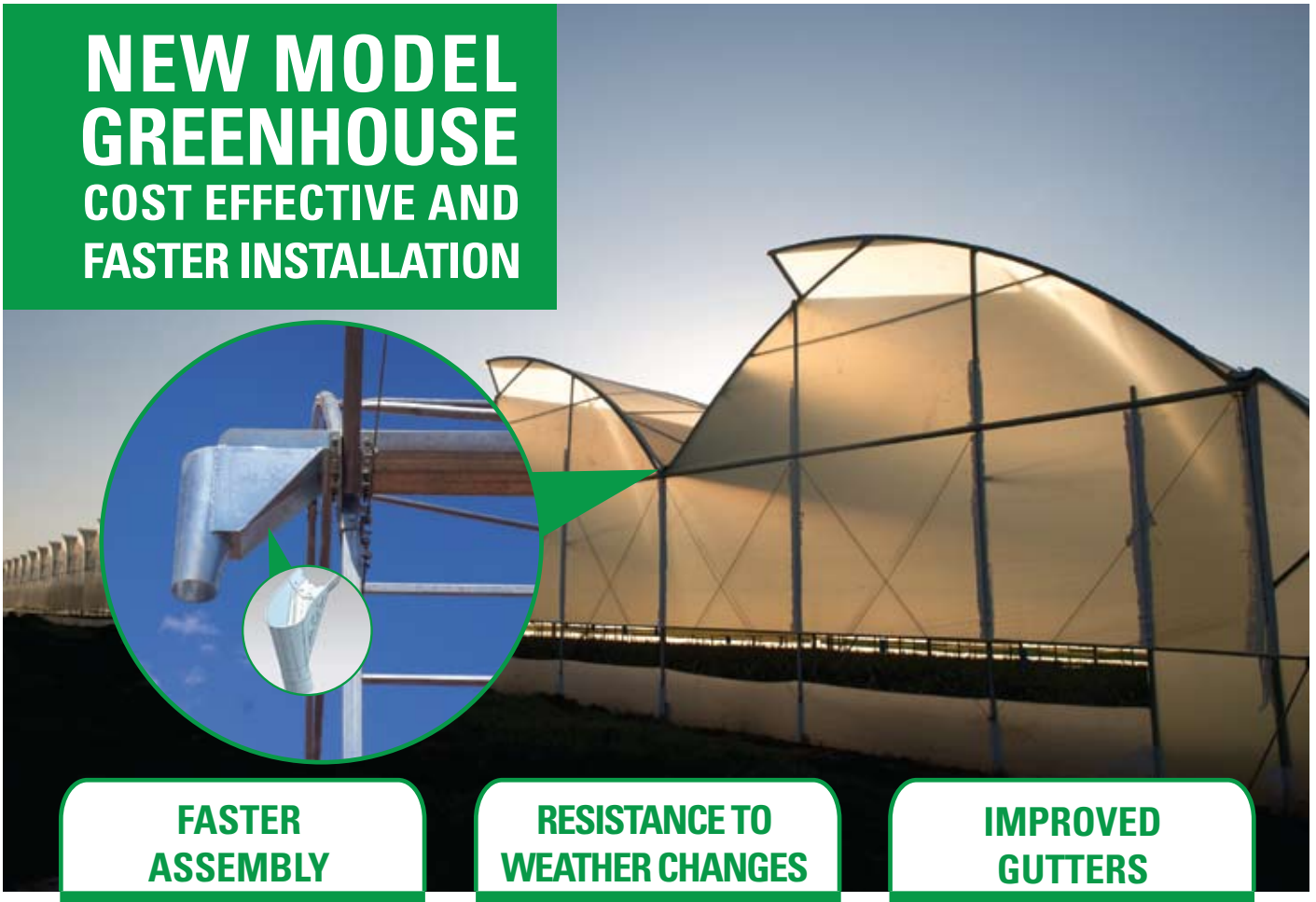

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AmiranK

Amiran Kenya Ltd Launches Cyflamid 5EW For Prevention And Control of Powdery Mildew.

As the Kenyan flower sector continues to grow in world markets, consumer demand and subsequently trade requirements are being demanded and increasingly differentiated in various markets. Demand for sustainably produced and distributed products is rising, as a result Amiran has sought for the best quality of product; Cyflamid 5 EW that work best to control, prevent and reduce the resistance of the disease, Powdery Mildew for a beautiful rose flower harvest that meets international standards.

With roses accounting to 70 percent of Kenya's flower exports, Amiran clearly understand the need to continuously help rose farmers have an enjoyable farming experience. This was clearly spelled during the launch of the product at a Nairobi hotel. Speaking to growers during the launch, Mr. Wilfred Muthamia said growers have a reason to smile as the new molecule stands for quality and availability. Amiran Kenya Ltd is willing and readily available to engage growers in serious discussions that will result in provision of their cost effective solutions.

In light of this, Amiran went a notch higher in the fight against powdery mildew with the launch of Cyflamid 5EW®, a protectant fungicide with excellent preventive, curative and long residual activity against powdery mildew. With the active ingredient, Cyflufenamid that belongs to the group of benzamidoxime and is the only representative of this group commercialized, its mode of action is unknown. Cyflufenamid is active on all strains of powdery mildew including strains resistant to DMIs, strobilurins, morpholines and benzimidazoles. At rate of 0.5L/Ha, Cyflamid 5EW, offers a new novel way to control powdery mildew, reporting positive results for its;

- Residual Activity, Vapour Action, Curative Activity & Penetrative Action
- Both primary & secondary infections control
- Cyflamid is in the new group U6 for Fungicides Resistance Management
- Safe for Predatory Mites and Beneficial Organisms (Less Adverse effect on Bees)

Cyflamid will be part of the world class Amiran Kenya Ltd products which not only spur production but ensure flowers meet the required international standards.

Finlays Horticulture Sold to Private Equity Firm

Finlays Fresh Produce UK among horticulture divisions sold by wider Finlays group, which will now focus on its drinks business. Producer and flower supplier James Finlays has sold its horticulture arm to private equity firm Sun European Partners for an undisclosed sum in order to focus solely on its drinks business.

Under the umbrella subsidiary Finlays Horticulture Investments, the individual businesses included in the sale include Finlay Flowers UK, Finlays Fresh Produce UK, Horticulture Kenya, Finlays Horticulture Tanzania, Omniflora, Finlay Flowers BV, FV SeleQt, Dudutech and Finlays Horticulture South Africa.

The company will retain its Kenyan flower farm business Finlay Flowers, located on its tea estates in Kenya, which will continue to supply Omniflora and Finlay Flowers UK exclusively. "Finlays Horticulture has a strong customer base, an experienced management team and is performing well. So the decision to sell has not been taken lightly," said Finlays managing director, Guy Chambers. "However, this is a strategic decision. Finlays has a unique and integrated global footprint in the beverage industry. We own and operate tea estates, extraction facilities for tea, coffee and plant extracts, packing facilities and R&D labs across four continents."

Chambers said it has become increasingly important to focus on beverages as a core business area, rather than trying to succeed globally at both beverages and horticulture in one company. "We have been working closely with Sun on this transaction and we are happy that they will be in a position to support the growth of the horticulture business going forward under new ownership," he added. The transaction is expected to be complete by the end of 2015, subject to closing conditions and customary regulatory approvals.

Chief executive of Finlays Horticulture, Martin Hudson, said: "Our team is capable and committed to delivering value, quality, availability, sustainability, innovation and insight to retail customers in the UK, Europe and South Africa. This will continue under the new ownership of Sun."

Paul Daccus, managing director at Sun European Partners, said Finlays Horticulture is performing "extremely well" and has a strong reputation. "Together with the management team, we will look to continue that success and focus on opportunities that will support further international growth, while continuing to invest in production," Daccus said.

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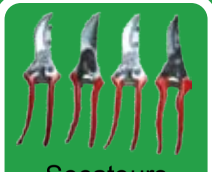
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Gloves


Guillotine Machine

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Dutch Trade Hardly Notices the Russian Measures

"The Russians are still holding onto their position. In flowers from the Netherlands, insects are not allowed." Robert Roodenburg, Director of VGB, provided this answer when questioned about the current state of affairs. "In practice it is hardly noticeable. Most products simply cross the border. The Russians get the products here themselves. The Dutch exporter has in that sense little to worry about. On the other hand, the merchant is of course more cautious and the trade actually faces much worse economic conditions in the country compared with a year earlier."

The domestic production of roses is growing, as communicated by a source through RusInform. Quote: "Consumers increasingly prefer the Russian version over the Dutch. This has everything to do with the price of the domestically grown rose, which is much more favorable." Excluding transport costs Russian buyers pay about 63 roubles (0.85 euros) for a Dutch rose. For the more pocket-friendly priced Penza variant - a city in Russia - one pays 25 to 40 roubles (0.34 to 0.54 euros).

"The Russians are, in terms of raw materials, completely dependent on Dutch products," says Roodenburg, and that will not change easily. At the same time greenhouses are being built and the country is serious about developing domestic horticulture. The source cited by RusInform seems to confirm this: the area around Penza, a Russian city will now produce enough roses to provide the entire European part of Russia.

Quiet commercially

Whether this increasing competition is noticeable at the auction is difficult to say. Russia in itself has become a sensitive issue and is careful to come out with any information whatsoever. What is known is that the exports to Russia are already declining, in terms of sales, they have been surpassed by more and more countries, and the disastrously low rouble, will not change these developments for the better.

An increase in sales, despite rain and cold

It was exceptionally cold in September so there was less supply. The mercury rose above 20°C on just two days. Normally, there would be 10 warm days. Slightly more rain fell than normal, which made, especially the beginning of the month, very wet. In comparison with September 2014, the number of items sold dropped by 1.8%. Sales rose by 1.4%.

Fewer cut flowers sold

The average price of cut flowers rose by 1 cent compared to September 2014, but 1.8% fewer items were sold. The Chrysanthemum group showed the largest decrease in sales, -24%. The average price and sales did rise (+10.2%). Freesia followed a similar pattern, a drop of 12.2% in the number of items sold and an increase in sales of 10.2%. Cymbidium showed a decrease in the number of items sold (-18.8%) and in sales (-8.7%). Hydrangea had the greatest rise in the number of items sold, +22.2%, and the sales also rose by 4.7%. Sales of Lisianthus increased the most in comparison with 2014 (+15.4%). The number of items sold of Alstroemeria and Gerbera rose slightly.

Slight drop in sales and quantity of houseplants

In august we saw a drop in sales (-1%) and in the quantity of items sold (-1.3%) of houseplants. Fewer items of Bromelia were sold in September (26.8%), and sales dropped by 15.3%. The Rose and Other houseplants groups displayed a negative change in the number of items sold. The first group fell 13.1% in September and the second fell 13.4%. The sales of other houseplants dropped by 11% and of roses by 1%.

Positive changes were seen in the arrangements group, with 37.2% more items sold. Dendrobium showed a positive trend compared to 2014. Last month 27.3% more items were sold, and sales rose by 19.6%. The sales of Cyclamen increased by 19.1% and of Anthurium, by 10.5%. A slight decrease in sales compared with last year was noted for Phalaenopsis (4.4%) and Dracaena (9.9%).

Less positive month for garden plants

The price, sales and quantity sold of garden plants all dropped inaugust. Sales of Buxus decreased by 18.7% and of Gaultheria by 16.8% compared with last September. A negative change in sales was noted for the Viola group (13.6%), other trees/bushes/container plants (8.7%) and Calocephalus (7.7%). Sales rose for the Aster group by 44.5%, Other perennials by 18.8%, Cyclamen by 17.6% and Hebe by 14.7%. The number of items sold of the other trees/bushes/container plants group decreased by 33.2%. Similarly, Viola decreased by 20.9%, Gaultheria by 4.7% and other bedding plants by 6.3%. Aster on the other hand sold 50.2% more in September, as did Erica (35.9%), Cyclamen (24.4%) and Hydrangea (9.3%).

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Improve Perishable Transport Service Quality to Avoid Losing Share to Ocean

Airfreight must improve service quality if it is to minimise the impact of customers with perishable goods switching to seafreight. Kuehne & Nagel's global business development manager for perishables logistics, Natasha Solano, said that over the last few years there had been a trend for perishable cargo to transfer over to ocean transport.

She said this was partly down to the reduced cost of using ocean transport -in some areas flower transport costs are reduced by 40% — environmental concerns and also shipping lines opening new routes serving perishable-producing markets. However, it was also because of improvements in refrigerated sea container technology which mean that temperature fluctuations during transport were greatly reduced.

The temperature of goods when being flown tended to be more volatile than shipping because of the number of times it is handled, she explained. In contrast to seafreight, where goods are loaded into a container at an early stage in the supply chain and then not generally handled again until delivery, airfreight goods are exposed every time they are loaded and unloaded onto trucks and aircraft.

While there are temperature controlled ULDs on the market, the low margin nature of much of the perishable industry meant these were too costly and more suited to pharmaceutical transport. Solano said airfreight can reduce the risk of losing customers by making sure staff are educated about the impact of temperature fluctuations on perishable cargo.

She gave the example of flowers that were going bad during air transport because they were stowed close to the cargo doors, meaning when a waypoint stop was made for more cargo to be loaded, they were exposed to heat.

Another example is perishable cargo being left on the apron for long periods while the aircraft is being loaded and unloaded. Qatar Airways senior manager cargo products David Beecham said it had avoided this problem by using temperature controlled vehicles to take cargo directly to and from the loading ramp. This meant perishable cargo would be exposed for as little as 40 seconds.

It had also introduced uniform standards of practice across its network. Solano added that the quality of transport service was becoming increasingly important because retailers, as opposed to producers, were taking charge of the supply chain. It wasn't all bad news for air cargo though, both Solano and Beecham agreed that there were many types of perishable cargo would never be able to transfer over to seafreight, for example softer fruits.

Also, the perishable industry continues to expand due to population growth, a growing middle class wanting more luxury produce such as salmon, and people becoming more health conscious.

The volume of transported horticulture and floriculture produce is expected to increase 460% by 2050 while foodstuff volumes are expected to increase 260%, Solano said.

Ethiopian Airlines starts cargo-flights on Maastricht

Ethiopian Airlines announced it will stop flying cargo into Brussels. Instead, the 5 to 6 weekly cargo-flights, amounting to 40,000 to 50,000 tonnes, will be destined for Maastricht-Aachen Aiport. The Ethiopian cargo freight to and from Belgium consists mainly of flowers.

This is good news for the small airport, situated in the very south of the Netherlands. For years, numbers of both cargo freight and passenger flights have been falling rapidly. Over the last year, freights fell by 23 percent.

Conversely, the decision of Ethiopian Airlines is a drain on the Belgian airport. According to CEO Arnaud Feist, the disappearance of Ethiopian Airlines might cost Brussels up to 400 jobs.

Lufthansa Cargo When Freshness is Cruicial

Many members of the Lufthansa Cargo team from all over the world were present at their booth during the three days of the fair to discuss the supply chain and transport process for perishable shipments so that we can offer the best possible solution for you.

Lufthansa Cargo ranks among the world's leading cargo carriers. In 2014 the airline transported around 1.7 million tonnes of freight and mail. Lufthansa Cargo focuses on the airport-to-airport business. The cargo carrier serves around 300 destinations in almost 100 countries with its own fleet of freighters, the belly capacities of passenger aircraft operated by Lufthansa and Austrian Airlines, and an extensive road feeder service network. The bulk of the cargo business is routed through Frankfurt Airport. The other Lufthansa Cargo hubs are in Munich, Leipzig-Halle and Vienna. The Lufthansa Cargo Group is an alliance of cargo airlines and companies affiliated with the air freight business, whose products, services and network complement each other perfectly.

Fresh Ltd is a special product for plants and flowers, fruits and vegetables, fish and seafood, meat and meat products, as well as dairy products. Lufthansa Cargo has long experience and recognized expertise in shipping temperature-sensitive and perishable goods.

Imagine: Whole shipments of roses from Kenya have to be transported to major international markets in perfect condition, and they must open just as they reach their destination. The answer is Fresh Ltd by Lufthansa Cargo.

Cutting deals with airlines is the trick.

One of the consequences of ongoing technological developments and ever faster and more efficient logistics, is that perishables go all over the world. Thanks to shorter lines, cooling technologies and better communication it is becoming increasingly more common, to transport flowers and plants, as well as cuttings and in vitro plants to the most distant and unknown regions. "Thirty years ago, it was unthinkable."

Experience

One: the transport industry is constantly evolving and each day you are confronted with a different situation. Each country has different requirements on incoming goods and you have to know when and where you can enter what. In addition, you have to build a network. You need virtually agents everywhere in the world which can mediate on the spot, making contacts and knowing the specific problems and opportunities of the country in question."

Service

"The second point, providing service, is also important,". " You need to think of speed, storage, product knowledge, qualified drivers and a broad knowledge of the market which allows you to think along with the customer. Also, try to combine products which drops the costs and literally find a way into the strangest places.

Cuttings

In particular, the transport of cuttings has increased dramatically in recent years. They are in all shapes and sizes, from in vitro to mature plants. All of this should be protected and temperature and humidity should be kept at a certain level and in all it should not take too long. These factors make the volume and weight of a shipment increase significantly.

Ocean freight

Another important discipline within the company is transporting bulbs. That comes to millions of kilos. Since bulbs are heavy and long lasting and also because container ships are getting faster, it is cheaper to send a boat. With that you can respond to the demand from your customers. Exporters and producers of bulbs, plants and raw material often benefit from both forms of transport.

Concerns of Ethylene in Greenhouse Production

Ethylene is a colorless, odorless gas composed of two carbon and four hydrogen atoms (C_2H_4). It is a naturally occurring plant hormone that acts as a chemical signal that controls several aspects in plant development and growth. In most plants, it is involved in flower senescence, fruit ripening and seed germination.

Ethylene can also occur in the greenhouse as a gaseous contaminant. Levels above 0.1 ppm are known to cause injury to plants during production, handling, shipping and storage (i.e. post-production). Symptoms of ethylene damage include foliar chlorosis or necrosis, drooping of leaves and poinsettia bracts, rapid flower aging and wilting, malformed leaves or flowers, pre-mature dropping of leaves or flowers, and stunted growth. Plants vary in response to ethylene, not only among different plant species, but even among plant cultivars of the same species. A plant's response depends on the ethylene concentration, length of exposure, sensitivity of the plant species and stage of plant life cycle. Greenhouse temperature also plays a role; higher temperatures are known to have a greater impact on the plant.

The most common source of excess ethylene in a greenhouse is from heaters that are not functioning properly or are insufficiently vented. Other sources of ethylene may include: exhaust from combustion engines (equipment powered by propane), leaky gas lines or contaminated fuel, cigarette smoke and decaying plant material. Most often, when there is an elevated level of ethylene, there will also be elevated levels of carbon monoxide, which can be very dangerous to humans.

One of the best-known ways to determine if you have ethylene contamination in the greenhouse is by growing "indicator plants" that are known to be sensitive to ethylene. These would include tomato, Gypsophila (baby's breath) and Cuphea. A second and more reliable method to detect ethylene levels in the greenhouse is by sending an air sample into a reliable commercial or university laboratory for analysis. Once a laboratory is selected, contact them about the details of their program and the instructions for collecting an air sample.

If an ethylene problem is detected, one of the quickest and easiest methods of reducing the effects of over-exposure is periodic ventilation of the greenhouse with outside air. This is only a short-term fix and should not be used as a long-term solution to the problem. Identify the source of the ethylene contamination and take the appropriate measures to fix the problem. One of the major keys in preventing ethylene damage to greenhouse crops is to be proactive.

It is recommended an annual inspection and maintenance program for heaters, equipment and other known sources of ethylene.

Keep a watchful eye on your plants for irregular growth and know the symptoms of ethylene contamination for your crops. An annual program and a watchful eye will go a long way in reducing contamination risks and major crop damage during the busy production time of the year.

Salvaging Tomato Production in Kenya

As new trends emerge, Kenyan farmers in the future will have to innovate continuously in order to remain competitive; the farmers will need to respond to the permanent pressure on margins, professionalism, increase demand and face growers in abroad countries with excellent farming techniques.

Koppert Biological Systems (K) Limited is one input supplier that is increasing partnerships and always carrying out research and investigations on the new, easy and highly effective farming methods that will enable farms to increase their yield while making their farming an enjoyable experience, priding itself in helping Kenyan farmers remain the leaders in the world markets.

This was revealed when Koppert Biological Systems (K) Ltd in partnership with Kenyatta University brought a team of professionals in different fields of the agriculture sector together in a Nairobi Hotel to discuss how to salvage the tomato production in Kenya. The workshop which marked the inception of Tomato ARF funded project was attended by researchers, academicians and scientists from the private sector, different universities, KARLO, KEPHIS, Ministry of Agriculture, Livestock and Fisheries among others. The workshop was also attended by large scale and small scale farmers drawn from different parts of the country. The workshop was an inception of a three year cross-sectional survey research project.

Koppert Biologicals Systems (K) Limited while creating an open forum through direct interaction between farmers, input supplier, scientists from different government institutions and academicians created an incentive to start a missing link. In addition they also laid down some of the available solutions they could offer to the farmers for the control of Tuta Absoluta. The company encouraged farmers to use Delta traps together with *pherodis pheromone* in scouting and monitoring. For mass trapping, they recommended Tutasan Water Traps or Horiver-Black sticky traps. In Biological Control, use of Mirical (*Macrolophus pygmaeus*) was advised.

Reflecting the challenges affecting the farmers' attendants agreed that it was possible to adopt Integrated Pest Management (IPM) packages for sustainable management of tomato leafminer (Tuta Absoluta) and Fusrium wilt-Nematodes. However, it was agreed that this can only be possible after understanding efforts to curb the spread of Tuta Absoluta as well as the challenges in managing it.

Why Timato?

Tomato is the second most valuable vegetable in terms of production and value in Kenya. It plays a critical role in generation of income and creation of employment for booth rural and urban populations in addition to meeting nutritional food requirements. However, commercial farming of this important crop is under immense threat from Fusarium wilt-Nematode complex and the recent attack by tomato leafminer (Tuta absoluta). Some farmers have reported yield losses of up-to 80-100 % per growing season.

Tuta Absoluta (Tomato leafminer)

Introduction

Tuta absoluta is a micro-lepidopteran moth with a high reproductive potential capable of over 10 generations per year under optimal conditions. The larval stage of the moth causes damage through feeding mainly in tomato fields.

Damage

-Can cause 50-100% yield reduction
-Damage is caused mainly by the caterpillars
-Can infest any of the plant above the ground in any stage of the crop

Project Theme

Towards adoption of integrated pest management (IPM) packages for sustainable management of tomato leafminer (Tuta absoluta) and Fusarium wilt-Nematodes complex.

Project title

Development , vadation and dissemination of integrated pest management (IPM) Packages for Tomato leafminer (Tuta absoluta) and Fusarium wilt-Nematode complex affecting tomato production in Kenya.

Project objectives

-To establish the current status of Tuta absoluta and Fusarium wilt-Nematode complex in Mwea Kenya
-To evaluate the efficacy of biological control tools for management of Tuta absoluta and Fusarium wilt-Nematode complex within smallholder farms in Kenya
-To develop, validate and disseminate IPM strategies for Tuta absoluta and Fusarium wilt-Nematode complex

Expected outputs

-Publish catalogues and papers on diversity and identity of Tuta absoluta and Fusarium wilt-Nematode complex
-Sustainable management of tuta absoluta and Fusarium wilt-Nematode complex within smallholder farms
-Improved tomato production in Kenya
-Increased capacity and knowledge for agricultural practitioners in integrated pest management

Project partners & Role

Koppert Kenya: Develop, validate, disseminate and upscale integrated pest management (IPM) Packagings for management of Tuta absoluta and Fusarium wilt-nematode complex. Disseminate information and capacity building.

Kenyatta University: carry out identification, characterization and maintenance of pure isolates of tuta absoluta, root-knot nematodes and Fusarium wilt pathogens. Disseminate information and capacity building.

Koppert BV : Techniocal backstopping on biological crop protection.

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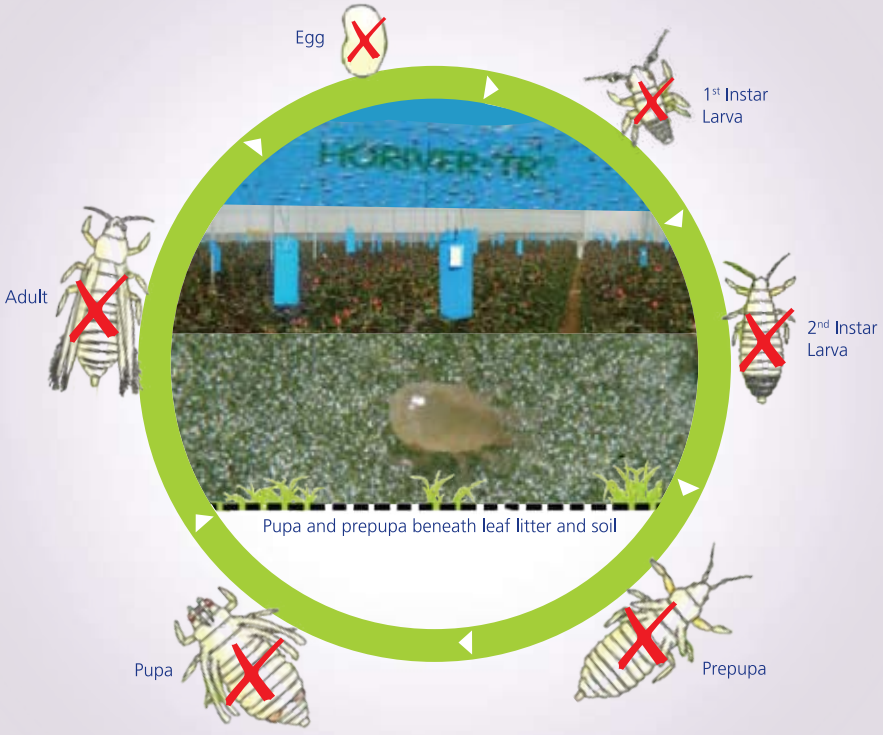

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- Achieve minimal flower rejects
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KOPPERT
BIOLOGICAL SYSTEMS

Ethylene: the invisible killer

Ethylene causes increased ageing symptoms like wilting, bud and leaf drop with flowers and plants.

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. Ethylene has, contrary to many other plant hormones, a very simple structure (CH2 = CH2). 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. Therefore transportation of flowers on the farm should be careful about which methods are used. Trucks should be turned off while unloading and loading of flowers into the packhouse as well as at cargo areas when shipping and receiving flowers internationally.

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 post-harvest treatments and Chrysal has **Chrysal AVB.** After harvest, the flowers are put on a solution like AVB which they absorb. When the flowers are treated correctly, they are protected against ethylene and the vase life is extended considerably.

Precautions

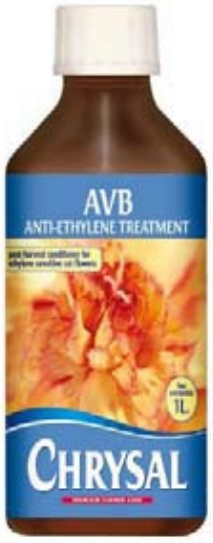
It is very important that growers strictly treat the ethylene sensitive flowers. For example when you notice in your vaselife room that after only a few days your Carnations / Roses shrink, wilt, droop you can take it for granted that they have not been treated correctly.

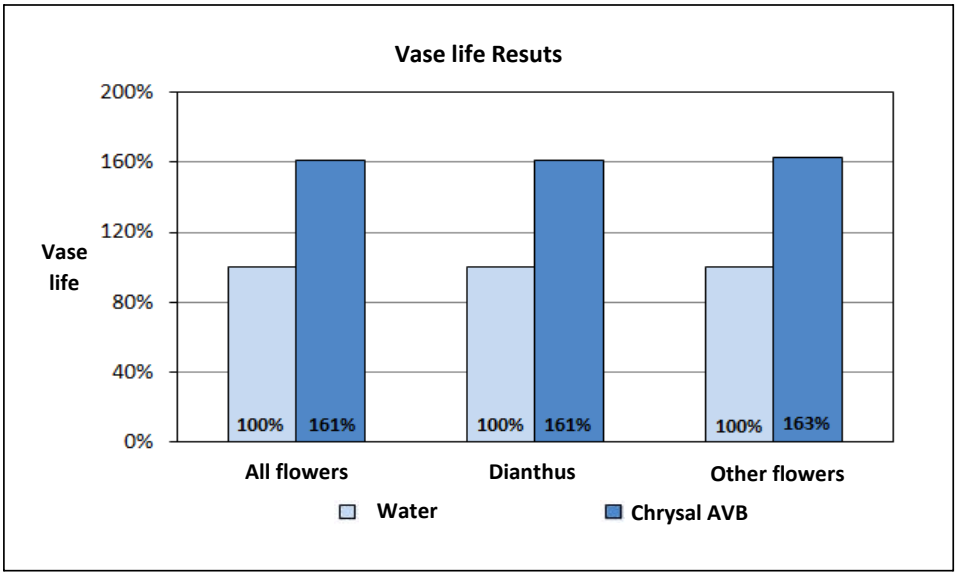
TIP

- 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.

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

Managing Trust in the Workplace

Introduction

Most of us have heard of instant crumbling of companies. So the question remains how does the manager perceive. More so, if he has staff to pay salary and bonus. Do you retrench, sack, pay salaries only or you pay salaries and bonus? You still need the workers to produce more and pay the debts and losses the company has incurred. But how do you keep grumbling workforce and expect maximum production? The bottom line is pay the salary and bonus, keep the employees happy and tell them the truth about the financial stability of the company. Preach only one gospel, the future of this company relies on your relational contacts with them

Relational Contracts

what are relational contracts. In an analysis focusing on what are known as relational contracts. Such "contracts" cannot be quantified or written down (at least to a lawyer's satisfaction) the way, for instance, a sales agreement might be: Sell our product and get a 5 percent commission. Instead, relational contracts represent more casual understandings between management and labor about things like performance bonuses.

Interested in how relational contracts affect worker productivity. One need to look at any narrowly defined industry—there are big differences in productivity. Noting that it is important to explain these differences so that firms know what they must do to keep their workers motivated. But there are obstacles. "There are frictions that prevent the firms from keeping their promises." What are the sources of these obstacles and how can firms manage and deal with their obstacles successfully?

One of their biggest concerns, is that of information asymmetry: "Managers are typically better informed about the challenges and opportunities that their firms face and therefore often have private information about the opportunity costs of their workers. That is, workers are often unclear as to whether they are being denied a bonus because their firm genuinely needs to direct resources elsewhere, or because the firm is simply being cheap—in which case punishment, by way of lower productivity, is in order. In the absence of this knowledge, workers may simply choose to punish their manager no matter what the reason behind the broken promises.

Workers vs. Management

In order to better understand this phenomenon, interactions between a manager and a worker is key. The manager offers the worker a compensation package (a formal wage as well as the informal promise of a bonus), which the worker can either accept or reject. If he accepts, he chooses how hard to work. Later, once the manager determines how costly it will be to provide the bonus, she decides whether or not to do so. Deciding not to offer a bonus ensures that she will either have to increase her worker's salary the next time around, or simply accept less effort from the worker (who after all has no idea why he has been denied his bonus).

When managers tap into unlimited funds to pay their workers, the optimal relational contract is one in which the worker was promised a bonus, which is paid when opportunity costs are low but denied when they are high. This lead workers to be maximally productive after being paid a bonus—and assured of yet another bonus—but to punish their managers by gradually lowering productivity when they were denied a bonus. (Punishing a manager by dramatically lowering productivity would leave the manager with less money to pay a bonus the next time around.)

When companies are tight on liquidity, however, managers have a tougher time dealing with such conflicts, and at times loose their workers. But all is not lost when this occurs, Managers can also "induce the worker to respond to a conflict by providing more effort rather than less. Essentially, the worker understands that more effort relaxes the firm's liquidity constraint, which, in turn, allows the manager to pay him a larger bonus."

Building Trust

In the workplace, trust between workers and management is key. Otherwise, workers are likely to punish firms with decreased productivity, or even abandonment, just when their efforts are needed most.

How do you actually manage trust from the workers? That's subtle. That has to do with: How much trust do the workers have in you in the first place? You can almost think of trust as one of the resources you have. The more trust you have from the workers, the more flexibility you will have in dealing with what economists call 'shock'—a bad situation. This can be applied not just to an economic situation but to our lives, as well. To relationships in general … friends, spouses, parents and kids.

Managers should tell all to their troops. They should institute a financial education program to assure employees that no money is being hidden from them.

You need to share all company financial plans and how the employees could help them succeed. The goal is to increase sales and a jump in production daily. This boosts the morale of the company

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Floriculture encourages the pursuit of joint activities in areas of mutual interest with national and international societies, companies and organizations. Agreements have been reached between Floriculture, leading growers and suppliers and trade associations. This unique partnership includes a complimentary copy for each member of the registered associations. Floriculture is proud to announce the cooperation with the above corporates.

A Closer Look
At Family Businesses

"It's all about the balance between continuity in the business and harmony in the family"

The strength of family business and its importance to an economy is widely praised. The family business is a success. But what about the 'behind the scenes' of all these success stories? What is 'the real story'? Because where people work, there are strong emotions.

It seems that within the family, the emotional factor plays an even greater role than in a non-family business. Emotions can be a source of strength, but also a source of conflict. Why is one family business able to handle these emotions, whereas another family business becomes a victim of their emotions? In short: what is the psychology behind the family business?

Globally, 60% of companies are family businesses and in the flowers sector, the percentage is even higher. "We can, of course, address the issues that arise within families in a very substantive and technical way, but if we were to focus only on that, we would go wrong. Then you disregard the dynamics of a family business with its family bonds and emotions. Therefore, it is always an important skill when working with family businesses to find the balance between the continuity of the company and the harmony in the family."

Characteristic of a family business is that it does not look at the next quarterly figures but to future generations. That makes you look differently at things like land holdings and investments. On the other hand, you see that in many family businesses, they say they are looking at the long term, but that they don't talk about things like succession. In practice, they often leave it too late. That may be because they find they are having too much fun to think about it, sometimes with the result that they are hit with a succession of health problems. Or sometimes they talk so much about succession that children have to fit in with it or so little that children no longer identify with the business.

The situation that the successor is not considered as capable is another classic example. These are very difficult cases, in which a conflict of roles occurs between the director of the company who is also the father of the son or daughter. Also, partners often play an important role in a family business. They have no blood relationship, can sometimes view other things as more important and are also often seen as troublemakers. At the same time, the family must also realize that partners do not just present problems. If the children are the future of the business, they are, after all, also the children of the partners."

Family agreement

It is recommended that making such difficult issues discussable so that the family can form an opinion. This can be done by a family agreement or mission statement about the company and the relationship between the family and the company. It sets out how the family views the sale of the business or the role of family members in the business. If a situation then arises, you can fall back on the agreement, rather than the emotion of the moment in order to come to a decision.

The role in this is not to say what should or shouldn't happen, but to put a process in motion, so there is a certain development in the process. Create a certain objectivity in what the company needs and if that is feasible. These can sometimes be painful questions.

The trend is that there are far more family-controlled enterprises emerging, in which the family owns the business, but does not actually run the business, instead of the family-run enterprise like we are used to. But that also brings with it new challenges.

New Records Were Set at IPM Dubai

The most important B2B trade fairs for horticulture and fresh produce in the Gulf region was booming. More exhibitors, more exhibition space and more visitors - IPM DUBAI and WOP DUBAI were on top form in 2015.

In October, more than 300 exhibitors came into contact with top-class customers from the Middle East and Asia at the two most important B2B trade fairs for horticulture and fresh produce in the Gulf region. The unanimous conclusion was that it provided "an excellent opportunity to come together and do business."

2015 also saw both B2B trade fairs continuing their growth trajectory - a great success, marking the ten year anniversary of IPM DUBAI. "The ever-increasing levels of interest showed how attractive the location of Dubai is to the horticultural industry", summarised Oliver P. Kuhrt, Managing Director of Messe Essen, and the event organiser. For us, it confirms the effectiveness of our strategy, which is to establish IPM ESSEN as a world-leading trade fair through affiliated events in important growth markets; thereby opening up new sales opportunities for our exhibitors."

IPM DUBAI and WOP DUBAI 2016

The successful duo of trade fairs, organised by Messe Essen and planetfair Dubai LLC, will be held at the Dubai World Trade Centre next year from 13 to 15 November 2016.

IPM DUBAI showcases the entire horticultural value chain and is the most important trade fair for the green economic sector in the Arabian Gulf. The focus is on products and services from the sectors of plants, horticultural technology, floristry, equipment, logistics, plant care and horticultural and landscaping equipment.

WOP DUBAI - World of Perishables is the only platform in the entire Middle Eastern region for fruit & vegetables, product safety, technical equipment, transportation and trade and services for temperature-sensitive goods. Both trade fairs complement one another perfectly and offer visitors a high degree of added value.

IPM DUBAI is on a growth trajectory: excellent visitor quality
With 102 exhibitors, IPM DUBAI achieved a growth of 28 per cent and was even able to increase the exhibition area by 50 per cent. Once again, world-leading trade fair IPM ESSEN's overseas affiliated event managed to increase its allure to buyers too: 3,505 trade visitors travelled in from 47 countries - six per cent more than last year. The exhibitors praised the excellent quality of the visitors and their willingness to invest.

This was also clear from the increase in internationality. For example, a larger number of Eastern European companies and cut flower producers from Africa and South America came to IPM DUBAI. China, Mauritius and Sri Lanka were represented in the international pavilions for the first time, alongside Egypt, Ethiopia, Germany, Kenya and the USA.

German companies were also represented under the banner "Made in Germany" at a pavilion organised by the trade association INDEGA (Representation of Interests of German Products for Horticulture).
With its customised framework programme, IPM DUBAI scored particularly highly with exhibitors and visitors: highlights included talks delivered by international industry experts on trends in landscaping and horticultural engineering, as well as a guided tour through Middle Eastern horticultural facilities and also the vote on the "Middle East Floral Designer of the Year 2015". Florists from the United Arab Emirates were invited to create a gala table. Glen Lumaweg Gomex from Al Jowder Flowers & Landscaping was able to win over both the specialist trade jury and the trade fair visitors with his design.

WOP DUBAI: The Most Important Platform For The Fruit And Vegetable Industry In The Gulf Region

WOP DUBAI also saw strong growth in 2015: with 205 exhibitors from 30 different countries, it saw an increase of 20 per cent and 25 per cent more exhibition space was rented out. In terms of visitors, eleven per cent more people attended the trade fair for fruit and vegetables, taking the total visitor numbers to 4,923. The visitors came from 76 countries. The exhibitor companies were very satisfied with the visitor response, and many registered as exhibitors for next year before the trade fair had even finished, some signing up for much larger exhibitor spaces.

International interest in WOP DUBAI increased once again in 2015. 14 countries were represented in pavilions including Egypt, Australia, Belgium, China, France, Italy, Kenya, Moldova, Morocco, Poland, Portugal and Rwanda - and Mauritius and Spain also celebrated their début.

The framework programme was also greeted with considerable interest, as it also provided the Eurofruit Middle East Business Forum exhibitors and visitors with relevant specialist information.

LUNA TRANQUILITY LAUNCH

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
AAA- Flowers		Nakuru	Banerjee	0704788852	banerjee@aaagrowers.co.ke
AAA Growers	Vegetables/Flowers	Nairobi	Musa Sando	0787866022	sando@aaagrowers.co.ke
AAA-Chestnut		Narumoru	Kiai/Sando	0722944030	sando@aaagrowers.co.ke
AAA-Growers		Nakuru	Moses Sando	0787866022	sando@aaagrowers.co.ke
AAA-Hippo		Thika	Steve	0721778736	julius@aaagrowers.co.ke
AAA-Roses		Rumuruti	Julius Ruto	0720330039	turiagronomy@aaagrowers.co.ke
Acacia Farm-Sunripe		Naivasha	Antony	0711827785	naivasha@sunripe.co.ke
Africala		Limuru	Rob	0721-837968	sales@africalla.com
African Blooms	Roses	Nakuru	Samir Chandorkar	0735384552	samir.chandorkar@xflora.net
Afriscan Kenya Ltd	Hypericum	Naivasha	Reuben Kanyi	0723920237	
Agriflora Ltd	Flowers	Nakuru	Clement Kipngetich		cngetich@sianroses.co.ke
Akina Farm	Roses	Nakuru	Arfhan	0722728441	arfhan@fontana.co.ke
Alani Gardens	Roses	Nakuru	Judith Zuurbier	0722 364 943	alani@alani-gardens.com
Altitude Flowers	Flowers	Nakuru	Dominic Koech	0723684277	
Aquila Development Co	Roses	Naivasha	Prakash Shinde	0710791746	pm@aquilaflowers.com
Ayana Farm	Roses	Nakuru	Gideon Maina	0721178974	gideon@fontana.co.ke
Bamboo Farm-Sunripe		Nakuru	Reuben	0723920237	
Balaji	Roses	Olkalou	BalasahebIngawae	0735593016	balasaheb.ingawale4@gmail.com
Baraka Farm	Roses	Nakuru	Lucy	0720554106	lucy@barakaroses.com
Batian Flowers	Roses	Nanyuki	Dirk Looj	0720102237	dirk@batianflowers.com
Beautyline	Flowers	Naivasha	Peter Gathiaka	0722676925	peter@beautyli.com
Bigot Flowers	Flowers	Naivasha	Kakasaheb Jagtap	0722205271	jagtap.kt@bigotflowers.co.ke
Bila Shaka Flowers	Roses	Naivasha	Joost Zuurbier	0722204489	bilashaka.flowers@zuurbier.com
Bondent	Eryngiums	Nanyuki	Richard Fernandes	062-31023/6	bondent.production@karik.biz
Black Petals		Limuru	Nirzar Jundre	0722848560	nj@blackpetals.co.ke
Blissflora Ltd	Roses	Nakuru	Apachu Sachin	0789101060	appachu7@yahoo.com
Blue Sky		Naivasha	Mike	0720005294	info@blueskykenya.com
Blooming Dale Roses Kenya Ltd	Flowers	Nanyuki	Sunil	0718991182	info@bloomingdaleroses.com
Buds and Blooms		Nakuru	Shivaji	0720895911	shivaniket@yahoo.com
Carnation Plants	Roses	Athiriver	Ami R.	0733626941	amir@exoticfields.com
Carzan Kipipiri	Flowers	Naivasha	Nicholas	0721844367	kipipiri.production@carzankenya.com
Carzan Kipipiri	Flowers	Naivasha	Justus Metto	0722755396	gm@carzankenya.com
Carzan Rongai	Flowers	Nakuru	Francis	0720890920	rongai.production@carzankenya.com
Carzan Rongai		Nakuru	Paul M.	0711838689	rongai.production@carzankenya.com
Charm Flowers	Flowers	Athiriver	Ashok Patel	020 352583	ashki@wananchi.com
Colour Crops	Hypericum	Nanyuki	Vincent	0721652231	colourcrops@tmu.com
Colour crops	Flowers	Nakuru	Maina	0722578684	bahati@colourcrops.com
Colour crops Naivasha	Flowers	Naivasha	Geoffrey Mwaura	0722200972	nva@colourcrops.com
Countrywide Connections		Nanyuki	Peterson Thuita	0724786004	bondet.production@kariki.biz
Delemere Pivot		Naivasha	Daniel Ondiek	0720395963	daniel.ondiek@vegpro-group.com
Desire Flowers	Flowers	Isinya	Rajat Chaohan	0724264653	rajatchaohan@hotmail.com
De ruiters	Breeder Roses	Naivasha	Fred Okinda	0722579204	Fred.okinda@deruiter.com
Double Dutch	Cuttings	Naivasha	James Opiyo	0723516172	Opiyojames160@gmail.com
Duro Farms (Rain Forest land)	Roses	Naivasha	Julius Kigamba	0723665509	jkigamba@fleurafrica.com
Elbur flora	Roses	Nakuru	Daniel Moge		
Enkasiti Thika	Flowers	Thika	Tambe	0734256798	enkasiti@gmail.com
Equator Roses	Flowers	Eldoret	Charles Mulemba	0721311279	cmulemba@sianroses.co.ke
Equinox	Flowers	Nanyuki	Tom Lawrence	0722312577T	tom@equinoxflowers.com
Everflora Ltd.		Thika	-	0735873798	everflora@dmblgroup.com
Fairy Flowers	Flowers	Limuru	Sylivester	0753444237	sylvesterkahoro@yahoo.com
Fides Kenya Ltd	Cuttings	Embu	Francis Mwangi	068-30776	
Finlays Flamingo Farm	Flowers	Naivasha	Peter Mwangi	0722204505	peter.mwangi@finlays.net
Finlays- IbiS Farm	Flowers	Nanyuki	Purity Thigira	0722279176	purity.thigira@finlays.net
Finlays Kingfisher Farm	Flowers	Naivasha	Charles Njuki	0724391288	charles.njuki@finlays.net
Finlays Kingfisher Farm	Flowers	Naivasha	Jacob Wanyonyi	0722773560	jacob.wanyonyi@finlays.net
Finlays Ibis Farm	Vegetables	Nanyuki	Augustine Mwebia	0721447430	augustine.mwebia@finlays.net
Finlays-Siraji Farm	Carnations, Roses	Nanyuki	John Magara/Peris	0729050116	peris.ndegwa@finlays.net
Finlays -Kericho	Flowers	Kericho	Elijah Getiro	0722873539	elijah.getiro@finlays.co.ke

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
Finlays -Tarakwet	Flowers	Kericho	Japheth Langat	0722863527	japhet.langat@finlays.co.ke
Finlays Chemirel	Flowers	Kericho	Aggrey Simiyu	0722601639	aggrey.simiyu@finlays.co.ke
Finlays- Lemotit	Flowers	Kericho	Richard Siele	0721486313	richard.siele@finlays.co.ke
Flamingo flora	Roses	Njoro	Sam Nyoro	0721993857	s.ivor@flamingoflora.co.ke
Flora ola	Roses, Hypericum	Solai-Nakuru	Wafula	08382972	floraolaltd@gmail.com
Flora Delight		Kiambu/ Limuru	Marco	0710802065	marcovansandijk@yahoo.com
Florensis Ltd	Cuttings	Naivasha	Anne Marie		annemarie@florensis.co.ke
Florenza	Roses	Nakuru	Yogesh	0715817369	
Fontana Ltd-Salgaa		Nakuru	Kimani	0733605219	production@fontana.co.ke
Fontana Ltd		Nakuru	Girrish Appana	0726089555	production@fontana.co.ke
Fox Ton Agri		Naivasha	Jim Fox	0722204816	jim@foxtonagri.com
Fpeak		Thika	Mutiso/Titus	0711214396	anthonymutiso@gmail.com
Frigoken K Ltd	Vegetables	Nairobi	Nicholas Kahiga	0722797547	nicholas.kahiga@frigoken.com
Gatoka Roses	Roses	Thika	Chris	0723408471	gatoka@swiftkenya.com
Gladioli Ltd		Naivasha	Pieriguichi / Claudia	0722206939	torres.palau@yahoo.com
Golden Tulip	Roses	Nakuru	Ravi	0723159076	ravi@bth.co.ke
Golden Tulip (Laurel Inter.)	Roses	Nakuru	Ashok	0738359459	ashok@btl.co.ke
Gorge Farm		Naivasha	Patrick Mulumu	0722498267	pmulumu@vegpro-group.com
Groove	Flowers	Naivasha	John Ngoni	0724448601	grovekenya@gmail.com
Hamwe	Hypericum	Naivasha	Peter Kamwaro	0721758644	hamwe.fm@kariki.biz
Hamwe- Molo	Fowers	Nakuru	JosephJuma	0725643942	production.fm@kudenga.co.ke
Harvest / Manjo Plants	Roses	Naivasha	Phanuel Ochunga	0722506026	phanuel.ochunga@gmail.com
Harvest Ltd	Roses	Athiriver	Mr. Farai Madziva	0722-849329	farai@harvestflowers.com
Highland plantations	Cuttings & Herbs	Olkalou	Amos Mwaura	0726726392	production@highlandplants.co.ke
Imani Flowers	Flowers	Nakuru	Moses	0722977214	
Indu Farm		Naivasha	Wesley Koech	0715546908	
Indu -Olerai Farm		Nakuru	Everline Debonga	0723383160	everlyne.adhiambo@indu-farm.com
Interplant Roses	Roses	Naivasha	Gavin Mourittzen	0733220333	info@interplantea.co.ke
Isinya	Flowers	Isinya	Pradeep	0736586059	pm@isinyaroses.com
Jatflora		Naivasha	James Oketch	0724418541	jatflora@gmail.com
Jesse AGA		Mweiga	Thuranira	0754444630	davidt@eaga.co.ke
Karen Roses	Flowers	Nairobi	Peter Mutinda	0723353414	pmutinda@karenroses.com
Kariki Ltd.		Thika	Samwel Kamau	0723721748	production@kariki.co.ke
Karuturi	Flowers	Naivasha	Rob		rob.paul@twigaroses.co.ke
Twiga Flowers	Flowers	Naivasha	pius Kimani	0721747623	pius.kimani@gmail.com
Kenflora Limited		Kiambu/ Limuru	Abdul Aleem	0722311468	info@kenfloraa.com
Kentalya		Naivasha	Linnet	0733549773	lynette@kentalya.com
Kenya Cuttings	Flowers	Ruiru	James Ouma	0725217284	john.odhiambo@syngenta.com
Kenya Cuttings	Flowers	Thika	Kavosi Philip	0721225540	philip.munyoki@syngenta.com
Kenya Pollen Flowers	Flowers	Thika	Joseph Ayieko	0733552500	joseph.ayieko@syngenta.com
KHE		Nanyuki	Elijah Mutiso	0722254757	mutiso@khekenya.com
Kisima Farm	Roses	Timau	Martin Dyer	0722593911	martin@kisima.co.ke
Kongoni River Farm-Gorge Farm	Roses	Naivasha	Anand Patil	0728608785	anand.patil@vegpro-group.com
Korongo Farm		Naivasha	Macharia	0721387216	
Kreative	Roses	Naivasha	Bas Smit	0722 200643	info@kordesroses.com
Lamorna Ltd	Roses	Naivasha	Mureithi	0722238474	admin@lamornaflowers.com
Lathyflora		Limuru	Mbauni John	0721798710	mbaunij@yahoo.com
Lauren International	Flowers	Thika	Chris Ogutu/Carlos	0722783598	laurenflowers@accesskenya.co.ke
Lex International	Roses	Naivasha	Steve Outram	0733 609863	steve@lex-ea.com
Liki River	Flowers	Nanyuki	Madhav Lengare	0722202342	madhav@vegpro-group.com
Liki River	Flowers	Nanyuki	Nitin	0700000342	nitin.golam@vegpro-group.com
Livewire	Hypericum	Naivasha	Esau Onyango	0728606878	management@livewire.co.ke
Lobelia Ltd/ Sunland	Roses	Timau	Peter Viljoen	0721632877	info@lobelia.co.ke
Lolomarik	Roses	Nanyuki	Topper Murry	0715 727991	topper@lolomarik.com
Loldia Farm		Naivasha	Gary/Rotich	0720651363	
Longonot Horticulture		Naivasha	Chandu	0724639898	chandrakant.bache@vegpro-group.com
Longonot Horticulture		Naivasha	Patrick Mulumu	0722498267	patrick.mulumu@vegpro-group.com
Maasai Flowers	Flowers	Isinya	Andrew Tubei	0722728364	atubei@sianroses.co.ke

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
Magana	Roses	Nairobi	Lukas	0788695625	farmmanager@maganaflowers.com
Mahee	Roses	Nakuru	Senthil Bharathi	0789777145	maheefm@eaga.co.ke
Mahee Wilham	Vegetables	Nakuru	Missire	0754444629	maheevegfm@eaga.co.ke
Maji Mazuri Roses	Flowers	Eldoret	Wilfred Munyao	0725848912	wmunyao@majimazuri.co.ke
Maridadi Flowers	Flowers	Naivasha	Jack Kneppers	0733333289	jack@maridadiflowers.com
Maua Agritech	Flowers	Isinya	Madan Chavan	0738669799	production@mauaagritech.com
Mauflora	Roses	Nakuru	Mahesh	0787765684	mahesh@mauflora.co.ke
Milmet/Tindress Farms	Flowers	Nakuru	Pravin		pravinyadav.29@gmail.com
Molo River Roses	Flowers	Nakuru	A. Wambua	0724256592	awambua@moloriverroses.co.ke
Mwanzi Farm	Roses	Rumuruti	Peter Wekesa	0723027208	
Mt Elgon Flowers	Roses	Eldoret	Bob Anderson	0735329395,	bob@mtelgon.com
Mweiga Blooms	Flowers	Nanyuki	Stewart/ Mburu	0721674355	mweigablooms@wananchi.com
New holland - Laurel Investment	Roses	Nakuru	Ashok	0738359459	
Nini Farms	Roses	Naivasha	Menjo / Philip	0720611623	production@niniltd.com
Nirp East Africa	Roses	Naivasha	Danielle Spinks	0702685581	danielles@nirpinternational.com
Ol Njorowa	Roses	Naivasha	Charles Kinyanjui	0723986467	mbegufarm@iconnect.co.ke
Olij Kenya Ltd	Roses	Naivasha	Sally Nicholas	0737888028	v.bhosale@olijkenya.com
Oserian	Flowers	Naivasha	Musyoka Stephen	0722888377	stephen.musyoka@oserian.com
Panda Flowers	Roses	Naivasha	Chakra	0786143515	chakra@pandaflowers.co.ke
Panocol International	Roses	Eldoret	Mr. Paul Wekesa	0722748298	paul.wekesa@panocal.co.ke
Penta	Flowers	Thika	Tom Ochieng	0723904006	tom@wananchi.com
Preesman	Roses	Nakuru	Benard Ndungu	0721630887	
Pj Dave	Flowers	Isinya	Simiyu	0723500049	pjdavetimau@pjdaveepz.com
Pj Flora	Flowers	Isinya	Palani Muthiah	0752607651	muthiah.palani1971@gmail.com
Pj Thande Farm		Kiambu/Limuru	Elizabeth Thande	0722380358	elizabeth@wetfarm.co.ke
Plantation Plants	Cuttings	Naivasha	William Momanyi	050 20 20282	pplants@kenyaweb.com
Porini Ltd	Flowers	Nakuru	Pitambar Ghahre	0726774955	porini@isinyaroses.com
PP Flora	Roses	Nakuru	Robert /Prakash	0718045200	ppflora2010@gmail.com
Primarosa	Flowers	Athi RiVer	Dilip Barge	0731000404	dilip@primarosaflowers.com
Primarosa	Roses	Nakuru	Kadam	0721274413	kadam@zuri.co.ke
Racemes Ltd		Naivasha	Bonny	0721938109	bonny@kenyaweb.com
Ravine Roses Flowers	Flowers	Nakuru	Peter Kamuren	0722205657	pkamuren@karenroses.com
Redland Roses		Thika	Aldric Spindler	0733603572	aldric@redlandsroses.co.ke
Redwing Flowers	Flowers	Nakuru	Simon Sayer	0722227278	sayer@redwingltd.co.ke
Rift Valley Flowers Ltd	Flowers	Naivasha	Peterson Muchuri	0721216026	fm@riftvalleyroses.co.ke
Rimiflora Ltd		NaivaSha	Richard / Stephen	0722357678	richard@rimiflora.com
Riverdale Blooms Ltd		Thika	Antony Mutugi	0202095901	rdale@swiftkenya.com
Roseto	Roses	Nakuru			gm.roseto@megaspingroup.com
Rozzika Gardens –Kamuta Farm		Naivasha	Mbuthia	0721849045	jwachiram@yahoo.com
Savannah international	Geranium	Naivasha	Ignatius lukulu	0728424902	i.lukulu@savanna-international.com
Selecta Kenya		Thika	Alnoch Ludwig	0738572456	l.allnoch@selectakenya.com
Soljanmi	Fowers	Njoro	Kirani Nangare	0787787544	kiran.nangare@xflora.net
Schreus	Roses	Naivasha	Pradeep		
Shades Horticulture	Flowers	Isinya	Mishra	0722972018	info@shadeshorticulture.com
Shalimar Flowers	Flowers	Naivasha	Anabarasan	0733604890	anbarasan@eaga.co.ke
Sierra flowers Ltd	Flowers	Nakuru	Sherif	0787243952	farm.sierra@megaspingroup.com
Simbi Roses		Thika	Karue	067 44292	simbi@sansora.co.ke
Sirgoek Flowers	Flowers	Eldoret	Andrew Keitany	0715 946429	sirgeok@africaonline.co.ke
Solai Milmet/Tindress	Flowers	Nakuru	Ravindra	0788761964	tindressmilmet@gmail.com
Star Flowers Flowers	Flowers	Naivasha	Dinkar	0789487429	dinkar@vegpro-group.com
Subati Flowers	Flowers	Nakuru	Naren Patel	0712 584124	naren@subatiflowers.com
Subati Flowers	Flowers	Naivasha	Naren Patel	0712 584124	naren@subatiflowers.com
Suera Flowers Ltd	Flowers	Nakuru	George Buuri	0724622638	gbuuri@suerafarm.sgc.co.ke
Sun buds	Hypericum Gypsophilla, Army	Naivasha	Reuben Kanyi	0723920237	kanyireuben@gmail.com
Sunland Timau Flair	Roses	Timau	Peter Viljoen	0723383736	info@lobelia.co.ke
Stockman rozen	Roses	Naivasha	Julius muchiri	0708220408	julius@srk.co.ke
Tambuzi	Roses	Nanyuki	Paul Salim	0722 716158	paul.salim@tambuzi.co.ke

FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
Terra nigra	Breeder--1ha	Naivasha	Peter van der meer		petervandermeer@terranigra.com
Timaflor Ltd	Flowers	Nanyuki	Simon van de Berg	0724443262	info@timaflor.com
Transebel		Thika	David Muchiri	0724646810	davidmuchiri@transebel.co.ke
Tropiflora		Kiambu/Limuru	Niraj		tropiflora@africaonline.co.ke
Tulaga	Roses	Naivasha	Steve Alai	0722659280	tulagaflower@africaonline.co.ke
Tk Farm		Nakuru	Gichuki	0721499043	davidgichuki20@yahoo.com
Uhuru Flowers	Flowers	Nanyuki	Ivan Freeman	0713889574	ivan@uhuruflowers.co.ke]
V.D.Berg Roses	Flowers	Naivasha	Johan Remeeus	0721868312	
Valentine Ltd		Kiambu/Limuru	Maera Simon	0721583501	simon.maera@valentinegrowers.com
Van Kleef Ltd	Roses	Nakuru	Judith Zuurbier	0722 364 943	judith@vankleef.nl
Vegpro K Ltd Vegetables		Nanyuki	John Kirunja	0729555499	john.kirunja@vegpro-group.com
Vegpro K Ltd	Vegetables	Nairobi	Judy Matheka	0721245173	jmatheka@vegpro-group.com
Vegpro K Ltd	Vegetables	Nanyuki	John Nduru	0722202341	jnduru@vegpro-group.com
WAC International	Breeder	Naivasha	Richard Mc Gonnell	0722810968	richard@wac-international.com
Waridi Ltd		Athiriver	P. D.Kadlag	0724-407889	kadlag@waridifarm.com
Wildfire	Flowers	Naivasha	Boniface Kiama	0722780811	roses@wildfire-flowers.com
Wilmer	Summer Flowers	Thika	Wilfred M.Kamami	0733714191	kamami@wilmar.co.ke
Winchester Farm	Flowers	Nairobi	Raphael Mulinge	0725848909	rmulinge@sianroses.co.ke
Windsor		Thika	Vikash	073705070	vikash@windsor-flowers.com
Xpression Flora		Nakuru	Mangesh Rosam	0720519397	mangesh.rasam@xflora.net
Zena	Roses	Thika	Arun Mishra	020 2328970	sales@zenaroses.co.ke
Zena Asai Farm	Roses	Eldoret	Laban Koima	0722554119	koima@zenaroses.co.ke
Zena Roses - Sosiani	Roses	Eldoret	Sylvester Saruni	0722635325	saruni@zenaroses.co.ke

FLOWER FARMS IN UGANDA

TYPE	FARM NAME	CONTACT PERSON	LOCATION	PHONE NUMBERS	E-MAIL
Roses	Rosebud	Ravi Kumar	Wakiso	0752 711 781	ravi.kumar@rosebudlimited.com
Roses	Maiye Estates	Premal	Kikwenda wakiso		premal@maiye.co.ug
Roses	Jambo flowers	Patrick Mutoro	Nakawuka Sisia Wakiso	(254) 726549791	pmutoro80@yahoo.co.uk
Roses	Pearl Flowers	Raghbir Sandhu	Ntemagalo Wakiso	0772 72 55 67	pearl@utlonline.co.ug
Roses	Aurum flowers	Kunal Lodhia Shiva	Bulega, Katabi Wakiso	0752 733 578	kunal@ucil.biz
Roses	X-pressions	Ali Droiya	Katabi Wakiso	0712 787788	xpressions@utlonline.co.ug
Roses	Eruma roses	Kazibwe Lawrence	Mukono	0776 049987	kazibwe@erumaroses.com
Roses	Uga rose	Grace Mugisha	Katabi Wakiso	0772 452 425	ugarose@infocom.co.ug
Roses	Kajjansi	K.K rai	Kitende Wakiso	0752 722 128	kkrai@kajjansi-roses.com
Roses	Uganda Hortech	M.D hedge	Lugazi Mukono	0703 666 301	mdhedge@mehtagroup.com
Roses	Melissa Flowers	Tobby Maddison	Katabi Wakiso	0755 722 262	toby.maddison@melisa-flowers.com
Chrysanthemums	Fiduga	Jacques Schrier	Kiringente , Mpingi	0772 765 555	j.scherier@fiduga.com
Chrysanthemums	Royal Van Zanten	Jabber Abdul	Namaiba Mukono	0759 330 350	j.Abdul@royalvanzanten.com
Impatiens, poinsetia	Wagagai	Olav Boenders	Iwaka Bufulu Wakiso	0712 727377	olav@wagagai.com
Chrysanthemums	xclussive cuttings	Peter Benders	Gayaza- Zirobwe rd	0757 777 700	pbenders@xclussiveuganda.com

FLOWER FARMS IN TANZANIA

TYPE	FARM NAME	CONTACT PERSON	LOCATION	PHONE NUMBERS	E-MAIL
Roses	Kili flora	Jerome Bruins	Arusha	255 27-25536 33	jbruins@habari.co.tz
Roses	Mt. Meru	Heikki Niskala	Arusha	255 27 2553385	office@mtmount-meru-flowers.com
Roses	Tengeru Flowers	Mark Ngalo Arusha	Tanzania	255 27 255 3834	teflo@africaonline.co.tz
Roses	Hortanzi	Mr Micheal Owen	Arusha	255 784 200 827	hortanziagm@cybernet.co.tz
Roses	La fleur de Afrique	Greysom Mrema	Arusha	0784 363 570	fda@ars.bol.co.tz
Hypericums	Kilimanjaro flair	Greg Emmanuel	Arusha	255 784 392 716	greg@kilimanjaroflair.com
Crysenthemums	Multi flower Ltd	Tjerk Scheltema	Arusha	255 27 250 1990	tjerk@arushacutting.com
Crysenthemums	Fides	Greg Emmanuel	Arusha	255 27 255 3148	fides@habari.co.tz
Crysenthemums	Dekker Bruins	Lucas Gerit	Arusha	255 27 255 3138	info@tfl.co.tz
Crysenthemums	Arusha cuttings	Tjerk Scheltema	Arusha	255 27 250 1990	tjerk@arushacutting.com

FLOWER FARMS IN ETHIOPIA

TYPE	FARM NAME	CONTACT PERSON	LOCATION	PHONE NUMBERS	E-MAIL
Roses	Linsen flowers	Peter Linsen	Holeta		Elinsenroset@ethionet.et
Roses	Karuturi Farm/Ethiopia meadows	Peter Pardoen	Holeta	0922 750602	Peter.Pardoen@karuturi.com
Roses	Alliance flowers	Navale	Holeta		navele@nehainternational.com
Roses	Ethio dream Rishi	Holeta	Ethiopia	011 23 72335	holeta@jittuhorticulture.com
Roses	Holeta Roses Navale	Holeta	Ethiopia		navale@nehainternational.com
Roses	Arsi Agricultural Mecahanization		Holeta		arsiflower@ethionet.et
Roses	Supra Flowers	Kaka Shinde	Holeta	0911 353187	kakashind@rediffmail.com
Roses	Agriflora	M. Asokan	Holeta	0922 397760	flowers@ethionet.et
Roses	KAF Flowers	Baker Elkadi	Holeta	251 913 202 460	baker-elkadi@yahoo.com
Roses	Rose Ethiopia	Betemarian Kiflu	Holeta	0911 91 22 81	betemariankiflu@yahoo.com
Roses	Ethio- Agricerft	Alazar	Holeta	0910 922 312	alazar@yahoo.com
Roses	Flowerama	Admin manager	Holeta	0912, 9311 81	flowerama@ethionet.et,
Roses	Dire flowers	Seifu Bededa	Holeta	251-11-5156888	dhf@ethionet.et
Roses	Addisfloracom P.L.C	Kitema Mihret	Holeta	0912 264190	tasfaw@addisflora.com
Roses	Joe flowers	Mihrtu Tafare	Holeta	0911 370519	miheretuta@yahoo.com
Roses	Enyi- Ethio	Teshale	Sebata	0911 464629	enyi@ethionet.et
Roses	Lafto Roses	Andrew Wanjala	Sebata	0922 116 184	irrigation@laftorose.com
Roses	Eden Roses	Vibhav Agarwal	Sebata	0930 011228	vaibhavaggarwal1@hotmail.com
Roses	Ethio-passion	Roshen	Sebata	0911 511 711	roshanmuthappa811@gmail.com
Roses	Golden Rose	Mr. Sunil	Sebata		
Roses	E.T Highlands		Sebata	0 911 50 21 47	bnf2etf@ethionet.et
Roses	Dire flowers 2	Abenet Fiktu	Sebata	0911 149 329	abifiktu@yahoo.com
Roses	Sharon Flowers		Sebata		saronfarm@ethionet.et
Roses	Zagwe roses	Melaku Terefe	Sebata	0912 426635	zagweflora@yahoo.com
Roses	Selam Flowers	Etsegenet Shitaye	Sebata	0913 198440	etstgshita@yahoo.com
Roses	Joy Tech	mulugeta Meles	Debra Zyeit	0911 302804	mulugeta@joytechplc.com
Roses	Dugda floroliculture	sayalfe Adane	Debra Zyeit	0911 50 48 93	general@dugdaflora.com.et
Roses	Minaye flowers	Eyob Kabebe	Debra Zyeit	011-3728667/8/9	minayefarm@ethionet.et
Roses	Bukito Flowers	Anteneh Tesfaye	Debra Zyeit	0911 615571	
Roses	oilij	Bas Van der lee	Debra Zyeit	0911 507 307	b.vanderlee@oilijethiopia.com
Roses	Yassin Flowers	Tesfaye Gidissa	Debra zyeit	0911 89 78 56	kemevision@yahoo.com
Roses	Z. K Flowers	Abebe Mamo	Debra zyeit	0911 52 65 29	abemic/2006@yahoo.com
Roses	Friendship flowers	Alemayehu	Debra zyeit	(251)91 130 49 67	friendship.flowers@yahoo.com
oses	Evergreen farm	Hiwot	Debra zyeit	0912 18 5065	Hiwot.Ayaneh@yahoo.com
Roses	Rainbow colours	Tadessa Kelbessa	Debra zyeit	0911 389 729	rainfarm@yahoo.com
Roses	Sher	Ramesh Patil	Ziway	0912 131940	rnpatilpune@yahoo.com
Roses	Braam farm	Ben Braam	Ziway	0920 7462 70	braam.roses@hotmail.com
Roses	Sher- Koka farm	Alemitu Biru	Ziway	0912 09 78 24	
Roses	Ziway Roses	Ermiyas Solomon	Ziway	0921 094373	ermiasziwayroses@yahoo.com
Roses	Herbug	Hubb	Ziway		hubb@herburgroses.nil
Roses	AQ	Wim	Ziway		wimjr@aqroses.com
Hypericum	Margin par	Hayo Hamster	Holeta	251 911 505 845	marginpar@ethionet.et
Gypsophila	Tal Flowers	Mr. Uri	Sebata		uridago@walla.co.il
Hydragiums	Ewf Flowers	Humphrey	Sebata	0920 35 1931	production-manager@Ewf-flowers.com
pelargoniums	Red fox	Michel Zevenbergen	Ziway	0911 49 00 23	m.zevenberge@ethiopia.redfox.de
Hypericum	Abssinia flowers	Sendafa			ggh_link@ethionet.et
Geraniums	Ethiopia cuttings	Scott Morahan	Koka		scott.moharan@syngenta.com
Budding plants	Florensis Ethiopia	Netsanet Tadasse	Koka		flrensis@ethionet.et
Crysenthemums	Maranque	Mark Drissen	Merjetu	(251) 22 1190750,	md@maranqueplants.com
Freesia & Statice	Freesia Ethiopia	Ronald Vijvrberg	Sebata	(251) 115 156259,	freesia@ethionet.et
Hypericum	Yelcona	Andreas	Sebata	0921 146 930	Andreasndieolens@hotmail.com

Downy Downs a Likeable Rogue

You know I have invested in two jackets. One stays on the back of my office chair and another one on my back. And that is how you always find me in my jacket without the office complaining. He once told me as he enjoyed his drink. He had a way with women and could always get my secretary around to fitting him between clients even when the appointment list was very tight. So when my secretary asked me to pass through his farm on my routine schedule, I did not ask how he had managed to get the appointment.

Death and disease are dreary subjects, and if I were you, I would have nothing to do with them! Crop Doctors are rarely called, so what make you disturb my quiet afternoon, I asked him to kick-start the discussion Tom was the type of persons who slowly grew on you. The more I came to know him the more I was convinced he was a likeable rogue. He was working with one of the biggest flower farms in the region and I knew him as a successful Farm manager who enjoyed his bottle. Sideways he ran a very successful family business

"You remember when the weather man announced Elnino", he asked. I never took him serious as they are fond of telling you to take your blankets outside in a sunny day only to run helter skelter after few hours "Can you please tell me what it is all about?" I said. "I am tired of this hide-and-seek game," I feigned a slight annoyance. "You are a doctor and you need to examine your patient. Maybe we can walk to one of the greenhouses and you see the crop", he answered. "We start by taking history of the patient, so can you briefly tell about my patient", I said.

For the last one week, it has rained heavily and for rose growers, this is not some very good news. This can easily cause high humidity and prolonged leaf wetness. It does not need a crop pathologist like you to know free moisture is required for an infection to occur. According to my sprayers, they have witnessed constant leaf wetness for a period of 6 hours in an area with a relatively high humidity. This gives room for spores to germinate and infect leaves. After spores' production, in the morning, temperatures rise and humidity falls so the spores are released into the air.

This did not sound very good but as a doctor I tried the best I could to conceal my feelings. "Maybe I can see my patient know", I said.

On stepping outside his office, we met a team of young upcoming professionals whom he introduced as the production manager, technical manager and head of sprays. They led us into the greenhouse.

We were now inside the greenhouse and I could clearly see the description on the crop was correct. I went over the tiny leaves sometimes with a hand lens. Looks like *Peronospora Sparsa*. I said to Tom in hearing of his team. "What is that", the head of sprays asked anxiously. "It is downy mildew", I answered. "And how can you notice it" asked the scout team leader who had also joined us.

At infection the fruiting structures of the fungus emerge from the undersides of the leaves and create the greyish – colored, downy coating as you can see. I said while showing them one of the leaves I had cut to examine. The downy mass of spores are difficult to see without a hand lens or microscope. These spores appear on the underside of leaf lesions.

A side view of an infected leaf you can notice the fine whitish mycelia near the midrib of the leaf. This is the location directly under one of the purple blotches you can also see purplish red to dark brown, irregular spots on leaves.

As the disease progresses, you will see angular blotches, yellow, purple to brown, to a scorch like burn and reddened areas on sepals and stem. Small spots or long purplish areas may form on canes and may kill twigs. Infection usually occurs on young plant parts but other parts are also affected. Defoliation may occur in extreme cases.

Knowing the magnititude of the matter, Tom had gone silent biting his lower lips as he followed the conversation. Downy mildew is a fungal disease that causes destruction of leaves, stems, and flowers. Its main species are: *Peronospora, Bremia, Plasmopara*, and *Basidiophora*. Downy mildew is a serious problem in the ornamental industry. Similar environmental conditions (i.e. cool, wet weather, high humidity) favour the development of all downy mildew species.

"So what are our chances", the production manager asked weighing in the conversation. Downy Mildew is high risk pathogens. It has a Short development cycle (8-10 days under optimum conditions). It carries a high potential for reproduction (high quantities of spores) for it is widely propagated by water, wind and workers. Damage is not reversible: The damaged tissues die and result in substantial losses of harvestable stems. High genetic variability: Rapid appearance of less sensitive strains

I will not like to go deep into the physiology of the fungus. I will try to sum up some of the practical solutions which can help you minimize the loss. As a grower you must keep an alarm when you see the first signs of change in weather or when you get the first showers. You must also check your greenhouse condition and ensure you have no leakages.

Once you are sure of the first two, it is important to let your green house breath much more efficiently than any other time. Are you irrigating? Yes but you have to cut down the metre cubic as requirements are less. Ensure no excess water moisture or extra water on the beds.

Are you growing in a flush system? Make sure you go one round of thinning of all unproductive stems to control heavy canopy resulting into high humidity. If you see the first showers do not wait for the symptoms to appear for they are irreversible. Straight check your spray program and go ahead with your preventive spray. Try to do with a systemic and a contact chemical group together. It is also important you make a group of varieties mainly into three; resistant, moderate and very sensitive.

Forget the other pest and disease problem for the time. This delay in your sprays will help you avoid wetting the crop. And when spraying, time your sprays in such a way that you finish by 3.00pm to give enough time to dry. And lastly ensure on stagnate water inside the greenhouse.

It was the last time Tom took me for a walk in a greenhouse. Unfortunately he fired himself before he was fired.

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Dipnoy 60-V2

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DIPNOY 60-V2 is specifically designed to control ***Botrytis Cineria*** in Post-harvest environments.

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