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THE LEADING FLORICULTURAL JOURNAL IN THE REGION

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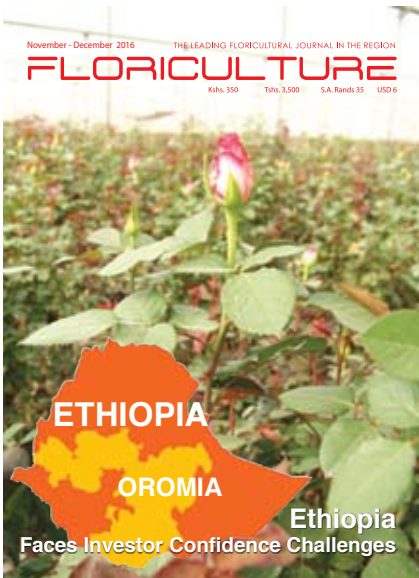


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The Leading Floriculture Magazine

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Thank You All

It's good to be together again. Few months ago the world around us seemed to be falling apart. The economy seemed to be heading to a depression. Kenyan flower industry seemed to be headed to heavy taxes in the European Union. The Ethiopian industry was in turmoil. To many in this region, it was the beginning of the end. Some companies failed or disappeared.

Everyone reading this issue worked tremendously hard. We're all tired. But we held it together and had a decent year end. Kenya will still continue accessing the EU market duty free and Ethiopia has some calmness. This is, in a year when even flat would have been good, is remarkable. Still, you worked harder than ever without seeing proportional results. That's discouraging.

But that extra effort made a big difference. We did less work in some markets but replaced that with successes elsewhere. We won a number of awards. With a steady hand and big support from our governments we held it together and actually succeeded.

This year my very humble holiday message is of gratitude to all those people who made it happen. Thank you for working so hard without always seeing the fruits of your efforts. I see it though. And I appreciate it.

And thank you to all the wives, husbands, partners, girlfriends and



boyfriends for your patience and support.

I raise my glass in a toast to all of you and those who can't join us. To a wonderful and safe holiday. Thank you for reading.

Merry Christmas and Prosperous 2017

Masila Kanyingi



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Botrytis blight outbreaks

Forecasts for clouds and rain favor Botrytis blight. Cultural practices and correct fungicides will help until the sun shines.

Listening to the continuity announcer, she announced weather forecast for the next five days as cloudy, cool and rainy weather conditions. These low light, humid conditions combined with a near full greenhouse floral crops meant Botrytis blight outbreaks. My crop was especially vulnerable now since they had a full flower canopy filled to the maximum allowable space.

Immediately, my Production Manager called me, "we are in danger of contracting Botrytis", he started. "Botrytis is a fungal disease that can cause leaf spots, petiole blighting and stem cankers on our crop. It will produce large masses of "fuzzy looking" spores that are most often called "gray mold." These spores or conidia will be spread on wind currents and can readily travel from infected to uninfected plants in that manner. The spores can survive for upwards of 21 to 24 days before they germinate on a plant", he concluded.

"Am listening", I said after a short interval of silence. "I suggest cultural control practices that will reduce the conditions that favour Botrytis infections: reducing the relative humidity in the greenhouse below 85 percent; making sure plants do not remain wet for six or more hours in a 24-hour period; and if possible, heat and vent on mornings and evenings for at least a half-hour or more to reduce humidity thus removing the humid, warm air allowing for plant surfaces to dry", he said.

"Do we have any seriously infected plants", I asked. "Not of now", he said. "However, if plants are seriously infected and need to be removed from the growing area, I will not just remove the plants and throw them on the compost pile out behind the greenhouse range as the spores can blow back into the facilities on wind currents.

Instead, I will bag up infested plants where they were growing, seal the bags and remove them from the facilities, thus reducing the risk of spores dislodging and infecting other plants in the greenhouse. I will also use the same process when cleaning plants to remove dead foliage. I will bag it and remove the spent blooms or leaves as quick as possible so the spores are not released in a clean greenhouse" he concluded.



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and Staff of Florinews Ltd Wish you
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IPM DUBAI With New Exhibitor Record

Most Important Horticultural Fair in the Arabian Gulf Region Grows by Nine Percent
IPM DUBAI will continue its success story: Ever more entrepreneurs in the green sector will use the most significant B2B fair in the Gulf region in order to initiate business with important purchasers from the Middle East. For the first time, over 110 exhibitors will be present in the Dubai World Trade Centre from November 13 to 15, 2016 - once again, nine percent more than in the previous year.

With a view to Expo 2020, IPM DUBAI will once more offer very good business prospects to exhibitors from the sections entitled Plants, Technology, Garden and Landscaping, Plant Maintenance, Floristry, Garden Features and Logistics. The need for horticultural products and horticultural technology in Dubai is rising due to large-scale urban construction projects, the creation of new public parks as well as the implementation of new hotels and resorts. His Royal Highness Sheikh Ahmed bin Saeed Al Maktoum, Chairman of the Emirates Group, President of the Dubai Civil Aviation Authority and Chairman of Dubai World (the state investment company), has therefore personally agreed to become the patron of the joint venture between Messe Essen and planetfair Dubai LLC.

Becoming Even More International

In 2016, more cut flower producers from Africa will present themselves at IPM DUBAI and the number of official national participation booths will rise once more, too. In addition to China, Egypt, Ethiopia, Germany, Sri Lanka, Taiwan and the USA, entrepreneurs from Costa Rica and India will also be exhibitors for the first time. On the German cooperative booth which will be promoted by the Federal Ministry of Food and Agriculture this year, twelve German firms will present first-class products "Made in Germany". They will be represented with young plants, peat soil, substrates, pots and shading fabrics.

An Exclusive Supporting Programme

IPM DUBAI will once more offer exhibitors and visitors outstanding opportunities for the exchange of

specialist ideas. Already one day before the start of the fair, they will be able to participate in a guided tour of selected horticultural projects in Dubai free of charge. During the fair, international experts in the sector will pass on their knowledge at first hand in exclusive seminars. The first day will focus on garden and landscaping and the second day on horticultural technology in cooperation with the Representation of interests of the German horticulture industry (INDEGA). The "Middle East Floral Designer of the Year 2016" will be honoured on the third day of the fair. Florists from the United Arab Emirates will be called

upon to submit their suggestions on the subject of "Wedding Floristry". A specialist jury as well as the visitors to the fair will select the winner.

Strong Duo: IPM DUBAI and WOP DUBAI 2016

WOP DUBAI, the leading trade fair for fresh products in the Middle East, will once more take place at the same time as IPM DUBAI. With this strong duo of fairs, planetfair Dubai LLC and Messe Essen will once more offer international trade visitors the chance to experience the whole world of the horticultural sector under one roof.



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What is the Future of Biological Control?

The crop protection industry is dominated by the large multinational agro-chemical companies. The biocontrol business is minute in comparison, with less than 10% of global sales of crop protection products. The future of the biocontrol industry is based on a range of interacting factors and difficult to predict the future, however many are suggesting that its future is likely to grow. There are numerous drivers for the use of biological control.

Pesticide resistance

Whether a pest or a disease, most organisms have the ability to become resistant to a large range of pesticides. This is often seen in the field where one season a particular pesticide works well and later the efficacy is not there. Resistance has been reported in many common groups of insecticides and fungicides.

There occurrence of resistance to a biological control is virtually unknown. For instance in Kenya the wide spread adoption of the use of predatory mites was mainly due the fact that many of the conventional pesticides were not working due to resistance.

Governments and the regulators

Broadly around the global, the authorities are trying to reduce the reliance on conventional pesticides. For instance EU have launched an action plan which has the objective to reduce pesticides, in compliance with the EU's Sustainable Use Directive.

The aim is to reduce the dependency of farms on plant protection products (up to 50% reduction in ten years), while at



Scouting for Pests (File Photo)

the same time maintaining agricultural production at a high level in both quality and quantity terms. Another and more dramatic example of how governments can affect the use of pesticides is that the EU has placed severe restrictions on the use of a number of Active Ingredients which include imidacloprid (Confidor), thiacloprid (Calypso), acetamiprid (Golan) and thiamethoxam (Actara) are likely to be under pressure for years to come and this will not only be reflected in the EU but also Kenya as well. For instance the UK supermarket has given notice to its suppliers world-wide. Therefore can biological control fill the vacuum left by the regulators withdrawing pesticides?

Retailer pressure.

The European retailers are under pressure to reduce the use of pesticides in the products they sell, whether this is French beans or roses. This is for instance an important criteria in products labelled Fair Trade. As a consequence they exert

Though there are many positives for the future of biological control there are some challenges to using the technology. Particularly with the use of predatory mites their successful use requires greater management and better scouting.

market forces on the growers in Kenya to comply by measuring pesticide use (MPS scheme) and determining the pesticide residues on products. Therefore growers are forced to seek alternative methods of pest and disease control and this will include the greater use of biological control agents.

Availability and cost

Technology, such as biological control will only be adopted if it is available, at a price that can be afforded and is shown to be effective. Kenya has been fortunate to have biological control agents that are produced in Kenya that are certainly available, fresh, and low cost. In addition to locally produced BCAs, the large Kenya flower market has attracted BCA suppliers from Europe, South Africa, India and China hoping to supply this large market.

Therefore the Kenyan grower clearly will have a good choice of product available in the future. Cost is an important factor because if the price is too high, growers will not be able to use enough of the BCA and therefore they will not always work quickly enough. Where cost is high then some growers can justify the extra cost through extra yield and quality.

Flower quality

Stressed plants do not yield as much as un-stressed plants. Therefore growers spend much of their time optimising plant growth and relieving plant stress. Pests cause plants stress; pesticides reduce the pest but at the same time can stress the plant. Wetters and adjuvants can cause stress by removing the waxy layer of leaves and in turn plants can be stressed. A feature of using biological control agents is that they do not stress the plant and in turn the stress free plants responds but producing more yield, increasing bud and stem length. However the grower has to capitalise and earn more money from this benefit.

and it worked so why change! However a feature of the Kenya floriculture sector is that it has been a rapid adopter of change. New ideas and technologies are welcome and growers are always willing to try something new and this is all about mindset. Within any group there are the early adopters and the laggards, but in general adoption is not a major barrier. This is not the case with groups of growers in other sectors and parts of the world. There are many reasons for this but the consequence is that this leads to technologies that are shown to be successful quickly being adopted. As a result biological control in some form or another has been adopted by the floriculture sector. This flexible mindset of the Kenyan grower is likely to be a key factor in the future success of the Kenyan industry and biological control.

The future of biological control.

The pointers suggest that the biological control might be a greater force in the crop protection industry in future. Pesticide makers such as Switzerland's Syngenta as well as Bayer AG and BASF SE of Germany are seeking environmentally friendly technology as the European Union phases out hundreds of agrochemical products and supermarkets require fewer chemical residues on foods.

Therefore you would expect the multinationals to be getting more involved in biological control. This is exactly what has happened in the last year with Bayer buying Agraquest, a global supplier of innovative biological pest management solutions based on natural microorganisms. BASF purchased Becker Underwood, a major biological seed treatments producer, whilst Syngenta purchased Pasteuria Bioscience which produces a range of soil bacteria for nematode control. However this is a relatively late move and one reason is that BCAs are expensive to produce and so less profitable. In a recent study Endure demonstrated that conventional pesticides are still much more profitable than Biopesticides (Table 1).

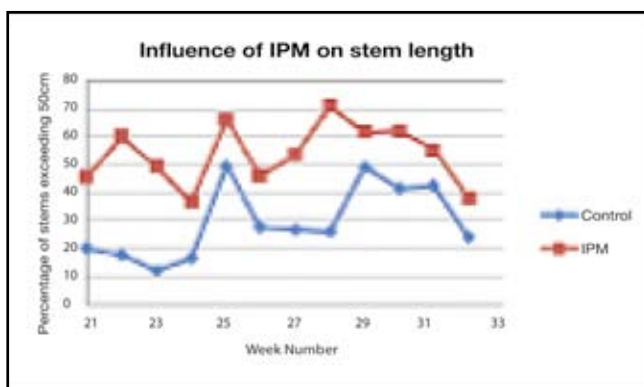


Figure 1. The influence of using IPM with a wide range of biological control agents when compared to a crop using a conventional pesticide programme on the number of stems greater than 50 cm in length. (Variety: Tropical Amazon).

The Changing “mindset” of Kenya growers. Farmers are not famous for their adoption of new ideas and as a group they can be considered conservative. My parents did it this way

%*	Chemical pesticide	BIOP
Sales value at plateau level	100	100
Cost of production	13	56
Gross margin	87	44
Cost of sales	21	15
Cost of research	8	12
Cost of administration	4	3
Earnings before investments, taxes and amortisation (EBITA)	54	14
Profit after taxes, provisions and amortisation	18	2

Table 1: Compared margin structure estimates for the production and sales of a Biopesticides (BIOP) and a chemical pesticide (source: Endure)

* Costs and margins are expressed as a percentage of the sales value of the commercial product.

Though there are many positives for the future of biological control there are some challenges to using the technology. Particularly with the use of predatory mites their successful use requires greater management and better scouting. With the precision scouting systems offered by Scarab-Consulting, again using some of the latest technology this challenge is being solved. BCAs are slow to act therefore planning and anticipation are critical.

There is no knock down with biological control and fire fighting with BCAs is not an option! To make biopesticides work they need a prophylactic programme which involves regularly application and results can take as long as 6 months to



Using a lens to scout (File photo)

full be appreciated. Fortunately most floriculture crops are longer term perennial crops which are highly suited to prophylactic programmes. The introduction of biological control brings with it new challenges, such as pests that were of minor importance ten years ago e.g. mealy bug. However these are often temporary challenges and solutions are soon found such as either compatible chemicals or another biological control.

There are many factors that cause a grower to follow a particular growing practice. With increasing price costs and unpredictable prices for roses, returns and profit are a major factor. The adoption of new technology must always be examined from a financial basis and need for efficient, accurate financial monitoring at the greenhouse and variety level is critical. Many flowers growers have been adopting BCAs and seem to think they are cost effective method of crop protection. In future the speed of change is unlikely to slow, the biological control industry has to keep up the pace of innovation to address the next new crop protection challenge!

MR. Henry Wainwright is a senior BCAs consultant and Managing Director of Real IPM K Ltd specialising in Consultancy and development of Bio-controls in Kenya

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Kelp Based Plant Growth Stimulants- Science Or Snake Oil?

“A plant hormone is an organic compound synthesized in one part of the plant and translocated to another part, where, in very low concentrations, it causes a physiological response”.

Introduction

There are a number of biochemical factors which determine the growth and sustainability of a plant. These include: Fertilizer, Water, Sunlight and Hormonal Stimulation.

The plant is fed by trapping of sunlight and combining it with water and oxygen to produce a carbohydrate. Combined with elements drawn through the root system from the soil, this allows the laying down of cell structures and the movement of nutrients through the plant. The stimulation of root or growing point growth has been shown to be largely hormonal from three primary groups-auxins, cytokinins and gibberellins.

Some species of kelp are among the fastest growing plants in the world. While most seaweed extracts are fertilizer supplements based on significant levels of minerals, the “cold cellular burst” method of extraction, pioneered and patented in south Africa and available as “Kelpak”, has been shown to maintain quantities of hormones of a specific fast growing Kelp *Ecklonia maxima* at their natural level.

There are a number of publications that have reported improved performance in plant growth and yield where seaweed products are used. However unfortunately the inconsistency of these results together with a failure to understand the mode of action and methodology of use has resulted, at times, in the seaweed group being reduced to the category of “snake oil” in some quarters. The particular method of extraction called “cold cellular burst” used in the manufacture of Kelpak” has risen well above this consistency problem with its gentle non-chemical, non temperature dependent method of rupturing the cell and spilling out the contents followed by a carefully designed separation process to ensure that only the active growth promoting portions are used. It is unfortunate that customer perception has failed, at times, to differentiate between these products however it could be expected that usage will clearly demonstrate the consistent performance of a naturally occurring blend of auxins and cytokinins (as present in Kelpak)

Hormones in Plant Growth

Cytokinins

Cytokinins are manufactured in the root tips of plants and are then transported in the xylem to all other parts of the plant, accumulating, in particular, in the young leaves seeds and fruits. The major function of cytokinins is to promote cell division and hence it is seen as a promoter of new growth.

Auxins

Auxins are synthesized by the plant in young leaves and growing points and then moved downwards through vascular bundles towards

the roots. Transport is slow at a round 1cm per hour. Removal of young leaves, buds and meristem tissue from the growing points has been shown to inhibit the number of lateral roots formed. This root growth can be restored by the additions of small amounts of auxins.

What Is Kelpak?

What does it do?

Kelpak is designed as a companion product to be used with a suitable fertilizer regime in the stimulation of root growth and the consequent uptake of nutrients from the soil. It has also been shown to change the stem cells in cereals plants making them more robust and resilient to bending or “lodging”. This increased resilience of plant and root cells, documented for wheat is likely to have other potential benefits in resistance to stress and disease. This has been reported in the turf industry by way of resistance to nematode damage in particular. In horticulture, significant increases in production have been reported presumably due to promotion of growth point growth and increased nutrient uptake by large root systems. Increased shelf life of tomatoes has also been reported.

What is “Cold Cellular Burst”?

There are a number of processes that have been employed in the digestion or preparation of extracts from seaweed sp. Over many years.

- The use of caustic solutions on dried material to break down the rubbery cell walls of seaweed and expose the contents for uptake by the plant
- The use of heat to liquidize and breakdown the dried seaweed into a liquid, which can be applied
- The use of extreme cold to make the cell walls brittle, followed by pressing through rollers, causing the crystals formed during freezing to frustrate the cell structures and release the contents
- The use of pressure on fresh material to compress the cells in the absence of air or water followed by a sudden release resulting in a rupture of the cell walls and release of the contents. This is termed “Cold Cellular Burst” and was developed and patented by the developers of Kelpak in South Africa.

The first three methods above all result in the loss of all or most of the auxins within the resultant extract due to their delicate nature. The last method retains the concentrations of auxins (and cytokinins) at their “as growing” level and therefore gives this method (developed and patented by kelpak) a unique balance that can provide the stimulation to root growth that is desirable in increasing nutrient uptake and plant vigour.

Why is it different?

Kelpak is an extract from the species *Ecklonia maxima* and uniquely maintains the balance

of cytokinins and auxins seen in that plant. Auxins are relatively delicate biochemicals and are easily destroyed during drying, heating, freezing or chemical extraction. For this reason levels of auxins are relatively low in traditionally manufactured seaweed based fertilizer products. However kelpak contains a level of 11g/litre of auxins and 31µg per litre of cytokinins.

A number of auxins and cytokinins have been identified in Kelpak and the role of each of these or the importance of synergistic effects of the ratio between these components is not fully understood. However a large volume of work has been carried out on kelpak as a naturally occurring blend of these hormones which demonstrated a range of uses of kelpak as an adjunct to a suitable fertilizer regime.

Use in Turf

Evidence from work carried out by the NZ Turf Research Institute and at Bowling Clubs on the central coast of NSW has indicated the following results from the use of kelpak in conjunction with a standard fertilizer regime:

- Increased and more vigorous root system
- More rapid recovery from stress
- Increased resistance to nematode infestations

Seaweed extracts are not nematocides, however cytokinins are found at low levels in the root systems of turf infested with nematodes. Therefore it has been reported that increasing the level of cytokinins in turf infested with nematodes inhibits larvae penetration and retards nematode development within the root system. It has been reported that using molasses or sugar in conjunction with kelpak can be a successful adjunct to a nematode control program.

Conclusions

Hormones play a potentially significant role in the growth of plants, their ability to take up nutrients and their resistance to pests and disease. Current knowledge indicates that not only the gross amount of each stimulant is important but their ratio to each other.

The extraction process from most seaweed products destroys or minimizes the level of the most sensitive hormone group- the auxins. Therefore unfortunately many terms of growth stimulation and claims for these products have been difficult to realize in practice for this reason.

However the cold cellular burst method of extraction appears to have overcome this problem and maintain levels and ratios of cytokinins and auxins in the resultant extract-Kelpak. Trial work on many species has indicated positive results in terms of root growth, resistance to lodging and disease and production.

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Ethiopia

Investors Rattled by Unrest



Ethiopian Map showing Oromia Area

Mounting violence in Ethiopia has seen many killed, as protests against the government's economic and human rights policies continues. The tensions at the heart of the crisis are systemic ones, yet what makes the violence particularly worrisome is that foreign investors have become prominent targets. Foreign businesses are

being systematically attacked in protest of the government's development-centric approach, with protesters citing land grabs and unfair competition as key issues.

Foreign investor confidence in Ethiopia has been shaken following nearly a year of unrest, with the country's government now admitting that many people have died as a result of police crackdowns and a deadly stampede in the country's Oromia region.

Government estimates claim that around 40,000 workers at foreign companies have been affected by the disruptions; as cement, textile, flower, and agribusiness firms have been attacked. Popular sentiments that the benefits of growth are not being felt by all, combined with worries about foreign goods undercutting local producers has made Ethiopia a very

dangerous investment locale.

Prime Minister Hailemariam Desalegn declared a six-month state of emergency in an attempt to quell the protests by ethnic Oromo and Amhara communities over a land dispute and political marginalisation. The unrest has caused millions of dollars worth of damage to foreign-owned businesses, including flower farms and other agribusinesses. The anti-government protests have dented the view that Ethiopia is a stable partner for investment, according to Emma Gordon, a senior analyst with research firm Verisk Maplecroft. "[Foreign] investors are very concerned with the situation in the country, with some already pulling out," she said. "They were willing to look past the human rights [abuses] perpetrated by the security services, but it's difficult to ignore them now."



Part of the State of the Art Infrastructure Ethiopia has built

Foreign-Owned Businesses Cease Production

A US-based company has pulled out of Ethiopia after anti-government protesters attacked its flower farm causing 10 million euros in damage, and triggering job losses in the country and The Netherlands, a spokesman said. Flower growers and exporters, Esmeralda Farms began operations in the northern Amhara region of Ethiopia some three years ago, said Juan Carlos Vallejo, a board member for the company.

Headquartered in Miami, with a base also in Ecuador, the company had employed some 550 Ethiopians growing flowers for export mainly to Europe and Russia via its subsidiary in The Netherlands, said Vallejo. But the farm's premises were attacked and burnt to the ground earlier this month by protesters who also set fire to neighbouring farms belonging to Italian, Indian and Belgian companies, Vallejo told AFP.

A "large group" of people invaded Esmeralda Farms Inc.'s farm 13 kilometers (8 miles) south of Bahir Dar city in the Amhara region on Aug. 29, causing about 7 million euros (\$7.8 million) of damage, country manager Haile Seifu said by phone. Flower farms in the area owned by Israeli, Italian, Indian and Belgian companies were among nine commercial properties damaged in the protests, which continued on Aug. 30, he said.

"They were so aggressive, there were also soldiers who couldn't control them, so we just ran away, as it's life or death," he said from the capital, Addis Ababa. "They came actually at once through our compound, through our fence, through our main gate, so everybody left." "It was crazy. They burnt all of our facilities, the dining rooms, everything was set on fire," he said, adding that 35 acres of the 160-acre farm had been under production, mostly growing spring roses and gypsophila. "Protestors destroyed tractors, trucks, containers, and the packaging hall, along with irrigation pumps and the company's greenhouses. Everything is gone," according to Director



A Lorry burnt by the protesters

Loui Hooijman, who travelled to the country 24 times last year to set up operations. During those trips, he found Ethiopia to be "one of the most peaceful countries in Africa," he wrote in a statement.

A bore hole the company had also sunk to provide water - which was also supplying the local population - was also damaged. Although there were no casualties, the damage was so great "we definitely cannot go on the farm any more, our facilities are completely destroyed."

Esmeralda had sent everyone home and was still "trying to understand what happened," Vallejo said, adding until then the company had only good experiences in Ethiopia. He said he believed the events may be linked to months of protests by the Omoro people who had feared their farmland would be seized for a government plan to expand the capital Addis Ababa. Esmeralda had "to stop our operation there, and we also had to stop our operations

in The Netherlands" in the central town of Aalsmeer with the loss of 25 jobs.

European export operations are now being handled from Ecuador, he added. Dutch growers' cooperative Royal Floral Holland had earlier said that "at least four nurseries in the vicinity of Bahir Dar in Ethiopia have been damaged by arson and vandalism."

Demonstrations in Ethiopia began popping up in November 2015 in the Oromia region, which surrounds the capital, over government plans to expand the boundaries of Addis Ababa. Although authorities dropped the urban enlargement project, brutally suppressing the protests, unrest has swept to other parts of Oromia, and more recently to the northern Amhara region.

Terribly Scared

When protesters torched a nearby Dutch-run farm in Ethiopia's Oromia region, Marc Driessen watched anxiously as smoke



Germany Chancellor Angela Merkel and her Ethiopian Counterpart on arrival for a state tour

billowed above the horizon, fearing his own business would meet the same fate. “I was really terribly scared because I saw AfricaJuice burning from our farm and we were getting noise from people that most likely our farm would be next,” he told AFP from his flower farm, Maranque, which boasts recently installed solar panels worth 600,000 euros (\$650,000).

The farm, some 125 kilometres (77 miles) south of Addis Ababa, is at the heart of the restive Oromia region where anti-government anger erupted into violence after at least 55 people died in a stampede at a religious festival on October 2. Not long after AfricaJuice, a Dutch fruit farm, went up in flames, hundreds of protesters brandishing sticks, rocks and a few guns gathered in front of Maranque.

Locals Intervention

It was a group of elders from the nearby village who rushed to the farm on their scooters, who saved the day. “We put ourselves in front of the protesters and we told them ‘Maranque is our property, do not

burn it. Burning this farm will not change the government. You’ll kill us rather than destroying this farm’. And our youngsters backed away,” said community elder Shumi Telia.

More than 800 residents of the village of Alaga Dore work at the farm. “It was like a war,” said Abraham Negussie, an employee at AfricaJuice, describing an attack by thousands of men, some armed with Kalashnikov rifles, according to witnesses. “Protesters say we don’t want to hurt the people, only to destroy this property completely,” he added. The attack left a trail of destruction with warehouses destroyed and vehicles and equipment burned.

It will affect investors

The violence in Ethiopia poses a threat to its reputation as an oasis of relative political stability and its double-digit growth, which make it a magnet for foreign investment. Driessen, who has been in Ethiopia for 12 years, is convinced that carefully nurtured ties to the local community helped protect his farm, where chrysanthemums, dahlias

and lavender grow in greenhouses. “We built a water line in the village, we put a cement floor in the school, we fixed their electricity generator... we need to do what we can to help the people surrounding us,” he told AFP.

Driessen said he was drawn to the Horn of Africa nation by its low production costs and the ideal climate of the Rift Valley. His company has invested 10 million euros in Ethiopia. “It will affect new investors dramatically,” he said of the recent violence.

Opinions

Experts, however, warn the unrest is far from over. “The moment the troops leave, there will be new attacks,” says Mohammed, who believes the best thing foreign companies can do is reach out to local elders and negotiate a deal for protection in exchange for land.

Others believe foreign agri-business should leave Ethiopia altogether. “If they truly want to help the country, foreign companies should leave and show the government that abusing its citizens will not attract foreign investment,” says Anuradha Mittal, executive director of the Oakland Institute. Anuradha Mittal, sums up the state of



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affairs in Ethiopia: “If I am a foreign investor, I look for opportunities. I understand that there are risks but in the face of this growing unrest where foreign companies have been targets, given all that has happened in terms of displacement of people and their lands given away to foreign investors, it would be astute to not go into a country like that.”

Government response hurts investor confidence

Alongside the unrest, the government’s response has only further unsettled foreign investors. The country’s state-run internet service was shut off for two days in August to disrupt protests. This move only further damaged investor confidence, and mainly hurt businesses, not protesters. In a country where a third of the population lives on less than \$1.90 per day, most protesters do not have internet access, as support for the movement is largely located in rural areas. Shutting off the internet only further compromised the position of foreign companies in Ethiopia.

Job Creations

Dutch firms insist their main goal is to help Ethiopia’s development. According to their government, Dutch companies alone provide 70,000 jobs in the country. “We have a great relationship with the local

community,” says Bas Rensen, director of FV SeleQt. His company had only been exporting beans for a couple weeks when their farm was attacked, but was already supporting a local school. AfricaJUICE is a Fairtrade certified business and ran a free health clinic for its workers.

Still, both companies have ties to Ethiopia’s regime. The Ethiopian government owns approximately 10% of africaJUICE, while FV SeleQt’s supplying farm, says Rensen, is run by “someone very close to the government”. Both firms, however, say they were not aware of any land-rights issues where they operate and believe their political connections were not the reason behind the attacks. “It was purely bad luck,” says Rensen.

There is still some Hope

Despite the shock, some investors believe that Ethiopia’s economy remains solid due to the country’s strong institutions and infrastructure, according to Ibi Idoniboye, Africa analyst at market research company Integer Research. “It’s true that we are experiencing a short-term dip in investor confidence, but the long-term view of the economies in East Africa, especially Kenya and Ethiopia, is still positive and we expect to see solid growth this year,” he said. But in the short-term, the anti-government

protests will markedly slow down foreign investment, especially in the agribusiness sector, which has bore the brunt of the violence, said Gordon. “The instability will continue until there is political reform in the country and the concerns of the protestors are addressed,” she added.

Moreover, Angela Merkel in Ethiopia to discuss issues of trade and migration, expressed concerns about German interests in the country, as Germany constitutes Ethiopia’s largest export destinations. Specifically, Germany consumes 30% of Ethiopia coffee production – a major cash crop and source of foreign currency. These exports could be threatened as unrest in agricultural areas continues, and protesting farmers continue to hinder the movement of goods to the capital.

German Chancellor Angela Merkel called on the Ethiopian government to be more inclusive and warned against using heavy-handed tactics against protesters. The government has denied accusations that the police have used excessive force but has acknowledged the need for political reform.

Conclusion

The country is now the second-largest flower exporter in Africa, with nearly a 100 flower growers on 1,700 hectares. The flower production started south of the capital Addis Ababa. Part of the country side is situated at 2,000 meter above sea level. North of the capital of Amhara, Bahir Dar, the flower production can be realized at an elevation of 2,840 metres above sea level. The Ethiopian Horticulture Producers Exporters Association expects that the area for floriculture will grow to 3,000 hectares in the coming five years and the revenue is projected to increase to \$550 million, already by the end of 2016. However, the recent political problems in the country could interrupt the steady growth in foreign



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Healthy Soil; Healthy Plants

By John Ogechah

Undervalued, neglected resource

Undervalued, the soil has become politically and physically neglected, triggering its degradation due to erosion, compaction, salinization, soil organic matter and nutrient depletion, acidification, pollution and other processes caused by unsustainable land management practices. The irony is that the main culprit of soil degradation is the very thing that most relies on healthy soils: agriculture. Industrial agriculture's intensive production systems, which rely on the heavy application of synthetic fertilizers and pesticides, have depleted soil to the point that we are in danger of losing significant portions of arable land.

It is estimated that on nearly one-third of the earth's land area, land degradation reduces the productive capacity of agricultural land by eroding topsoil and depleting nutrients resulting in enormous environmental, social and economic costs. Most critically, land degradation reduces soil fertility leading to lower yields.

In Africa, the United Nations paints a graver picture: 65% of arable land, 30% of grazing land and 20% of forests are already degraded. Locally, there has been concern in the recent years about the state of Kenyan soils and the decline in yields in some parts of the country attributed to soil health. The first national soil test was carried out across the country and the results released revealed a lot of issues ranging from soil pH, limited nutrients and organic matter content in the soil.

2015 – The International Year of Soils

This worrying state of soil affairs, against the backdrop of unprecedented population growth which will require an increase of approximately 60 percent

in food production by 2050, means that business-as-usual cannot be an option going forward. Driven by an increasing awareness that soil health is at the root of planetary, agricultural and, of course, human health, the Food and Agriculture Organization of the United Nations (FAO) has declared 2015 the International Year of Soils in an effort to raise awareness and promote more sustainable use of this critical resource. It notes that unless new approaches are adopted, globally, arable and productive land per person in 2050 will be one-fourth of the level in 1960. Healthy soils not only are the foundation for food, fuel, fibre and medical products, but are also essential to our ecosystems, playing a key role in the carbon cycle, storing and filtering water, and improving resilience to floods and droughts. This, of course, is an incredibly timely initiative in light of a series of serious challenges impacting our future and perhaps our very existence that we should all surely embrace with open hearts and willing hands!

What is a healthy soil?

But what constitutes a healthy soil?

FAO defines soil health as the capacity of soil to function as a living system, with ecosystem and land use boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and promote plant and animal health. Healthy soils maintain a diverse community of soil organisms that help to control plant disease, insect and weed pests, form beneficial symbiotic associations with plant roots; recycle essential plant nutrients; improve soil structure with positive repercussions for soil water and nutrient holding capacity, and ultimately improve crop production.

The concept of soil health captures the

ecological attributes that are chiefly those associated with the soil biota; its biodiversity, its food web structure, its activity and the range of functions it performs. At least a quarter of the world's biodiversity lives underground. Such organisms, including plant roots, act as the primary agents driving nutrient cycling and help plants by improving nutrient intake, in turn supporting above-ground biodiversity as well. This biological component of the soil system highly depends on the chemical and physical soil components.

There is a price to pay

The green revolution of the past century has seen the constant removal of soil minerals and a loss of two-thirds of the humus that helps to store and deliver those minerals and on which the organisms depend. It is a no-brainer to recognise that every time we harvest a crop from a field, we are removing a little of the minerals that were originally present in those soils. We replace a handful of them, often in an unbalanced fashion, and we decimate our soil life with farm chemicals, many of which are proven biocides. And when we decimate this 'microbial bridge' between soil and plant there is a price to pay. The plant suffers, in that it has less access to the trace minerals that fuel immunity, and the animals and humans eating those plants are also compromised. Restoration of this microbe bridge between soil and plant through sustainable soil management is key to the achievement of food security and nutrition, climate change adaptation and mitigation and overall sustainable development. How do we do this?

Composting

Composting, the accelerated conversion of organic matter into stable humus, is much more than just that. When compost

is added to the soil it stimulates and regenerates the soil life responsible for building humus. Compost serves as a microbial inoculum to restore your workforce. A teaspoon of good compost can contain as many as 5 billion organisms and thousands of different species. These beneficial microbes increase biodiversity and the balance of nature that comes with it. This balance can create a disease-suppressive soil where beneficial organisms neutralise pathogens through competition for nutrients and space, the consumption of plant pathogens, the production of inhibitory compounds and induced disease resistance through a plant immune boosting phenomenon called systemic acquired resistance. Vermicompost (compost produced from worms) are superior type of compost containing worm castings (worm poop). Castings are loaded with beneficial microorganisms which continuously build fertility in the soil. They are very high in organic matter and humates which are both extremely important to plant and soil health.

Mycorrhiza

Mycorrhizae is a general term describing a symbiotic relationship between a soil

fungus and plant root. Mycorrhizal fungi have been lauded as the most important creatures on the planet at this point in time. A part from enhancing plant growth and vigour by increasing the effective surface area for efficient absorption of essential plant nutrients, these organisms produce a carbon-based substance (called glomalin) that, in turn, triggers the formation of 30% of the stable carbon in our soils. These fungi are endangered organisms as we have lost 90% in farmed soils. There are developed products allowing farmers to effectively reintroduce these important creatures into farmlands. Compost also has a remarkable capacity to stimulate mycorrhizal fungi.

Pest antagonists

Soil degradation earlier explained above disturbs the balance of nature that keeps pest organisms in check, leading to an upsurge of pests (including diseases). Re-introduction of antagonistic fungi that attack fungi causing root rots such as *Fusarium*, *Rhizoctonia*, *Pythium* etc and nematode attacking fungi such as *Purpureocillium* (formerly *Paecilomyces*) that attack plant parasitic nematodes

such as root knot nematodes is another sustainable way of restoring this balance.

Protect soil life

Strategies that promote the survival of soil life and their humus home base must be promoted. Moreover, there is no point in reintroducing beneficial microbes with one hand and then promptly destroying the new population with the other. The use of unbuffered salt fertilisers kills many beneficials and over tillage destroys mycorrhiza.

However, the single most destructive component of modern agriculture, in terms of soil life, has been pesticides. Even some 'safe' herbicides are more destructive than fungicides in destroying beneficial fungi.

Manage nitrogen

Mismanagement of nitrogen is a major player in the loss of humus. Excess nitrogen stimulates bacteria, and in the absence of applied carbon, they have no choice but to feed on humus. A carbon source should, therefore, be included with all nitrogen applications. We need to regulate N applications (e.g. by adopting foliar application of N) and to include a carbon source such as molasses, manure or compost with every nitrogen application. The carbon source offers an alternative to eating humus.

Turning point

The UN declaration of 2015 as the International Year of Soils was a timely wake-up call encouraging a focus upon the importance of the thin veil of top soil that sustains us all in so many ways. It is not too late to recognise past mistakes and move forward to make this critically important year the turning point. The good news is that the Kenyan agricultural sector is well endowed with a broad range of expertise that is well positioned and ready to assist commercial growers and rural communities develop production systems that are economically viable and environmentally intelligent.

The author is the Training Manager at Dudutech



Vermicompost, ready for use

Natural Pyrethrum: A Solution for

Whiteflies, Aphids, Thrips, Mealybugs, Caterpillars, Mites, Bugs, Beetles, Scales and Many More

By Winrose J. Maria



Growers are faced with challenges from pests ranging from pests in the soil that attack the root system to those that attack the stems, leaves or buds posing an economic damage or aesthetic damage to the crops and thus leading to low production yields.

The most commonly found pests on crops are whiteflies, thrips, diamond backmoth caterpillars, African bollworm caterpillars, beet armyworm, mealybugs, aphids, stinkbugs, mites, leaf hoppers, jassids, cutworms, beetles, ants and others. There are different methods of controlling these pests ranging from biological controls, cultural methods, physical methods and chemical controls.

Farmers prefer a pest control method that has a fast action to the pests though they put into consideration issues of efficacy, post-harvest intervals (PHI), maximum residual levels (MRLs), phytotoxicity, resistance, safety of predators, pre-entry time after spraying, human and environmental impacts particularly on crops such as vegetables, flowers and fruits; and whether for export or for local market. For the export market there are regulations on the kind of molecules to be used on different crops by the consumer markets and significant issues with MRL's. One of the molecules that has been in use for

years for the control of pests is the pyrethrin molecule. Pyrethrins are the active ingredients in pyrethrum derived from the dried flowers of the plant

The advantages of using pyrethrum based products for control of pests are:

- Pyrethrum is 100% natural
- Low mammalian toxicity: No other insecticide can claim such a long record of proven safety towards humans and warm blooded animals. It is one of the least toxic of all insecticides and is rapidly metabolized if accidentally swallowed (in tests toxicity to rats was found to be 4,000 times lower than toxicity to the house fly).
- No resistance issues as insects lack immunity to pyrethrins because of the complex structure of pyrethrins and thus one can spray pyrethrins continuously. Pyrethrins have six active compounds called esters and thus attacks the pests from six different points.
- Broad spectrum activity: this means that it has an activity on all insect pests
- Has a fast action: it gives a knockdown effect on the insect as it works by contact and also by affecting the nervous system of the insect.
- Environmentally friendly: pyrethrum quickly breaks down in sunlight leaving no residues.

- No Pre-harvest Interval: this allows pyrethrum to be applied to crops up to and including the day of harvest. It may also be applied post harvest.
- Repellency action: it is capable of repelling insects in addition to knock-down.
- Very low Re-entry Period: After spraying, workers may return to the greenhouse as soon as the spray mist has settled.
- No Residues: Pyrethrum quickly breaks down in sunlight leaving no residues. This is particularly significant where MRL's are an issue (typically with export vegetables and fruit)

Pyrethrins are usually confused with pyrethroids but they are different in that pyrethrins are natural while pyrethroids are synthetic or man-made; pyrethrins have six active compounds while pyrethroids have one and this makes pyrethroids far more likely to be exposed to resistance by insects. Pyrethrins have a unique ability to induce excitation behavior in insects, characterized by erratic and increased movement by insects. This has the benefit of 'flushing' the insects out of hiding places, resulting in increased exposure to the Pyrethrins. Synthetic Pyrethroids do not have this flushing effect. Pyrethrins are naturally broken down by UV rays and PH variances and therefore have shorter environmental persistence than synthetic Pyrethroids.

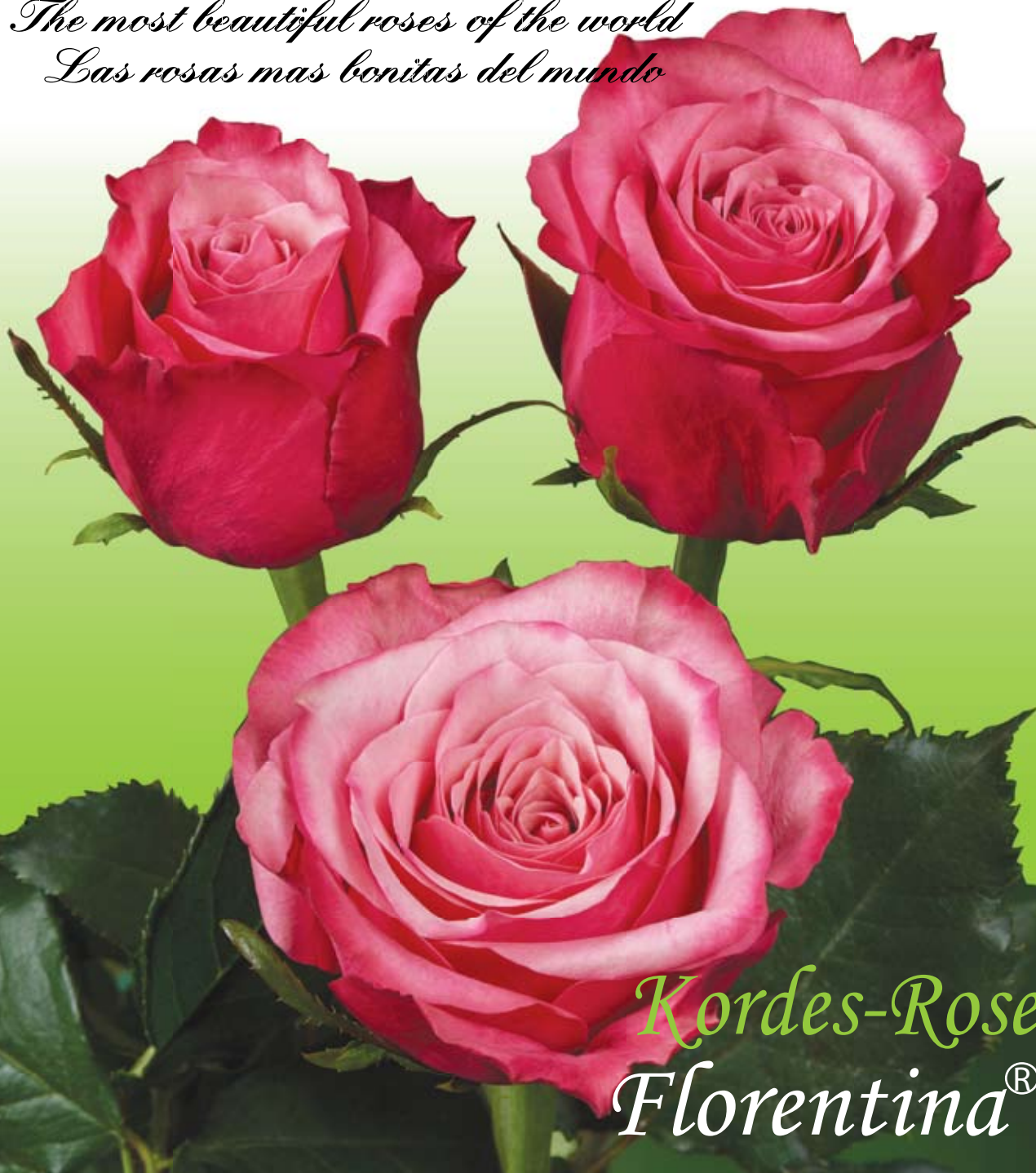
KAPI LIMITED, a company based in Nakuru has specialized in pyrethrum formulations since 1964. It formulates a pyrethrum product called Flower DS 4% EC for agricultural use. Made with Kenyan pyrethrum, Flower DS 4 EC is a 100% natural formulation using only natural ingredients. Flower DS 4 EC may be used for conventional spraying in spray regimes in order to minimize the chance of resistance developing with the other insecticides used in the spray regime. It is also ideal for use on crops controlled by MRL's. Flower DS 4 EC is also suitable for organic farming.

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What Peat is?

Peat is the most common material used in plant growing media, but have you ever thought about what peat really is?

Organic Growing Medium Made By Nature

Peat is a mixture of decomposed plant material that has accumulated in water-saturated bogs in the absence of oxygen. Peat formation is a continuous process, with bogs typically accumulating peat at a rate of 1-2mm every year.

The rate of accumulating plant material is greatest in areas where the ambient temperature is high enough for plant growth but where the level of rainfall, specific topography of the landscape and low transpiration rates encourages waterlogging, limiting aerobic microbial activity which would normally break down the plant material. Such conditions are found more frequently in the northern hemisphere.



Figure 1 Extent and location of global mires and peatlands, Lappalainen E., Global Peat Resources, 1996

Uses of Peatlands and Peat

Peatlands are used and managed for many different purposes. Undrained peatlands are natural habitats for a wide range of endemic species of fauna and flora, and are a known carbon sink, locking up carbon released as CO₂ into the atmosphere. As such, many bogs, particularly in Europe, are protected for their wildlife value, as well as their contribution to limiting climate change, with specific protection under national and European laws.

Historically, large areas of peatlands have been drained, and used for agriculture and forestry, as well as for the extraction of the peat itself. In the country of origin, extracted peat can be used as a local source of energy (biomass as a fuel for power plants), and for use in horticulture as a major constituent of growing media.



Figure 2 Natural peatland (photo Kekkilä Oy)

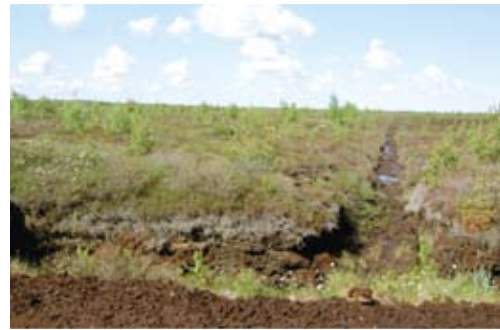


Figure 3 Drained peatland (photo Kekkilä Oy)



Figure 4 Sphagnum moss is one of the most common plant species found in peat bogs. Peat, which is created from bogs dominated by this plant, is often described as sphagnum peat (photo Kekkilä Oy)



Figure 5 Drained commercial peat bog for the production horticultural peat, Estonia. (Photo Kekkilä Oy)

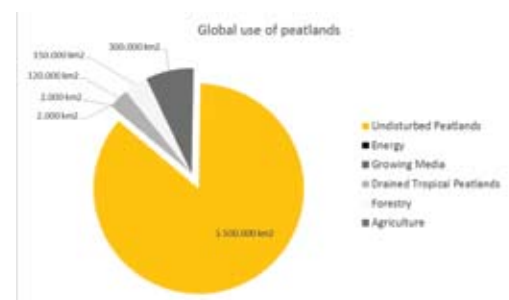


Figure 6 Source: IPS, Strategy for Responsible Peatland Management, 2010

Responsibly harvested by people

Peat is only harvested from carefully selected sites where specific extraction permits have been obtained from the local government of that area. These areas are selected, in part, because of their limited conservation value. Where areas are identified as having a conservation value, these are protected and not used for the extraction of peat. For example, in the European Union, peat extracted for fuel or horticulture is taken from just 0.4 % of all peatlands.

Out of all industries that have an impact on peatlands, including forestry and agriculture, it is the peat extraction companies who are regulated the most. For example, prior to starting to extract peat, it can take several years before all permissions are granted. The entire process from applying for the permit to actually extracting peat for the first time can take up to 10 years. This may include, as well as assessing the site at the beginning for its conservation value, having specific plans, and money set aside, to ensure that the bogs can be regenerated when the peat extraction ends.

After obtaining the necessary permits, the first thing that is done is to create a series of ditches across the peatland to drain the water from the bog. This encourages the surface layers of peat to dry, and enable its extraction. Before drainage, a natural peatland has an extremely soft surface which prevents any equipment or machines to be used on the surface. It can take up to three years until extraction can start after the first ditches have been excavated.

Once the peat is ready to be harvested, this then takes place during only the summer months (roughly from May to September) when the weather is sunny and windy enough to help dry the surface layers of peat.

Peat for use in horticulture is extracted using two different methods. The first method produces the so called "milled peat", and the second method produces "sod peat".

Milled peat

During the harvest, 1 - 3 cm thin layers of peat is milled or harrowed loose from the surface of the drained peat bog. After several days of drying under the sun, and when the peat is sufficiently dry (approximately 40-45% moisture content), it is collected directly from the surface of the peat bog by vacuum harvesters or, collected mechanically from ridges previously built.

Stockpiles of peat are formed at the peat bog and, by the autumn and winter, are covered with plastic foil. Finally, when required at the factory, the peat is transported to the production facilities, where it can be further processed.



Figure 7 Harvesting milled peat (Photo Kekkilä Oy)



Figure 8 Harvesting of peat takes place over the summer months when the weather is warm and dry (Photo Kekkilä Oy)

Sod peat

During sod peat harvesting, big blocks of peat are dug out directly from the bog with special equipment up to a depth of approximately one metre.

The sods of peat are left on the surface of the bog to drain excess water. When blocks start to dry in the springtime, they are piled

manually in small piles to dry further, until they are dry enough to be processed in the substrate producing unit.



Figure 9 Harvesting sod peat (Photo Kekkilä Oy)



Figure 10 Sod peat (Photo Kekkilä Oy)



Figure 11 Sod peat piled under plastic (Photo Kekkilä Oy)

During the preparation and production of peat, the best available technology (BAT) is used in order to protect environment and ensure sustainable production.

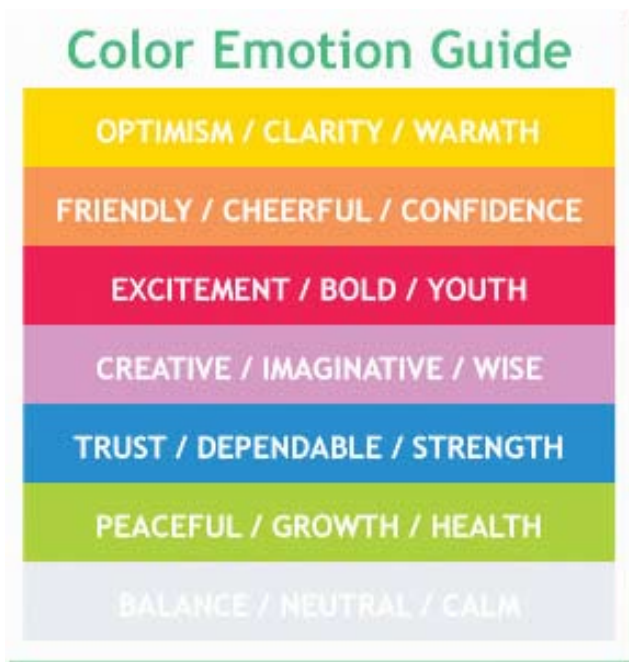
When peat extraction finishes on a site, the area will be used for other purposes, which has usually been pre-determined at the point of receiving the extraction permit. The three main options for after-use of a peatland are forestry, agriculture or re-wetting to create a new bog. Where bog regeneration is specified by the licencing authority, drains are blocked, and native plants are raised and planted to encourage the regeneration of a natural bog ecosystem.

Why Color Sells Plants: The Psychology Behind Color Selections

With festive season approaching it's the perfect time to look at what could help you boost your sales for the upcoming season. But does color sell plants?

A simple answer would be yes and no. But this not much help with deciding what colors you should focus on displaying. Research would suggest a number of reasons why consumers will select certain colors. It could be based on seasonal ideals, so when you think of this you would generally lean towards pastel muted colors even veering on towards the warmer yellow tones for a splash of brightness; think Easter and daffodils. But what else? There must be other factors that will influence color choices other than the typical seasonal selections. Well there can be, and this is where it gets a little more complicated.

Research will tell you that color selection is often based on personal preference, experiences, upbringing, cultural differences and so forth, often muddying the effect individual colors have on us.



However, if you are to examine the color preferences between men and women, as done in Joe Hallock's Color Assignments, you get a rough idea of colors that are most universally appealing. Although there are apparent differences between gender choices there are also glaring similarities. For example, both men and women most preferred blue, green, orange and red in similar amounts. The same can be said for least preferred colors between the both being brown, orange and yellow. Another example shows that men prefer bright toned colors whereas women prefer softer toned colors. Obviously this diagram lacks the broad spectrum of colors available in the flowers you could possibly sell, and again it is all down to consumer personal preference.

Seasons

Another factor that influences color choices is seasons, whether that is the typical colours associated with the season or dependent on the varieties that are available. Most gardeners planning for spring are looking forward to bursts of colors that are uplifting after a cold and dreary winter. Think of those yellow daffodils again!

Choices

People like choices. It's a fact. But too much choice will often overwhelm a consumer, which is why presenting consumers with only the most popular colors is usually the way to go. But it's still important to provide enough of a selection that people feel like they can express themselves individually.

Trends

Even in the floral industry there are trends set for the year of what will be the most popular colors. Consumers want to be individual but also to be socially accepted by others and will often follow trends set in the industry. The Netherlands is the trendsetter when it comes to determining the popular color of the season. For example, in the beginning of this season you should plan to include a variety of purple shades. Of course this just touches the surface, as there are numerous factors that go into trendsetting, and trends can bleed over from other industries such as the fashion world.

What should you do?

You should aim to have a varied selection of colors to choose from as male and female color preferences vary so greatly. Consider what time of year consumers are buying, the most popular trends set for the year and the type of consumer that you sell to the most. Bear in mind there is no definitive right or wrong answer to color choices!



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- Increases the germination percentage rate

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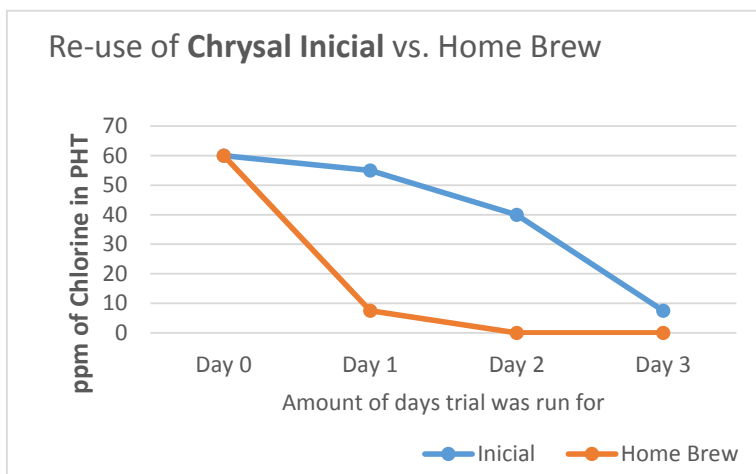
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Chrysal 'Has' the Solution – Chrysal Inicial

Rehydration for flowers is essential! **Chrysal** has come up with a “**First Drink**” solution for every Rose. With **Chrysal Inicial**, you will be assured that your Roses get the cleanest, purest post-harvest water treatment a flower needs. With its simple mixing formulation, flocculating capability and slow release chlorine **Chrysal Inicial** is the thirst-quencher for all flowers.

We all know that water management can be difficult, however with **Chrysal Inicial** it doesn't have to be. You can re-use **Inicial** for up to 3 days, allowing for water saving, without having to worry if your flowers are being hydrated enough. It cleans, regulates pH and keeps bacteria at bay all at the same time, ensuring that your Roses get the best possible uptake of water within the first hours of Harvest. The results speak for themselves – see the graph below which shows how the slow releasing chlorine of **Inicial** allows to keep you PHT **free of Bacteria** while saving water usage at the same time.



Detailed Analysis:

Day 0 – This was the first day that the flowers were harvested. They were placed into a bucket of fresh **Chrysal Inicial**. From the greenhouse they were taken to the Packhouse for pre-cooling. After a period of 4 hours the flowers were removed from the bucket and graded, The **Chrysal Inicial** bucket was then returned to the cold store overnight. This allowed the **Chrysal Inicial** PHT to cool down over night before being re-used the next day.

Day 1 – this is the second use of **Chrysal Inicial**. With a similar protocol to Day 0, the bucket of Inicial was removed from the overnight cold store and taken to the Greenhouse. Flowers were placed in this bucket and transported to the Packhouse for precooling. After 4 hours the flowers were removed from the bucket for grading, and the bucket itself was returned to the cold store overnight.

Day 2 – this is the third use of **Chrysal Inicial**. Again following the same protocol as Day 0 and Day 1, the bucket was removed from the overnight cold store, where it was taken to the Greenhouse. Flowers were placed in the pre-cooled PHT of Chrysal Inicial and then brought to the pack house. At this point the bucket, which had now been used for a total of 3 Harvests and over 3 days, would be discarded and a Fresh batch of **Chrysal Inicial** would be used for another 3 days.



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Inicial

Chrysal Inicial reduces problems associated with use of “Home-Brew” post harvest treatments



In the following ways:

- It's an all in one post-harvest treatment for better vase life and opening – maintains pH for optimum uptake, flocculates for better water quality and controls bacteria.
- pH of the ready to use solution: 5.0—6.0
- Inactivates fine solutions and neutralizes harmful organic and inorganic substances, allowing the flower stems to fill up with clean water
- Simple and easy to dose (0.3g/l).
- Suitable for all water types – ideal for the Kenyan situation
- Most active and stable form of Chlorine – tests show solutions can be used for 2-3 days.
- Minimal possibility of damages usually associated with home brews (Aluminium toxicity, Chlorine burns)
- Suitable for all cut flowers
- Ready to use solution contains: Aluminium Sulphate (20ppm), Active Chlorine (50ppm).
- Residual solutions may be disposed of by draining into the sewer system

That's the beauty of Chrysal

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Marco van Zijverden, Dutch Flower Group

“We want to remain
the best company
in international
ornamentals”



business as usual



Mr. Marco van Zijverden, CEO DFG

Marco van Zijverden, CEO of the Dutch Flower Group (DFG), has won the National Entrepreneur of the Year 2016 award for his entrepreneurship and innovative strength. The CEO of the DFG family business oversees thirty companies specialized in trading fresh cut flowers, floral arrangements, plants and foliage. According to Lucas Fox, CEO of Royal FloraHolland “Marco is a true entrepreneur bursting with talent and ambition.”

Way back when, his father advised him not to get into flowers, but ‘to learn a real profession’. Years later the international trading group he commands generates 1.4 billion euro turnover in flowers and plants every year.

Flower trading anyway

“My grandfather was a rose grower. My father didn’t like cultivation, so he got into the flower trade. He started in 1956 with one customer in Germany and founded the OZ Group. I was never intended to go into flowers. My father always told me to learn a real profession: lawyer or surgeon. I eventually studied business administration at Nyenrode. It’s either fate or chance, but I ended up in the flower trade anyway. I think it’s a wonderful product and I love being in contact with growers. I’ve done just about everything in my career: buying on the clock and processing flowers.”

The dollar went into a free fall around the time that Marco graduated (1986). OZ

Export was dependent on the US and exports dropped. “My father then asked me to come up with and execute a plan to turn things around financially. In 1993, Jaco (Marco’s brother) and I took over OZ Export and in 1999 we merged with Art and Jaap van Duijn (Van Duijn Group) and became the Dutch Flower Group.”

Gut feeling

What is Marco’s ambition? “We want to be and remain the best company in international ornamentals. A company where people like to work and can develop themselves.” Marco’s personal motivation is that he wants to empower people. “I am someone who likes to let others perform. Because I can’t do everything on my own. So, if employees are good at what they do, I want to empower them. Our company has grown because of the people who propagate this philosophy. Attracting the right people is 90% gut feeling. Even if you have the best resume in the world, it still has to ‘click’.

Kenya's Access to Europe Remains Intact



Flowers Ready for Export (File Photo)

Kenya will continue enjoying duty-free and quota-free access for its goods to the European Union (EU) even if neighbouring countries fail to approve the Economic Partnership Agreements (EPAs).

Josiah Rotich, the chief trade development officer at the Trade ministry, said that Kenya will, however, not enjoy other benefits that come with the EPA until all East African Community (EAC) partners ratify the deal.

Among the benefits that will remain pending is the rules of origin, a provision that allows Kenyan exporters to enjoy duty-free access to the European market despite their goods being made using raw materials sourced from other countries.

“On the basis of Kenya ratifying the agreement, the country will continue benefiting from the duty-free, quota-free access for as long as we are still trying to sort ourselves out at the EAC level,” Mr Rotich said during a roundtable meeting organised by the Institute of Economic Affairs (IEA).

“What Kenya is benefiting from the EU is market access only. All the other things in the agreement like rules of origin, the financial support, development component— we don’t benefit from that because so far the agreement has not been ratified by everybody else.”

Kenya and Rwanda signed the European trade deal in September, but it needs approval from all members of the East African Community bloc — which also includes Burundi, Tanzania and Uganda — to take full effect. Burundi and Uganda have indicated they are willing to sign the deal, but Tanzania has declined to ratify it citing adverse effects on its industrial ambitions.

It was feared that Kenya will lose the most without the deal signed, as other member states would still continue getting duty- and quota-free access under EU’s Everything But Arms initiative since they are classified as Least Developed Countries. The trade deal with the European Union gives EAC member states duty- and quota-free access for their goods to the EU as long as they meet the set health and safety standards.

EAC member states initialised an interim EPA deal in 2007 and another in 2014. Governments were given two years from the October 2014 agreement to ratify the deal in national parliaments.

Failure to ratify the deal would have seen Kenyan face a Sh10 billion-a-year tax on exports to the EU market and put to risk exports of more than Sh120 billion.



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FOCUS ON SAFETY LEADS TO MULTIPLE BENEFITS

If you improve safety, at the same time you also improve product quality and product and process efficiency.



Gloves are part of safety measurers

Top quality is every grower's trademark. Safety is another important priority: Growers take things further than is legally necessary and set the bar extremely high. The result? millions of working hours without any accident leading to absence, working methods and production processes which are efficiently organized and an undisputed product quality.

Growers need to draw up clear guidelines to limit dangerous situations as much as possible and reduce the chance of incidents. The most important ones are summarized as the so-called 'golden guidelines' 'Certain for instance when it comes to working at height, loading and unloading, separating pedestrians from forklifts and working in closed areas.' It is essential of course that employees adhere to these guidelines. 'According to the law, you are not allowed to drive faster than 50km/hr in urban areas. But not everyone is adhering to that rule either.' 'Research showed that the unsafe situations within companies are for 90 per cent the result of decisions of employees to do something or not.

Stimulating safety awareness is therefore crucial.' That is why stimulation of the safety culture and safety behaviour of people receive a lot of attention in floriculture. Most growers organise annual safety day. During this specific day employees are actively involved in workshops and receive medical checks. In addition, each employee receives a so-called safety visit. 'An employee is being visited by a trained colleague who observes them and advises on improvements.

These are so-called Safety Management Auditing Technique-audits, or in short SMAT-audits. In this way growers prevent people from getting blinkered view, because they have been doing their job for a very long time. Research shows that people with routine jobs run the largest risk of getting an accident.'

The mentioned safety guidelines in combination with the focus on safe conduct is clearly bearing fruit. Flower growers employees are extremely safety conscious and – very important – point out unsafe behaviour to each other.

Safety on Site

Growers not only find it important for employees to work safely within the company premises, companies pay attention to safety on the road and at the grower's location. 'Many colleagues travel a lot and visit clients. Research has showed that calling while driving is extremely dangerous, even when it is done hands free. Growers guideline therefore states that in case of bad weather or important calls, to park your car first. It is still a challenge to find a balance with regards to this specific issue.'

Experience teaches us that safety on site at the grower is not receiving sufficient attention yet, not with regards to their own personnel nor third parties. According to a grower working on height is a good example. 'Every day production employees, consultants and suppliers use installations which take them high up in the greenhouse. At every point that works up to 6 metres high needs to follow a safety training first, be secured and use a helmet on a certified

installation that is regularly checked. This is not without reason! The number of deadly accidents while working at height is extremely high all over the world.'

This is exactly why growers will train the employees who regularly work in greenhouses on how to work safely at height and make them more conscious about the existing dangers. In the future we also want to take into account other unsafe situations in and near greenhouses. A possible example for instance is making machines energy free when they are being maintained. 'This knowledge we also want to share and discuss with clients in order to increase safety awareness among growers. We hope this will be an eye opener for them.' Although the average horticultural company can improve a lot when it comes to safety, in other aspects the horticultural sector is leading. 'Other sectors can learn a lot from the hygiene protocols that are implemented in horticulture.'

Multiple benefits

The focus on safety does not only result in extremely low figures of occupational injuries; growers are benefiting in other fields as well. 'If you improve safety, at the same time you also improve product quality and product and process efficiency. 'Working safely does also imply working error-free. When a machine is not directly accessible because of fencing, you cannot fix small problems quickly. You therefore have to guarantee that the machine always works perfectly. Those issues benefit the quality and the working methods. All these factors are interrelated and strengthen each other. That is why working in a safe way leads to multiple benefits!

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Zimbabwe: Cut Flowers Exports Down by 95%

Zimbabwe's exports of cut flowers declined by 95% to \$3,1 million in 2015 due to the stringent export requirements needed by the government, ZimTrade has said.

In 2002, Zimbabwe was the second largest exporter of cut flowers in Africa, after Kenya, exporting flowers worth \$60m globally, according to the country's export promotion body.

In his mid-term fiscal policy review, Finance minister Patrick Chinamasa proposed to eliminate export permits in the horticultural sector to provide an opportunity for cut flower growers to tap into the export market.

Historically, about 70% of Zimbabwe's flower exports came from Banket, Concession, Glendale, Bindura, Harare, Goromonzi, Trelawney, and Kwekwe, mostly growing roses.



Other flowers included proteas, asters and chrysanthemums.

The Netherlands is Zimbabwe's largest export destination for cut flowers, importing an average of 69% of the country's flowers in the last 15 years.

ZimTrade said there was need for local flower growers to keep abreast with state-of-the-art production practices, as well as marketing techniques

Despite unrest in home-country, Ethiopian Farms Present at IFEX Japan

The three-day event took place at the Makuhari Messe in Tokyo, Japan. It was a crowded show with an increased amount of international exhibitors.



Jeroen van der Hulst of Flowerwatch, who was so kind to send some pictures of the show, was amazed by the presence of the Ethiopian rose growers. "Farms from the region Sebeta, like ET Highland and Yalkoneh were present at the show despite the terrible happenings."

Kenya: 60,000 Flower Farm Workers Get 25 Percent Pay Increase

Over 60,000 flower farm workers across the country are set to benefit from a 25 per cent salary increase.

This is after the Agricultural Employers' Association (AEA) signed officially a pending Collective Bargaining Agreement with the Central Organization of Trade Union (COTU).

Representing flower farm employers AEA Chief Executive Officer Wesley Siele said some 60,000 are the targeted beneficiaries of this new

remuneration.

Siele said the two year CBA which will be expiring in July 2017 will be backdated to July 2015 when it was agreed upon.

"I know it is a little late to formalize this agreement but we have been having extensive discussions that have given us a clear way forward," he said.

Apart from increasing pay, the CBA will also be looking into improving the workers' working conditions.



Dutch Flower Traders Provide Glimpse of Brexit Consequences

The British public's vote to withdraw from the European Union is expected to trigger slowdowns in trade and higher costs for many European shippers, but the so-called Brexit may have one victim that's been overlooked: Dutch flower traders.

Officials at Royal FloraHolland, the world's largest trading center for plants and flowers, say they are already bracing for their No. 2 customer's departure. The June referendum did not have an immediate impact on the flower trade, but UK Prime Minister Theresa May's announcement last

week that she plans to trigger a two-year window for exit talks by the end of March has put the Dutch flower traders on a deadline.

The traders — who trade more than 12 billion flowers per year and whose international business has a 40 percent market share — are now looking for new markets.

This decision is going to impact links down the supply chain, particularly in air cargo, as the traders are heavily reliant on it to move

their cargo.

“The Brexit, certainly for our industry, is not positive,” said Edwin Wenink, director of the center's Floricultural Logistics Optimization Worldwide, or FLOW, program. “You can already see it coming. At the moment still we do not see a huge effect, but we can imagine in the future there will be an effect.”

Wenink and other Dutch officials peg that future date at two and a half years from today, roughly the date of May's planned “hard break” from the European Union.

Ecuador: Agriflor Looks Back On Show With Satisfaction



Aerial View of the Exhibition Hall

Agriflor 2016 ended with a result that could be described best as “The Perfect Trade Fair”, according to the organizers.

First of all the down town location of the

exhibition was warmly welcomed by visitors and exhibitors. People felt relieved and freed to be able to leave for a while during show hours. Not because the need was there, but just the idea that one could leave for a break, to go for example to the hotel if

one wanted, was giving everybody a feeling of independence.

Secondly, the size of the show was such that it allowed everybody to have an overview in one glimpse, without losing the idea of being in a complete show with all new varieties on display that the Ecuadorian flower industry has to offer. The 2nd floor enabled everybody to get a helicopter view of the fair.

The atmosphere in the Hall was of a composition which created a unique ambiance. Almost 150 exhibitors from Ecuador and 17 other countries on 5,500 m² exhibit space, offered to over 1,000 international flower buyers a complete picture of what can be sourced in the market at this moment. Especially cut roses but also many other types of fresh cut flowers were put on display for the international flower buyers that visited this 3 day trade show in Quito, Ecuador.

Olij Roses Joins Dümme Orange

Olij Roses International / Olij Breeding, with head office in De Kwakel, is to become part of the family of companies known as Dümme Orange. The two parties have reached agreement on the transfer of shares.

This integration will enable Dümme Orange to expand its assortment within the roses product group, giving it access to a wider sales network. Olij's activities in the field of breeding, propagation and production of plant material in South America, Africa and the Netherlands offer opportunities to achieve maximum customer value and bring more innovations onto the market for growers.

"Becoming part of Dümme Orange will enable us to offer a more extensive assortment to all our customers and make use of technical knowledge and logistics

in order to create a better product," says Ruud Olij, Director of Olij. "Our activities are highly complementary and we look forward to achieving enhanced added value for our customers and agencies worldwide."

Biense Visser, CEO of Dümme Orange: "We are very pleased that Olij has joined us. This means that we can once again take the next step in building our global position in the ornamental horticulture sector. Roses are an important product, a big market with a great deal of potential. We will therefore continue to seek further opportunities within this product group."

The merger also brings benefits in the area of disease control and phytosanitary solutions. Through its Green Care policy, Dümme Orange is adopting targeted measures to supply healthy cuttings and plants. Hans van den Heuvel, R&D Director at Dümme Orange: "When

preparing for the acquisition, our priority was the implementation of Green Care for roses, including an 'Elite' step in the process which will enable us to guarantee a clean product. Our customers can be confident that this will result in a long-term improvement within a few months."

Knowledge in the field of DNA-marker assisted breeding is also being shared with Olij, allowing more targeted breeding of roses with, for example, resistance to diseases and pests. This will make both cultivation and the product more environmentally friendly and more sustainable. Harry Kloppenburg, Commercial Director at Dümme Orange: "Olij's activities offer potential for optimising our breeding activities for more crops and bringing better and innovative varieties onto the market. The synergy benefits of breeding, sales and marketing make this a great opportunity for both companies."

The Latest Autumn Varieties by Interplant Roses



"The morns are meeker than they were,
The nuts are getting brown;
The berry's cheek is plumper,
The rose is out of town...."

That's said in a poem by Emily Dickinson, but Interplant shows that the rose does contribute to the autumn season. Their new spray rose varieties have colors that match this time of the year. Interplant introduces the spray rose varieties Earth & Fire, deeply orange coloured, and Candelicious, with a soft white tone and pink edge.

Brexit and Plant Breeder's Rights

Martin Ekvad outlines what the Community Plant Variety Office (CPVO) foresees as the likely implications of Brexit for plant breeders, both British and from other countries.

For the plant breeding industry, it is important to get assurance that titles granted before Brexit will still be valid in the UK following Brexit.

The question of whether titles granted by the CPVO could be valid in the UK after Brexit, and possible conditions for such a scheme, is also frequently put to the

CPVO. CPVO President Martin Ekvad said, "These and other questions will be subject to negotiations between the UK and the EU."

Ekvad believes that it is important that a user-friendly solution is found which will not add to unnecessary administrative work for EU breeders seeking protection in the UK, and UK breeders seeking protection at EU level.



Britain PM, Theresa May, All Eyes on Her

Introducing: Rose Safari a Premium Rose Selection

Leading strategic solutions and unpacking service provider Flower Optimal Connections are proud to unveil their brand new selection of premium Kenyan roses under the banner 'Rose Safari'.

Rose Safari not only features exclusively selected premium roses from top Kenyan rose growers but also draws aesthetic comparisons between these roses and the beauty of Kenya's Wild.

The brand marketing follows a journey of a lone 'rose explorer' as he visits several well known safari destinations in search for the best premium roses. The roses are packed in special 'Rose Safari' boxes and shipped directly to florists across Europe.

Rose Safari Video

Introducing: Rose Safari A Premium Rose Selection

All over the world, narratives of Kenya's majestic wild have been shared. Each tale speaking of her distinctive beauty, her



There we go

unique culture, her untouched splendor, and sights & sounds presented in diverse shapes and colors.

The Safari country, where the BIG FIVE tear through dense jungle and vast plains. Where all year round nature-fed rivers snake through the floors of the Great Rift Valley with breathtaking landscapes and volcanic mountains forming an exquisite background.

Kenya is also known to be the land of beautiful roses. Rose varieties of diverse colours, shapes and sizes are grown amid this natural beauty.

De Ruiter Creates Genetics for low altitude T-Hybrid Mix

Named Best Stand at the Naivasha Horticultural Fair 2016 With a century of breeding experience globally & over 20 years in Kenya. The company considers rose farming as serious business 'Every day is Valentine's Day' & we stick by our motto 'Creating Flower Business'. With offices in main flower growing areas. the company is truly a global brand.

The company has recently been striving to increase its market share in the low altitude T-Hybrid varieties and feels it has created enough synergy at this level with +5cm head sizes, +60cm stem lengths (Ensuring auction marketability), excellent vase life performance, good pest & disease resistance & 140 stems p/sqm production figures.

This will provide the market with new lines and an improved quality and saleability of larger headsizes as demanded by most of the retailers and consolidators during the dynamic market changes and new demands.

Flower Exporters Test Maritime Cold Chain

“
Though the amount of flowers transported by this method is not yet large enough to be considered a trend, a combined maritime and air transport method known as backhauling has recently begun to expand.”



Dutch flower conglomerate Royal FloraHolland has begun seeking a combined maritime and air cargo alternative to sole air transport, the Journal of Commerce reports.

As maritime cold chains make vast improvements in reefer container and control technology, Royal FloraHolland is exploring the advantage of splitting transport between ships and planes, thereby cutting costs by 38% and decreasing greenhouse gas emissions by 87%.

Though the amount of flowers transported by this method is not yet large enough to be considered a trend, a combined maritime and air transport method known as backhauling has recently begun to expand. Shipping lines have been investing heavily in their refrigerated cargo capacity, hoping to capture a cold chain market that had

long eluded them given the differences in time of transport between ships and airplanes.

Flowers, like fruits, are a perfect example of why this is the case: consumers place a premium on freshness of these items and any time delay, even in temperature controlled rooms, can cost the company. As a result, only 1.6% of the dutch company's exports cross an ocean (to the U.S.), while the rest are sold in Europe.

Of course, the shipping lines are not expanding their capacity to increase their market share of the flower market — other cold chain goods, like pharmaceuticals, are far less time-sensitive so benefit for the increased scale of transport maritime cargo offers.

Yet, as real-time visibility and temperature controlled capacity increases, flowers and



Mr. Lukas, CEO, Royal Flora Holland

food companies may begin to benefit from increased the scale as well. After all, demand for cold chain products is far more reliable than the demand for a manufactured good.

Kenyan Growers Eager to Grow New Garden Cut Rose

Each variety reacts differently to altitude and this cannot be predicted.

Garden type cut roses and scented cut roses are highly demanded but known for their short vase life. For this reason, breeders are investing time and money in developing this popular variety type with the desired habits. And Rosa Eskelund of Roses Forever is such a breeder. She invested years in breeding a cut rose that does not only look like a garden rose, but also smells like a garden rose and has a long vase life. After ten years of breeding, she succeeded and after nearly 5 years after trialing the variety, now the so-called Rosa Loves Me® series enters the market. And they seem well demanded varieties for mainly Kenyan growers. “We receive many positive reactions and many are eager to plant new beds of these varieties”, says Rosa.

Rosa Loves Me® roses

Rosa Loves Me® is a new rose brand that consists of seven varieties. According to Rosa, all these cut rose varieties have the looks and many the scent of a garden rose and have a very long vase life. “They last for 12 days up to 3 weeks”, she says. “And on top of that, the healthiness of these varieties contributes to the sustainability of their production in for instance Colombia and Kenya”, says Rosa. The names of all varieties start with Rosa Loves Me® and the names of the new varieties are: Sweet, Tender, Two Times, With Heart and Soul, Over the Moon, Purely, and, Just a Little Bit More.



Garden Roses Ambience



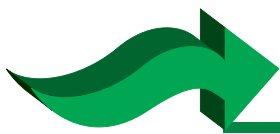
Demand Kenyan growers

Five years ago John Pouw, who is responsible for the marketing within Viking Roses, sent the first budwood to Kenya, only enough to make a few plants per variety. And it has been a slow process. “It took several propagation rounds, and therefore a lot of time, to come to the 50 plants required for a first test”, says Pouw. “Then you need to ‘build up’ the plant to see it for 4 flushes. So. another year gone. Then expand to a full bed. Of course, many varieties are beautiful, fragrant, long life, but do not pass the productivity requirements.” Finding the best altitude for each variety is another challenge. “Take Rosa Loves Me® With Heart and Soul,” Pouw says, “Up to around 1400m and above 2000m the stems will be crooked. In between, they are nice and straight. Each variety reacts differently to altitude and this cannot be predicted.”

Today, the first reactions have come back from the wholesale and retail customers. According to Pouw, these are positive.

“Now the first commercial plantings are on their way to three farms in Kenya and one in Colombia and it is time to reveal the varieties to a larger public at IFTF”, she says. “And it is interesting to see that the same retailers that demanded head sizes of at least 5 cm are now saying that for the Rosa Loves Me® series, averaging at 4.5 cm at 2400m, this is not necessary”, says Pouw. “Emotion cannot be standardized. The auctions have been masters at this, but in the end the consumer decides.

Look at the history of Rote Rose in Japan. Production was terrible, plants ugly, flowers small, but if you saw and see the end product presented to the Japanese buyer, you understand the high prices.” And Pouw predicts a similar future for Rosa Loves Me®, with flowers slowly opening into diameters 12 cm. They will not flood the market with the varieties, the supply will follow the demand. “Cultivation licenses will only be issued to those farms that are complementary in the market.”



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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.



FLOWER & VEGETABLE FARMS IN KENYA

FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
AAA- Flowers-Rumuruti	Roses	Rumuruti	Sailesh	0722 203750	-
AAA- Flowers -Chui Farm	Roses	Timau	Sailesh	0722 203750	-
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	-	0721-837968	sales@africala.com
African Blooms	Roses	Nakuru	Ravindra	-	-
Afriscan Kenya Ltd	Hypericum	Naivasha	Charles Mwangi	-	-
Alani Gardens	Roses	Nakuru	Judith Zuurbier	0722 364 943	alani@alani-gardens.com
Aquila Development Co	Roses	Naivasha	Prakash Shinde	0710791746	pm@aquilaflowers.com
Bamboo Farm-Sunripe		Nakuru	Reuben	0723920237	
Balaji	Roses	Olkalou	Paul Mwaniki	-	-
Baraka Farm	Roses	Nakuru	Lucy Yinda	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
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 Rongai	Flowers	Nakuru	Nicholas	0721 844361	rongai.production@carzankenya.com
Charm Flowers	Flowers	Athiriver	Ashok Patel	020 352583	ashki@charmflowers.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
Credible Blooms	Flowers	Rumuruti			
Credible Blooms	Flowers	Ngong			
Dale Flora					
Delemere Pivot		Naivasha	Daniel Ondiek	0720395963	daniel.ondiek@vegpro-group.com
Desire Flowers	Flowers	Isinya	Rajat Chaoohan	0724264653	rajatchaoohan@hotmail.com
De ruiters	Breeder Roses	Naivasha	Fred Okinda	0722579204	Fred.okinda@deruiter.com
Double Dutch	Cuttings	Naivasha	James Opiyo	0723516172	Opiyojames160@gmail.com
Dummen Orange	Flowers Breeders	Naivasha	Steve Outram	0733 609863	s.outram@dummenorange.com
Elbur flora	Roses	Nakuru	Daniel Moge		
Enkasiti Thika	Flowers	Thika	Tambe	0734256798	enkasiti@gmail.com
Equinox	Flowers	Nanyuki	Tom Lawrence	0722312577	tom@equinoxflowers.com
Everflora Ltd.	Flowers	Thika	Bipin Patel	0735873798	everflora@dmbgroup.com
Fairy Flowers	Flowers	Limuru	Sylvester	0753444237	sylvesterkahoro@yahoo.com
Fides Kenya Ltd	Cuttings	Embu	Francis Mwangi	068-30776	francis.mwangi@dummenorange.com
Flamingo Holdings Farm	Flowers	Naivasha	Peter Mwangi	0722204505	peter.mwangi@flamingo.net
Flamingo Holdings-Kingfisher Farm	Flowers	Naivasha	Charles Njuki	0724391288	charles.njuki@flamingo.net
Flamingo Holdings- Kingfisher Farm	Flowers	Naivasha	Jacob Wanyonyi	0722773560	jacob.wanyonyi@flamingo.net
Flamingo Holdings-Siraji Farm	Carnations, Roses	Nanyuki	John Magara/Peris	0729050116	peris.ndegwa@flamingo.net
Finlays -Kericho	Flowers	Kericho	Elijah Getiro	0722873539	elijah.getiro@finlays.co.ke
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	-	-	-
Flamingo flora	Roses	Njoro	Sam Nyoro	0721993857	s.ivor@flamingoflora.co.ke
Flora ola	Roses, Hypericum	Solai-Nakuru	Wafula Lucas		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	



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FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
Fontana Ltd-Salgaa	Roses	Nakuru	Kimani	0733605219	production@fontana.co.ke
Fontana Ltd	Roses	Nakuru	Girrish Appana	0726089555	production@fontana.co.ke
Fontana Ltd - Akina farm	Roses	Nakuru	Arfhan	0722 728441	arfhan@fontana.co.ke
Fontana Ltd - Ayana Farm	Roses	Nakuru	Gideon Maina	0721 178974	gideon@fontana.co.ke
Fox Ton Agri		Naivasha	Jim Fox	0722204816	jim@foxtonagri.com
Frigoken K Ltd	Vegetables	Nairobi	Nicholas Kahiga	0722797547	nicholas.kahiga@frigoken.com
Gatoka Roses	Roses	Thika	-	-	-
Gladioli Ltd		Naivasha	Pieriguichi / Claudia	0722206939	torres.palau@yahoo.com
Golden Tulip	Roses	Nakuru	Mne	-	-
Golden Tulip (Laurel Inter.)	Roses	Nakuru	-	-	-
Gorge Farm		Naivasha	Patrick Mulumu	0722498267	pmulumu@vegpro-group.com
Groove	Flowers	Naivasha	John Ngoni	0724448601	grovekenya@gmail.com
Harvest / Manjo Plants	Roses	Naivasha	-	-	-
Harvest Ltd	Roses	Athiriver	Jairus Oloo	-	-
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 Debonja	0723383160	everlyne.adhiambo@indu-farm.com
Interplant Roses	Roses	Naivasha	Gavin Mouritzen	0733220333	info@interplantea.co.ke
Isinya	Flowers	Isinya	Rajesh	-	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.	Flowers	Thika	Samwel Kamau	0723721748	production@kariki.co.ke
Kariki Ltd - Bondet	Eryngiums	Nanyuki	Richard Fernandes	062-31023/6	bondet.production@karik.biz
Kariki Ltd - Hamwe	Hypericum	Naivasha	Peter Kamwaro	0721758644	hamwe.fm@kariki.biz
Kariki Ltd - Hamwe- Molo	Fowers	Nakuru	Joseph Juma	0725643942	production.fm@kudenga.co.ke
Twiga Flowers	Flowers	Naivasha	pius Kimani	0721747623	pius.kimani@gmail.com
Kenflora Limited		Kiambu/ Limuru	Abdul Aleem	0722311468	info@kenflora.com
Kentalya		Naivasha	Linnnet	0733549773	lynette@kentalya.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
Kongoni River Farm - Liki River	Flowers	Nanyuki	Madhav Lengare	0722202342	madhav@vegpro-group.com
Kongoni River Farm - Star Flowers	Flowers	Naivasha	Dinkar	0789487429	dinkar@vegpro-group.com
Kongoni River Farm - Timau	Flowers	Timau			
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
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
Magana	Roses	Nairobi	Lukas	0788695625	farmmanager@maganaflores.com
Mahee / Mwanzi Flowers Ltd	Roses	Olkalou	Srinivasaiah	0711368756	sriini@eaga.co.ke
Mahee Wilham	Vegetables	Nakuru	Missire	0754444629	maheevf@eaga.co.ke
Maridadi Flowers	Flowers	Naivasha	Jack Kneppers	0733333289	jack@maridadiflores.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 Greens	Flowers	Nakuru	Justus Metho	0722 755396	justus@mologreens.com
Mt Elgon Flowers	Roses	Eldoret	Bob Anderson	0735329395,	bob@mtelgon.com



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FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
Mweiga Blooms	Flowers	Nanyuki	Stewart/ Mburu	0721674355	mweigablooms@wananchi.com
Mzuurie Flowers - Maji Mazuri	Flowers	Eldoret	Wilfred Munyao	0725848912	wmunyao@majimazuri.co.ke
Mzuurie Flowers - Molo River Roses	Flowers	Nakuru	Andrew Wambua	0724256592	awambua@moloriverroses.co.ke
Mzuurie Flowers - Winchester Farm	Flowers	Karen	Raphael Mulinge	0725848909	rmulinge@winchester.co.ke
Mzuurie Flowers - Bahati	Flowera	Bahati			
Nini Farms	Roses	Naivasha	Philip Kuria	0720611623	production@niniitd.com
Nirp East Africa	Roses	Naivasha	Danielle Spinks	0702685581	danielles@nirpinternational.com
OI 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@oserial.com
Panda Flowers	Roses	Naivasha	Chakra	0786143515	chakra@pandaflowers.co.ke
Panocol International	Roses	Eldoret	Mr. Paul Wekesa	0722748298	paul.wekesa@panocol.co.ke
Penta	Flowers	Thika	Tom Ochieng	0723904006	-
United Selections	Roses	Nakuru	-	-	-
Pj Dave	Flowers	Isinya	Simiyu	0723500049	pjdavetimau@pjdaveepz.com
Pj Flora	Flowers	Isinya	Palani Muthiah	0752607651	muthiah.palani1971@gmail.com
Pj Flowers Ltd		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 Ltd	Flowers	Athi RiVer	Dilip Barge	0731000404	dilip@primarosaflovers.com
Primarosa - Zuri Farm	Roses	Oljororok	-	-	-
Racemes Ltd		Naivasha	Bonny	0721938109	bonny@kenyaweb.com
Rain Forest	Roses	Naivasha	-	-	-
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 Mutua	0722357678	richard@rimiflora.com
Riverdale Blooms Ltd		Thika	Antony Mutugi	0202095901	rdale@swiftkenya.com
Roseto	Roses	Nakuru	Anand Shah		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	-	-	-
Schreus	Roses	Naivasha	Haiko Backer		
Shades Horticulture	Flowers	Isinya	Mishra	0722972018	info@shadeshorticulture.com
Shalimar Flowers	Flowers	Naivasha	Anabarasan	0733604890	anbarasan@eaga.co.ke
Sian Roses - Maasai Flowers	Flowers	Isinya	Andrew Tubei	0722728364	atubei@sianroses.co.ke
Sian Roses - Agriflora	Flowers	Nakuru	Clement Kipnetich		cmnetich@sianroses.co.ke
Sian Roses - Equator Roses	Flowers	Eldoret	Charles Mulemba	0721311279	cmulemba@sianroses.co.ke
Sierra flowers Ltd	Flowers	Nakuru	Sherif	0787243952	farm.sierra@megaspingroup.com
Simbi Roses		Thika	Karue Jefferson	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
Subati Flowers- Nakuru	Flowers	Nakuru	Naren Patel	0712 584124	naren@subatiflowers.com
Subati Flowers - Naivasha	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	Naivasha	Reuben Kanyi	0723920237	kanyireuben@gmail.com
	Gypsophilla, Army				
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
Syngenta Flowers - Kenya Cuttings	Flowers	Ruiru	James Ouma	0725217284	john.odhiambo@syngenta.com
Syngenta Flowers - Kenya Cuttings	Flowers	Thika	Kavosi Philip	0721225540	philip.munyoki@syngenta.com
Syngenta Flowers - Pollen	Flowers	Thika	Joseph Ayieko	0733552500	joseph.ayieko@syngenta.com
Timaflo Ltd	Flowers	Nanyuki	Simon van de Berg	0724443262	info@timaflo.com
Transebel		Thika	David Muchiri	0724646810	davidmuchiri@transebel.co.ke



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FARM NAME	PRODUCT	LOCATION	CONTACT PERSON	TELEPHONE	E-MAIL
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
Wilmar Agro Ltd	Summer Flowers	Thika	Alice Muiruri	0732 321203	alice.muiruri@wilmar.co.ke
Windsor		Thika	Vikash	073705070	alish@windsor-flowers.com
Xpression Flora		Nakuru	Mangesh Rosam	0720519397	mangesh.rasam@xflora.net
Zena -Thika Farm	Roses	Thika	-	-	sales@zenaroses.co.ke
Zena - Asai Farm	Roses	Eldoret	Emeritus Kasee	-	sales@zenaroses.co.ke
Zena Roses - Sosiani Farm	Roses	Eldoret	Phanuel Ochunya	-	sales@zenaroses.co.ke
Zena - Nakuru Farm	Roses	Nakuru	-	-	sales@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	Raghibir Sandhu	Ntemagalo Wakiso	0772 72 55 67	pearl@utlonline.co.ug
Roses	Aurum flowers	Kunal Lodhia Shiva	Bulega, Katabi Wakiso	0752 733 578	kunal@ucl.biz
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
Chrysanthemums	Fiduga	Jacques Schrier	Kiringente , Mpingi	0772 765 555	j.schrier@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	xclusive cuttings	Peter Benders	Gayaza- Zirobwe rd	0757 777 700	pbenders@xclusiveuganda.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	Tretter	Arusha	255 27 2553385	office@mtmount-meru-flowers.com
Roses	Tengeru Flowers	Tretter	Arusha	255 27 255 3834	teflo@africaonline.co.tz
Roses	Hortanzia	Mr Micheal Owen	Arusha	255 784 200 827	hortanziagm@cybernet.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	Hanjia	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	Supra Flowers	Kaka Shinde	Holeta	0911 353187	kakashind@rediffmail.com
Roses	Agriflora	M. Asokan	Holeta	0922 397760	flowers@ethionet.et
Roses	Ethio- Agricerft	Alazar	Holeta	0910 922 312	alazar@yahoo.com
Roses	Addisfloracom P.L.C	Kitema Mihret	Holeta	0912 264190	tasfaw@addisflora.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	-	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	Sharon Flowers		Sebata		saronfarm@ethionet.et
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	Edwin	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	mnpatilpune@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@herbugroses.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



Low-Down on Downy Mildew

By Joseph Muita

Rose growers have a relatively benign group of insect pests to deal with and so focus most of our pesticidal attention on the fungal disease -- powdery mildew -- that seem to bedevil us on a yearly basis. However, every few months, we are confronted with a far more virulent fungicidal invader known as downy mildew. Downy mildew is a fairly common term as far as plant diseases go

Downy mildew disease poses an increasing problem in the horticultural industry causing serious losses in many floricultural and greenhouse crops. Downy mildews present a challenge to growers both because the disease can be present but not obvious; and because they are difficult to control with fungicides once established. The pathogens are very different from Powdery Mildews- they attack different plants under very different environmental conditions, and are controlled by different classes of fungicides. Downy Mildew diseases are caused by a group of fungus-like organisms: they are not true fungi, and are similar to Pythium and Phytophthora species. Most of the Downy mildew fungi are host specific and infect only one plant family.

Symptoms of Downy Mildew

Rose downy mildew is remarkably variable. In the past 20 years the most common symptom has been angular, tan spots with a very small amount of white crystalline sporulation on leaf undersides. The name of the pathogen —Peronosporaspora— reflects the sparse production of white spores. Sometimes collapsing buds or cankers form on newly emerging rose canes. Different species and cultivars of roses respond differently to downy mildew, making a diagnosis very difficult. Severe leaf drop is common on some cultivars. Tiny speckles may form that are tan or even bright pink. Downy mildew start as yellow to light green, irregular leaf lesions which can become purple to dark brown and be delimited by leaf veins. Under humid conditions, the fungus sporulates on leaf undersides, producing white, tan, gray or purple, downy growth.



Downy mildews reproduce through special structures called sporangia that develop on leaf undersides. Air currents and splashing water dislodge these sporangia which then infect nearby healthy plants. Symptoms will vary along with the host plant and Downy mildew pathogens vary in aggressiveness. As the disease progresses, lower leaves can wither and fall off. The fungus grows both locally and systemically and it can escape notice until conditions are right for sporulation. Systemic symptoms can include stunting, leaf distortion and epinasty, shortened internodes, and a decrease in the quantity

and quality of flower production. Some downy mildews produce long lasting survival spores (Oospores) that can persist in the soil indefinitely. These diseases thrive under the cool, wet conditions, generally favored by cool temperatures (15-23° C). Downy mildews need wet leaves and high relative humidity (greater than 85 %) to cause disease; under these conditions, disease can occur very rapidly and is difficult to control.

Controlling Downy Mildew

The best control of downy mildew is to make sure that your plants do not get it in the first place. Growers should provide the required cultural conditions for healthy plant growth and development. Preventing the introduction of downy mildew pathogens into the greenhouse is of primary importance. Plants should only be purchased from reputable and trusted sources and should be thoroughly inspected before their introduction into production areas. Cultural management practices for Downy mildew diseases consist of managing relative humidity in the greenhouse, strict sanitation, and preventive fungicide applications. It is critical to keep relative humidity below 85 % to decrease sporulation on infected plants and stop germination of spores on healthy plants. This can be done by venting and heating, which fills the greenhouse with warm, drier air. The use of fans in greenhouses improves horizontal air flow and prevents cold spots where condensation develops from occurring. The density of the plant canopy should be reduced by spacing plants to allow for maximum air circulation and sunlight availability. Greenhouses should be scouted regularly for the first symptoms of the disease to achieve effective control with fungicide applications. Diseased plants, infected debris, and soil should be promptly removed and destroyed.

Fungicides should be applied preventively for maximum efficacy. The highest levels of control are obtained when fungicides are applied preventively. Many products which give excellent control preventively result in less or no control when used as curatives; once sporulation occurs control is difficult to impossible. The use of fungicides to control downy mildew diseases has become more difficult because of the development of fungicide resistant strains of downy mildew pathogens and concurrent loss of effectiveness. Most products with systemic activity are subject to an anti-resistance strategy. These measures include: beginning a regular spray program with a protectant fungicide, limiting the number of applications of particular fungicides applied per season, rotating fungicide applications among FRAC groups (modes of action), applying systemic chemicals in combination with a protectant ones.

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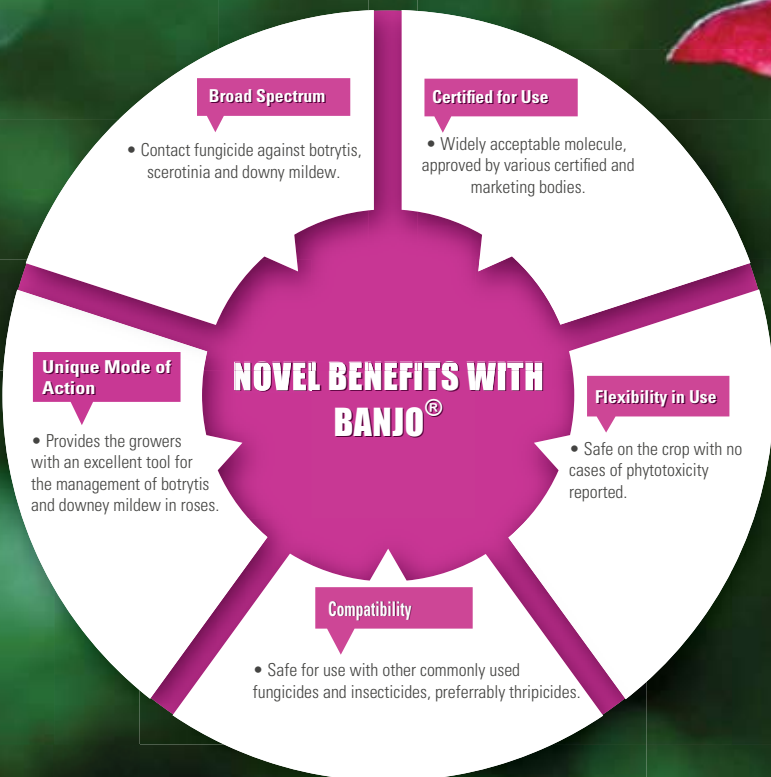
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