Hortfresh Journal

For Leads in Horticulture

Kes. 250 Tshs. 4,425 Ushs. 7,262 USD. 2.8 USD. 1.9

March - April 2012

The impact of Israel's Agro-tech industry on Kenya's Agriculture sector

I.F.T.E.X Opens its doors in Kenya

Wooden Greenhouses on the Rise

Lady expertise in Growing Lady's Fingers

Amiran the Gateway to Israel's Leading Agro-technology Sector in East Africa

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1ltr
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I.F.T.EX.

International Flower Trade Expo

Wednesday March 21 - Friday March 23, 2012
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Hortfresh Journal
Leads in Horticulture

Hortfresh Journal is bi-monthly published and circulated to members of relevant associations, government bodies, and other personnel in the horticultural industry as well as suppliers of equipments, materials and services.

Inside

Published by
Tech Era Communications

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March - April 2012

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Publication Frequency
Bi-monthly

In my Opinion...

Curbing Shortage & Eventual high cost of Technically Experienced Staff

Kenya's horticultural sector rank as one of the economy's fastest growing, being second from tea. This is reflected virtually by year after year expansion in fruit, vegetable and flower exports. Cut flowers, French beans, runner beans, snow peas, Asian vegetables, mangoes and passion fruits exports to mention but a few, have continued to flourish. Despite the recent tough economic times when the Kenya shilling lost drastically in value against the US dollar, the industry has been resilient and has gone through significant maturity as export volumes continue to increase.

It is time to make the industry even better by training and skill development. Every company is looking for experienced staff; 3 years to 5 years experience. Where is experience bought? Where do we expect the young men and Women from institutions of higher learning to get experience from? Every company should endeavor to develop their own "experienced" staff. There are so many fine men and women who are qualified with degrees, diplomas and they need to be given a chance to gain the experience.

At East Africa Growers Ltd, we have come up with what we call "Graduate Entry Scheme" where we recruit qualified men and women with degrees, diplomas, certificates and put them through a training process, where those who excel take up specialised roles. 80% of the current managers in the company are as a result of in house training plus many other senior people out elsewhere. This should be enumerated since through this there will be enough expertise in the industry for all of us, leading to fair competition and we will all have affordable labour thus ensuring continuity and stability and growth.

There is currently very high mobility of technical staff between companies. There are very few well trained and experienced agronomists, farm managers, processing managers and emerging/expanding organizations are continuously approaching the same staff with better offers driving up the cost of affording these vital experts. Companies that can't afford competitive offers are ending up having no experts and therefore limiting their potential growth and performance.

I urge every organization to actively engage in training and career development without fear of losing the trained employee and to strive to create a positive environment within their organizations where the employees can see opportunities of growth and good future without having to look for it elsewhere.

Mr. Nicholas Ambanya
General Manager Veg & Fruit East Africa Group

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Kenya Flower Council

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I.F.T.EX. International Flower Trade Expo Opens its doors in Kenya

Expectations of this fair are high since Kenya is one of the world's key players in the field of producing and exporting fresh cut flowers; supplying 55 per cent of the flowers sold at the Netherland's auctions and 40 per cent of the produce in the EU market.

The first specialised flower trade exhibition- International Flower Trade Expo (I.F.T.EX.) is set to open its doors from Wednesday 21st to Friday 23rd March 2012 at Oshwal Centre, Nairobi. It is the first time the show is held and will be consistently taking place biennially in the even years.

According to the organizer, it will be a professional floriculture trade exhibition in terms of organisation, as well as in attracting buyers. It will provide the local floriculturists with an opportunity to learn more about the international floriculture market and will help them expand their scale of operations.

The expo will be in the magnificent, superb, yet so tranquil; state-of-the-art Oshwal Centre that has a total surface of 4,500 metre square exhibition space, in the proximity of Nairobi and with sufficient parking spaces.

Intended exhibitors are not only the suppliers of equipment for flower growers, but also the growers themselves who are getting a stand at no cost. It will be the first time in the country's flower industry history that buyers from overseas will come face to face with the growerson one roof.

"Growers are important because the fair can only be organised because of them" Dick van Raamsdonk, the president HPP Exhibitions had earlier said.

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Raamsdonk says the show will be a world class; equivalent to shows staged in Netherlands, Europe, America and Amsterdam. He said, the show has the potential of becoming bigger than all others.

It will serve the Kenyan flower growers with a platform to maximize their promotion to an international audience.

Rea Vipingo

venture into horticulture farming

Rea Vipingo has ventured into horticulture farming in a bid to diversify its sources of revenue.

The company which announced a three-fold increase in turnover last year boosted by a weak shilling and a higher harvest — said it had leased a farm in Athi River for growing vegetables, in addition to the horticulture farming in Dwa Estate, Kibwezi.

"The vegetable project is progressing well but remains in a development phase," said Neil Cuthbert, managing director of Rea Vipingo. "In addition, a 130-acre parcel of land in the Athi River has been leased for development as a satellite vegetable operation.

This project was brought into production in December 2011," added Mr Cuthbert.

The listed firm, ventured into horticulture last year to avoid depending mainly on sisal and diversify its streams of income.

"Whilst the sisal fibre price remains at a satisfactory level, the directors are mindful of the turmoil and volatility of the global economy into which the group sells its product," he said.

Mr Cuthbert projected that the recent strengthening of the shilling against the US dollar and the massive increase in the cost of borrowing money would impact on this year's performance.

Rea Vipingo announced an 593.6 per cent increase in revenues for the year ended September 2011, earning its shareholders the highest dividend payout in seven years.

The sisal grower realised a net profit of Sh467.1 million, compared to Sh67.3 million in 2010. "Sisal is traded in the US dollar currency and as a result, the group was able to take advantage of good dollar prices and a favourable exchange rate," he said.

Adequate rainfall in Kenya and Tanzania also saw Rea Vipingo produce 19,540 tonnes of sisal fibre, a 15.6 per cent increase from the 16,920 tonnes produced during the previous year.

Naivasha

Horticultural Fair 2012

The event will be held on Friday 14th & Saturday 15th September 2012 at the Naivasha Sports Club.

The Horticultural Fair was started in 2002 to bring together exhibitors and visitors and is 100% Charitable.

All the money collected goes to local and national charities with a focus on, but not limited to, caring for woman and children. Children homes, community clinics, HIV/AIDS projects, schools and hospitals all benefit, as well as small desperate case by case donations that make an enormous difference to people's lives.

A Sustainable future begins with KOPPERT BIOLOGICAL SYSTEMS

Koppert Biological Systems (K) Ltd. is a subsidiary of Koppert B.V. of Netherlands. Koppert has been supplying sustainable solutions for the professional cultivation of vegetables, fruits and ornamental crops for more than 40 years. Koppert is in fact the international market leader in the field of biological crop protection and natural pollination.

Koppert Kenya was established in 2006 and has consistently delivered reliable systems, based on top quality products. We have helped growers produce more yields of a higher quality in a healthy and sustainable way. Our experienced specialists work hand in hand supporting growers every step to ensure success of our programs and products. Our range of bio-control tools include predatory mites, parasitic wasps, beneficial fungi, monitoring and mass trapping devices and other accessories.

Sustainable IPM Systems

The crop protection landscape in Kenya has gradually evolved over the years to incorporate sustainable integrated pest management (IPM) systems. In the Floricultural sector, there has been a gradual decline and rationalization in the use of chemical pesticides to control pests and diseases in favour of biological control. The results have been positively overwhelming; growers have achieved better quality of flowers and increased harvestable quantities per M^2. One of the areas in which Koppert has mastered the deployment of effective and successful tools is in the control of the two spotted spider mite (*Tetranychus urticae*). Our unique approach involves the use of two predatory mites -*Phytoseiulus persimilis* (SPIDEX) and *Amblyseius californicus* (SPICAL). The combined use of both predators prevents the occurrence of sudden upsurges of the spider mite. This is due to the inherent unique characteristics of SPICAL; a broader diet, resistance to high temperatures, low relative humidity & some pesticides. This means it can survive longer in the crop even in the absence of the pest, and thus is able to combat new infestations immediately they occur. The savings a grower is able to make as result of protecting his crop against sudden upsurge of the pest is indeed priceless.

Secondary Pests

After successful implementation of spider mite control, growers need to watch out for 'secondary' pests such as thrips, whitefly and mealy bugs. Koppert has a diverse range of tools that assist growers prevent and/or control these pests. Thrips, for instance, are continually posing a threat to growers leading to the loss of valuable produce. Heavy thrips infestation may occur at the most inconvenient time, such as close to the prime flower days when every cut-flower stem counts. However, this need not be the case because a comprehensive bio-control strategy that tackles the various stages of the pest's life cycle can be employed. Our strategy includes (1) the use of the predatory mite *Amblyseius swirskii* (Swirski-Mite) which preys on the thrips larvae, and (2) intensive application of *Horiver-TR* (blue Horiver sticky cards) and *Lurem-TR* (thrips attractant) for mass trapping of the thrips adults. In future, we will also avail products to target the pupal stage such as Macro-Mite (*Macrocheles robustulus)*, a soil dwelling predatory mite. Adding Attracker (a solution of selected sugars that lures thrips) to ALL thripicides further increases the effectiveness of these insecticides when sprayed to control thrips. Growers who have adopted this strategy have been able to reduce insecticides sprays by 25% to 75%. The predatory mite *A. swirskii* (Swirski-Mite) is also used for the control of Whitefly. It preys on the first larval instars of both the glasshouse whitefly and tobacco whitefly.

For mealy bug control, we recommend the product PLANOPAR. It is based on the parasitic wasp *Coccidoxenoides perminutus.* When introduced early, this parasitic wasp effectively controls the Citrus mealy bug *(Planococcus citri)* which is increasingly becoming an important pest in Roses.

Healthy soil life

In recent years, Koppert has also developed crop protection solutions for use below the ground. We would like you, the grower, to be aware of the importance of a healthy growing media soil, stimulate soil life and bring it into balance. Continuous research brings new insights in this field. For this reason, at Koppert we are convinced that maximum disease suppression in the soil forms the key to a healthy and vigorous plant. We have thus invested in reasearch and technology to developed unique products and systems to assist growers achieve this goal. Already, growers are benefiting from one such product TRIANUM -the trade name for Koppert's unique, patented hybrid strain of the beneficial fungus Trichoderma harzianum. Growers have benefited from a vigorous and healthy crop above ground that is more resistance to soil-borne & secondary diseases. This translates to an increase in yields of higher quality and a healthy return on investment (ROI). Interestingly, TRIANUM is only the first step towards a new concept at Koppert called NatuGro; a total approach that aims at growing crops in a natural way.

Value for Money

As with every other resource that is invested into making a successful business, Koppert goes an extra mile to demonstrate that our bio-control tools are economically viable and sustainable. We therefore have cost-benefit analyses reports for all of our products and programs. These assist you the grower, to make informed decisions where crop protection systems are concerned.

Koppert Kenya will continue to provide growers with viable and sustainable bio-control tools. This we believe is the basis of a great partnership with the growers to set new standards for sustainable production of ornamentals and food crops.

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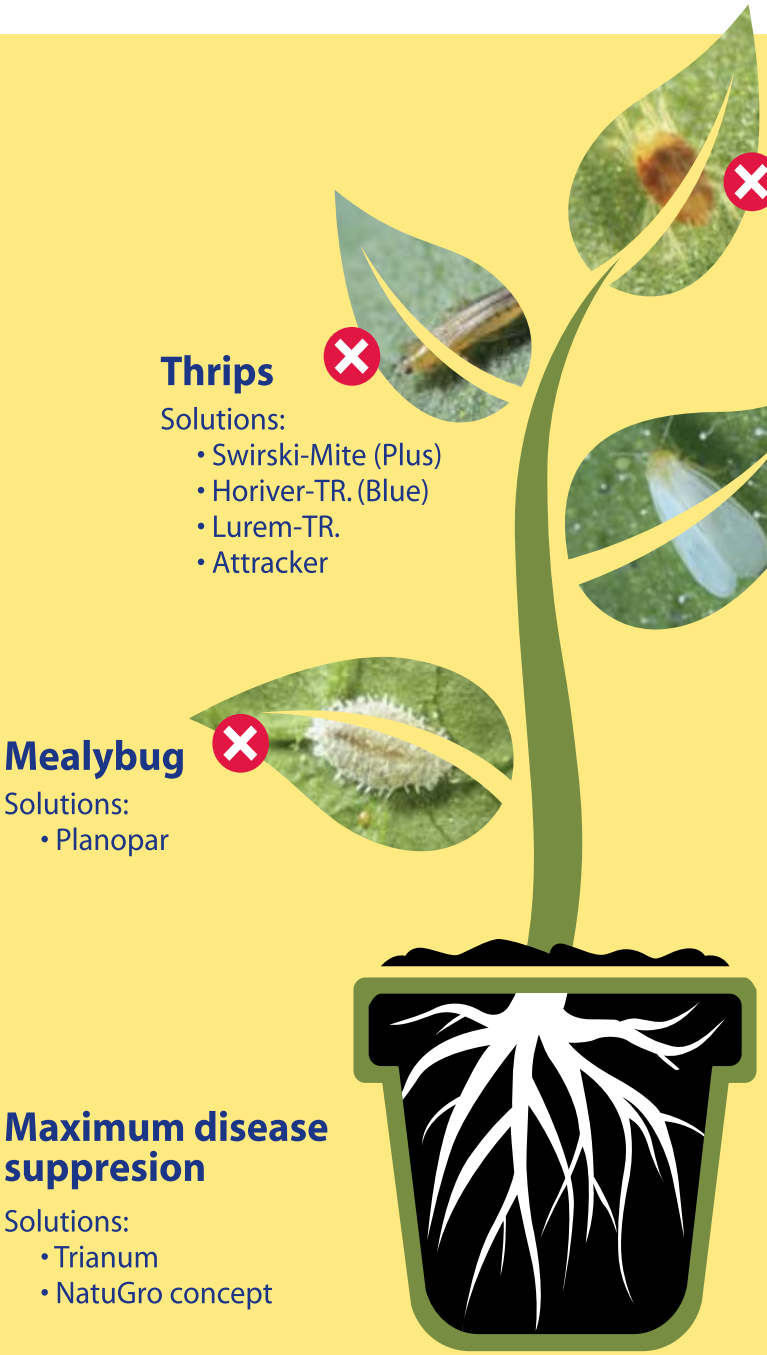

Spider mite
Solutions:
- Spical (Plus)
- Spidex

Thrips
Solutions:
- Swirski-Mite (Plus)
- Horiver-TR. (Blue)
- Lurem-TR.
- Attracker

Whitefly
Solutions:
- Swirski-Mite (Plus)
- Ercal
- Horiver (Yellow)
- Rollertrap

Mealybug
Solutions:
- Planopar

Maximum disease suppresion
Solutions:
- Trianum
- NatuGro concept

Solutions for sustainable crop protection!

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KOPPERT BIOLOGICAL SYSTEMS

2012 Valentine
go a notch higher

Chairman of Flower Vendors Association Mr. Elvis Wainaina who said that the sales were higher compared to last year

Despite the little knowledge about the origin of Valentine day, majority of Kenyans, especially the urban folks went a notch higher this time, with the celebrations.

On the eve of the day, colour red was predominant in clothes worn. Flower tents and hawkers displaying red roses, were strategically positioned in all around the city centre in major streets. This was as a result of Nairobi City Council through the Town Clerk Mr. Phillip Kisia graciously allowing and licensing the flower vendors.

Most of the flowers sold on this day were fabulously, wrapped along with other beautiful gifts such as red teddy bears, chocolate, ribbons, or in small, cute traditional reed baskets. The prices varied depending on the package; a bouquet of natural red roses costing as much as Kshs. 1,200 and a teddy bear costing up to Kshs 2,000.

Supermarkets were not left behind; they offered attractive Valentine packages with alluring gifts. Right at their entrances were Valentine stands set up and attendants shrouded in red. All packages included at least a red flower while some contained not just flowers and beautiful wrappings but also red wine, hot chocolate and huge teddy bears with fantastic love messages.

This day was engulfed in romantic shopping sprees with supermarkets remaining open up to 9.00pm. Kenyans may not be very romantic but this time they made sure they expressed their in-felt feeling to their loved one in style. Red roses, special lunch and dinner, traveling out of town, buying for one another shoes, perfumes, hand bags and jewellery all this was a clear indication that kenyans have stepped up the revels.

Kenya Flower Council with the kind support of P. J. Dave Roses gave bouquet of roses to news desks of different media houses. Also in collaboration with the Kenya Tourist Board they gave out roses to ladies as part of local promotions of branding Nairobi and Kenya at large as an internationally, acknowledged, lead country in the growing and exportation of cut flowers.

Oserian Flower farm too, treated their women employees with a bunch of red roses, sugar and rice. This is part of their policy to avail all round opportunities to women at the workplace as per the new Kenyan Labour Laws. Out of their 6,000 employees 34% are women.

At international market, flower sales for valentine were low compared to last year. According to the Dutch organization of exporter VGB, prices at Flora Holland were relatively low because there was more supply than demand for many types of flowers. "Prices were a bit higher than in other weeks, but not really the top prices you would expect for Valentine's Day", an exporter said.

US superior beans developed for Kenya

Green beans are an important crop for Kenyan exports, netting much higher profits for farmers than dry beans. However, there are problems which limits the scale of cultivation. The varieties that are being grown some are susceptible to common bean rust and are sensitive to high temperatures during the flowering period.

"Green beans are typically grown at altitudes higher than about 5,000 feet, which can have a temperate climate despite their proximity to the equator, but competition and land prices at these higher altitudes has increased," said Phillip Griffiths, vegetable breeder and associate professor of horticulture.

"To consider sub-Saharan Africa a region only for subsistence farming is to overlook opportunities for small-holder growers to produce crops with much higher values," he added. "The ability to expand green bean production into marginal areas at lower altitudes would provide new opportunities for farmers, but it requires the development of new varieties that combine heat tolerance with multiple rust resistance genes."

Griffiths and his colleagues have spent time researching beans that are able to cope with both of the problems mentioned above

Funding for breeding such beans came from several sources, including the Alliance for a Green Revolution in Africa, the Toward Sustainability Foundation, Cornell's Mario Einaudi Center for International Studies and the Cornell Assistantship for Horticulture in Africa (CAHA) and a recently established doctoral scholarship established by an anonymous donor.

Trials of beans suitable for use took place over two years at six different sites. Plants were identified that provided good yields at lower altitudes and also those with rust resistance genes, that showed immunity to all local strains of rust.

Breeding and evaluating beans for Africa from upstate New York turned out to be an effective approach.

"For these particular traits, the performance of the plants in high-temperature greenhouses in New York and selection for rust resistance in the USDA's Maryland greenhouses correlated very well with field performance in Puerto Rico, Kenya and Tanzania," said Griffiths.

There may be a second opportunity to leverage the research and resources at Cornell for the benefit of sub-Saharan Africa.

The AgriTech 2012... 15th to 17th May 2012

The AgriTech 2012 is scheduled to take place from 15th to 17th May 2012 at the Israel Trade Fairs and Convention Center in Tel Aviv, Israel.

The Convention held once in every three years, is one of the leading international events that showcase Israel and international agriculture technologies. It traditionally attracts many Ministers of Agriculture, decision-makers, experts, practitioners and trainers in agriculture, and thousands of visitors. It provides an opportunity to see at one site the latest developments in agricultural sector and advanced agro-technologies, especially in the fields of irrigation, water management, arid zone agriculture, intensive greenhouse cultivation, development of new seed varieties, and organic and ecologically-oriented agriculture.

The impact

of Israel's Agro-tech industry on Kenya's Agriculture sector

Israel is world renowned for its advancement in cutting edge technology, which has impacted the lives of many around the world in a positive way and has also had a big impact here in Kenya. The technology has rapidly transformed endless seas of desert into a world of agriculture, bringing hope to Africa. In view of this, **Israel's Ambassador H.E. Gil Haskel** had this to say, when interviewed by the Hortfresh crew.

Q1. On a wide level, what would you say has been the impact over the years of Israel's agro-tech industry to the Kenyan agriculture sector?

Today the most visible contact in Kenya is the floriculture industry, one of the leading if not the best, in which Israel has been very involved in developing.

There are many Israeli floriculture companies established in Kenya which bring together the winning combination of Israel technology know how in Kenyan conditions and very dedicated man power.

Israeli farmers realized that having differing seasons between Kenya and Europe turns the potential of flower growing in Kenya into a gold mine. Kenya does not have gold investments but growing flowers in Kenya during autumn and summer and exporting them to Europe during winter is better than gold, this has been proven by the Kenyan floriculture sector.

In general terms, the tremendous relationship existing between the Israel and Kenya business community basically means that Israeli technology is there for Kenya. It is hanging just for the Kenyan horticulture to come and pick it.

Q2. Which Israeli innovations have been adopted in Kenya?

Israel is very much interested in the development of the Kenyan economy and if we can assist in this development by exposing the Kenyan market to the technology development, we see it as a win- win situation for Israel and Kenya.

A visible technology is the green house and drip irrigation technology in horticulture of which Israel is the worldwide leader. These Israeli technologies allow a farmer today, almost in any climate to grow almost any crop in any season of the year without depending directly on the climate, soil condition or the amount of rainfall.

Most of what happens in Kenya depends on rainfall and since most of the year is dry, there is minimal return. Israel is very willing to assist Kenya in becoming non-dependant on rapid climate cycles or changes.

In Israel we grow in a semi-arid and arid desert and we grow the most tropical crops.

In the Israeli desert, you can find water melons, mangoes, strawberries, tomatoes, chilies, capsicum which are grown in artificial conditions; in greenhouses irrigated through drip irrigation that require minimal amount of water. In some cases these crops are even watered with the blackish water and not sweet water (Water with high percentage of salt and minerals). This is not fiction it is actually done in South deserts of Israel and we would like to offer Kenya our expertise and know how in this field.

Imagine a day, when people of Turkana will not be depending anymore on rainfall for their livelihood, this is something we are keen as Israel to be a part of.

According to our Jewish religion and tradition, we have a motto 'You save one soul, it is equivalent to saving the entire universe'. It is from that point of view that we in Israel, as Jews believe in cooperation in the field of agriculture not only as an economic asset but also a as religious and philosophic approach.

With the average amount of rainfall Kenya has, the quality of soil and quality of conviction of people and farmers, Kenya can transform rather rapidly into a food basket for Africa.

Q3. How would you rate the presence of the Israeli private sector in Kenya? And what has been the impact of this?

We have greenhouse technology that we can find in certain parts of Kenya but we feel that there is more that can be done. The sophisticated drip irrigation system is being adopted slowly by farmers in Kenya and its very important to understand that drip

irrigation is not just a black pipe; each hole has sophisticated membrane and filters which allow full control by the farmer, of how much water the plant receives, the quality of water and the amount of nutrients that are injected to the water like soluble fertilizers; that is why they are different from the obvious drip irrigations.

Another innovation that is being slowly implemented in Kenya is Israel seed production which in itself is very innovative because the Israel seed companies develop seeds which are ideally adjusted to certain type of soil, with certain type of climate and allows maximum yield from each single seed.

Israeli fertilizers are usually compatible with certain seeds. Many times the soluble fertilizer will be mixed with irrigation water and fed to the plant through drip irrigation and this allows a totally identical amount of fertilizer to reach each seed and allow identical yield that is produced from each single seed.

In Israel we believe that each seed in each single plant deserves maximum attention. In return each seed pays back the investment the farmer put in.

Another is pest management. Now Israel agriculture is transforming itself more and more into non-chemical pest control that result in much healthier crops.

Q4. How could Israel and Kenya widen the scope of their collaboration in the field of agriculture?

We have to do much. We need much more of Israel in the sector, we have to encourage many more Israeli companies to come and set base in Kenya because the potential is huge and its market welcoming. We have to promise them economic stability and to expose them to the incentives that are offered by the Kenyan government. Without this pro-active exposure, the Israeli companies that can come will not find their way into East Africa.

My job is to describe to the Israel sector the warm and positive reception given to Israel by Kenya and to convince them that bringing their technology to Kenya will be more beneficial to their businesses than to any other market.

I'll do that hand in hand with my counterparts in the Kenyan government and well I think we will need to have more Israeli delegation coming and holding business seminars.

I intend to establish the long overdue Kenya-Israel Chamber of Commerce whose main task will be to ease and facilitate business connection between compatible Israeli and Kenyan companies.

One very concrete measure is to organize the largest ever delegation from the Kenyan agricultural sector to Israel on the occasion of Agri-Tech 2012 which is one of the largest Agri-fairs that is held annually in Israel. This will allow Kenyan agriculturalists the full exposure to all the latest Israeli agricultural innovations and technologies. The fair will be held in May 2012 in Tel Aviv.

Q5. What must Kenya do to take in more technology and best practices from Israel?

The Kenyan government should work out a set of incentives for farmers that should be exposed to the Israeli agricultural sector. This will encourage the different Israeli companies to bring their business to Kenya.

Q6. One of the biggest brand names in this sector is Amiran Kenya Ltd, identified as an Israeli-Kenyan company representing many Israeli companies. Please comment on this?

Amiran is doing ground breaking work in developing Kenyan agriculture both on the technological front, bringing Israeli technology into the Kenyan farms and also in agricultural education and orientation among Kenya's young generation, which is the foundation block for the future society of this country.

Know that Amiran Kenya Limited is doing this not only as a business endeavor but also through deep conviction for the future of Kenya and Kenyans, and I am very proud of their work.

Q7. What do you say about the Israel Experience Expo?

It will be a first of its kind. It is an opportunity to expose Israel to Kenya in the field of Tourism, Trade, Culture and general orientation. I intend to initiate a series of such events all over Kenya to allow every single Kenyan to learn the real aspect of Israel and what Israel has to offer Kenya as a nation and Kenyans as individuals.

I would like to bless personally all those involved in organizing the expo and wish all the best success.

Q8. What would be your final comment?

I am very proud to be representing Israel in Kenya. I think Kenya is undergoing a very exciting and courageous process of change. The combination of three aspects: the implementation of the new constitution, word for word implementation of vision 2030 and the entrance to election year; which I am sure, will result in a viable and solid new administration. All these three will bring Kenya into a different era. I am proud to be associated with Kenya.

P.O. Box 20496
Nairobi 00200
Kenya

Floral Packaging Solutions Africa Limited (FPS Africa) will change its name from Zwapak Africa limited on 1st March 2012. Following the change of ownership of Zwapak BV a re-structuring resulted in FPS Africa being formed – A WHOLLY OWNED KENYAN COMPANY!

The partnership that Zwapak Africa enjoyed with Floralife and Smithers Oasis®, we are happy to say is now even stronger.

The core activities of FPS Africa are:

- The main activity of FPS Africa is the production of sleeves based on orders from the European retailers. Our manufacturing plant can also offer excellent printing quality with its high quality 8 colour flexo printing line.
- In order to provide a complete post-harvest packaging solution FPS Africa also offers Floralife® brand of flower food. This is a result of joint venture with Floralife® of U.S.A, largest provider of plant care products in the region. Manufacturing of flower food began in 2009 with a state of the art laboratory facility set up in the premises of FPS Africa.
- FPS Africa has also been appointed the exclusive distributor of Oasis® brand of floral foam for use by the florist both commercial and the enthusiast. We carry the Ideal foam and many other accessories related to floral foam. Also available is the Oasis® growers' products such as propagation trays.
- FPS Africa is the sole distributor of netting products made by SANPAC Africa limited. These can be used a bucket extension, transportation from farm and general use in the pack house. A finer mesh is also available to protect single stem heads.
- FPS Africa also stocks general accessories such as rubber bands, secateurs, knives strapping rolls, and strapping clips which can strap boxes with the use of any stretching and crimping equipment.
- FPS Africa has also tied up with Cyklop International to distribute pack house machinery like strapping machines, defoliators, binding machines and conveyors to make work more efficient.
- FPS Africa also offers high quality labels for display purposes for flower sleeves.

LOCATION:

FPS Africa is conveniently located on Mombasa road in very close proximity to the Jomo Kenyatta International airport where most flower farms have depots to ensure swift and timely deliveries of any size.

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Pest Resistance to Pesticides

How to manage resistance to pesticides

It is abundantly clear that one of the major production constraints in any agro-ecosystem is the direct or indirect damage caused by pests (insects, fungi, bacteria, weeds, rodents, etc).

Pesticides have been and are still the major combat weapons that people use to subdue the population of pests from reaching economically damaging levels.

However, the number of pests that have developed or are developing resistance to various groups of pesticides has increased at an alarming rate since the turn of the last century.

In other words, the ability of certain individuals to tolerate or avoid pesticides that would prove lethal or reproductively degrading to the majority of individuals in a normal population, a term known as resistance, is becoming a serious production problem in agriculture.

The first instance of resistance to pesticide was noted in 1908 with the San Jose Scale (Quadraspidiotus perniciosus) against lime-sulfur; however, resistance really became a concern in the late 1940s with the use of organo-chlorine insecticides. In 1946 house flies were discovered resistant to DDT.

The number of instances of resistance development has gone up exponentially since the end of 1950s.

By the end of 1990s, approximately 600 arthropods species, more than 250 species of plant pathogens, 280 species of weeds, and several species of nematodes and rodents were proven resistant to one or more pesticides of the major groups.

How does resistance to pesticides develop?

Resistance to pesticides is the result of the selection pressure of pest strains tolerant to doses of pesticides that would kill the majority of the normal pest population. These strains tend to be rare in the normal population, but widespread use of pesticides can reduce the normal susceptible population thereby providing the resistant individuals with a competitive advantage. The resistant individuals multiply in the absence of intra-specific competition, and over a number of generations quickly become the dominant proportion of the population.

This implies that resistance is pre-adaptive, i.e. acquired from parents and never acquired through habitation during the lifetime of an individual. For instance, it is not possible to produce resistance within a single generation by exposing pests to sub-lethal doses of a pesticide.

There are two basic mechanisms for development of resistance:

1. detoxification of the active ingredient within the biochemical pathway;

2. tolerance of the pest due to decreased sensitivity to the active ingredient at its site of action.

The rate of resistance development also depends on genetics of the resistance factor. In some cases, resistance originates with mutations occurring in populations, resulting in new genotypes some of which are predisposed to resist adverse factors. If the character required for resistance can be obtained through expression of a single gene (monogenic resistance), resistance may occur after only a few generations. For example, monogenic resistance occurred to insecticides by Musca domestica only after a few years of use. However, if many genes are required (polygenic resistance) development of resistance may be much slower.

Table 1. Doubling periods of the number of species resistant to different categories of insecticides (after Giliomee, 1997).

Insecticide Group	Years
DDT/Methoxychlor	6.3
Lindane/Cyclodienes	5.0
Organophosphates	4.0
Carbamates	2.5
Pyrethroids	2.0

Prevention of resistance to any pest management tactic is impossible; however, its rate of development can be slowed by considering operational factors that enhance it and modifying the pest man agement program accordingly.

Some of the common management routines for resistance management are:

- Use of combined tactics to achieve suppression (e.g. integrating ecological tactics, use of natural enemies, use of resistant plants and use of plant protection chemicals) so that undue reliance is not placed on any one tactic. This is called tactic diversification.

- Use of passive tactics, example, proper irrigation and fertilization to produce vigorous plants which can better tolerate pest injury.

- Modification of use patters - this includes such methods as use of appropriate dosages, less frequent applications, leaving some populations untreated, preserving refugia, etc; or the use of multiple tactics such as use of pesticide mixtures (one component of the mixture could be a 'single-site' and the other a 'multi-site' product), and rotating pesticides (usually consists of a few, 2-3 consecutive applications known as block spray, then switching to a chemical with different mode of action and from a different chemical class).

- Reduce the number of pesticide applications through establishment of better monitoring and forecasting methods.

In conclusion, given the fast rate at which pests are developing resistance to pesticides and the very slow rate at which new molecules are coming to the market, it is imperative that tactics to pest control takes a management approach than relying on a single method. With the increase in the number of sub-standard and adulterated products in the market (major recipes for resistance developments), it is important for growers to be mindful of the type of pesticides they are using in curbing pest population. An integrated management program does provide effective and sustainable solution to pest problems and helps in managing resistance development.

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While representing a wide array of global agricultural leaders from around the world, Amiran Kenya Ltd is best known for its role as a bridge between Israel's leading agro-tech industry and the large, medium and small scale farmers of East Africa.

Israel is renowned worldwide as a leader in agricultural technology and water management. The country has been involved in projects in the developing countries to ensure increased crop yield, which will in turn impact on income and food security. Kenya is one of the countries that have benefited by making great strides in the agriculture industry thanks to the use of these advanced technologies.

The agriculture sector has for many years dominated Kenya's economy. The sector currently accounts for about 25% of the country's Gross Domestic Product (GDP) and accounts for 80% of national employment. This is in spite of the fact that only 15 percent of Kenya's total land area enjoys sufficient rainfall and fertility to be farmed. Agriculture is a huge source of income and employment for millions of people especially in the rural areas. The agricultural sector has seen unparalleled growth over the past years as more companies venture into production and export of flowers and fresh produce.

The growth can be attributed in part to the role that Israeli technology is playing in the sector. Israel is one of the very few countries in the world where huge overseas investments in Israeli companies are matched by no less significant Israeli investments all over the world. Besides the fact that innovative export industries are the engine of the Israeli economy and even very small Israeli firms operate on a global scale, Israel and Kenya, home of Amiran have a long and rich history. Amiran Kenya is considered by many to be the only real gateway in East Africa to Israeli agriculture.

For years now, whether in a quiet way or by engaging with the masses, as has been its policy for the last 3 years; Amiran has brought innovation after innovation to the Kenyan Agricultural sector, and has played a major role in bringing the Kenyan Floriculture and Horticulture sectors to their current globally respected positions.

It has often been said that Kenya or Africa for that matter could be the "food basket of the world". The people at Amiran don't see this as just another cliché, they act on it, it is an objective towards which they strive and work all the time believing that this is something that is attainable. Africa's large land masses and water reservoirs seem like an almost unending resource for sustainable agribusiness, to the company, which has identified as one of its missions, to adapt the successes and innovations of Israel's leading agro-tech industry to Kenya and the rest of Africa.

Amiran's biggest contribution to the Kenyan agricultural sector has been the agricultural and technical knowhow

coupled with top of the line technology and products that it has continually brought into the country over the years with its array of firsts in bringing Agricultural innovations that have been unsuccessfully imitated by its competitors.

Drawing its strength from a workforce of over 300, Amiran has played a key role in creating the current multibillion Shilling floriculture and horticulture industries literally from dust and working with these to help them grown since then.

Amiran prides itself in creating 'Complete Solutions' based on a turn-key project approach, which is supported by the highest quality inputs available to the market. Over the years Amiran has grown from single line operations to a pioneer one stop agricultural shop, allowing it the depth in terms of experience, knowledge, manpower, tools and products to implement large scale projects or to offer small scale farmers an all inclusive approach to sustainable agribusiness and to support them until they are on their feet.

A recent study conducted by a Nairobi University Professor, shows that Amiran was 'top of mind' of 85 percent of over 250 large and small scale grower's interviewed, meaning it was the first connection a person made when asked about agribusiness in Kenya. There is no question that as Amiran continues to drive change in the Kenyan agriculture sector, it has at the same time become the 'hottest' brand name among the small scale farmers of Kenya. Many farmers who have adopted the Amiran 'Complete Solution' approach understand that Amiran's efforts are business oriented, aimed at making money for their farmers – at putting money in the pockets of Amiran's clients!! The Amiran motto that says "The Farmer's Must Succeed" is deeply embedded in all of those involved at Amiran in this effort.

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Located along Old North airport road, off Mombasa road in Nairobi, at Amiran House, this great agricultural entity has stayed at the top of its game over the years in the country and the wider East African market by ensuring that it offers the best quality and service to its customers making the Amiran Kenya Ltd brand synonymous with the highest international standards of excellence in Agriculture.

In the late 1980's Amiran brought consultants from Israel to advise the future flower growers of Kenya on the adoption of large scale greenhouses, which today are part of Kenya's heritage as they symbolize Kenya's position as the leading floriculture producer in the world. Continuing with this 'hands on' approach, Amiran helped to build the first flower farms in Kenya, complete with greenhouses and advanced irrigation systems at the time and has since erected 90 percent, 2700 hectares of the 3000 hectares of greenhouses in Kenya. Continuously growing its investment in Kenya, Amiran's involvement in the agriculture sector grew as it diversified into agro chemicals and fertilizers responding to the ever present needs of the growers.

The majority of the greenhouses in use by flower and horticulture export farms in the country today were put up by Amiran, which initially brought in Israeli technicians to oversee and set them up and has over the years trained its team of Kenya professionals to do the same with the same precision, care and technical know how. The quality products used in the Kenyan market by Amiran are sourced from Azrom, one of the world leaders in this area operating in East Africa exclusively through Amiran.

Amiran Offers a wide range of quality agrochemicals and fertilizers sourced from some of the leading multi national companies in the world. With its long time experience in the agrochemical business, extensive and intensive good relationship with agrochemical industries around the world, agrochemical research institutes and agrochemical administration authorities, Amiran continues to

Soluble fertilizers introduced to Kenya by Amiran in 1995

introduce to the market new chemicals and fertilizers that lead to higher yields and better crop production and protection. Amiran ties in all of these technologies for projects for large scale growers like the flower farms and horticulture export farms and for small scale farmers through the award winning Amiran Farmer's Kit (AFK).

One of Amiran's major agrochemicals and fertilizers suppliers is Makhteshim Agan Group, one of the world's leading manufacturers and distributors of agricultural products based in Israel, with over 60 years of field-proven experience, impeccable reputation for quality, value and attentive service, and ranking among a handful of the world's largest makers of agrochemicals and fertilizers products and is unrivalled for its diverse offering of advanced, environmentally friendly products.

Haifa chemicals, another important supplier from Israel, which serves Kenya through Amiran, is a long established International Corporation that produces and markets Specialty Fertilizers, and Technical Chemicals, and is well-known worldwide for its innovative solutions in all its fields of expertise and has gained production capabilities, application know-how and deep understanding of the marketplace.

The irrigation department at Amiran Kenya was the first to lay down drip irrigation systems in the country in the 1970's and to date continues to install irrigation systems all over the country for all types of farmers both commercial and non commercial with improvements to the technology shaping up consistently and new methodologies and products for effective irrigation being introduced to the farmers by Amiran's world class suppliers, Netafim. Netafim is the Israeli company which invented drip irrigation and has made it the highest yielding, most water conservative system of irrigation practiced across the globe today. This method, which has since been proven as the most efficient way to irrigate in terms of water conservation and efficiency of water use, has been adopted by both large and small scale growers.

In addition to being the first in bringing in the greenhouse technology into the country,

laying down the first drip line irrigation systems, Amiran also introduced the first soluble fertilizers into the Kenyan market in 1995.

In 2006 Amiran introduced its own brand of seeds into the Kenyan market, once again relying on global leaders to supply the best possible seeds to the Kenyan farmer. Repacking these seeds into packs that would be appropriate for small scale growers, Amiran entered into agreement with hundreds of agro-vets across the country and has since maintained a relationship of supporting the efforts of the various outlets, with a variety of quality products and training on the proper use and advantages of doing things the 'Amiran way'. Through its Seeds Department, Amiran is taking a growing role in the East African seed market with large scale supplies to NGOs and Donors. Amiran's now famous brand of seeds called Gold Medal Seeds are top quality and high yielding seeds, which by adhering to high standards, subsequently raise the standards and quality of the farmers' products thus improving the farmer's position in the entire value chain and enabling them to access markets locally and internationally.

Complimenting all of these is a team of professional agronomists offering the best technical advice as well as innovative products aimed at achieving the best possible yields and geared towards creating solutions towards agricultural problems by using intensive research.

As a major player in the Kenyan economy Amiran Kenya Ltd continues to stand by its age old commitment to the people of Kenya, and continues to work together with its partners for a better future for Kenya.

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Ushering Youth into Agri-Business

(L-R) Amiran's Head of Agro Division Yariv Kedar and Managing Director Pinhas Moskovich shake hands with YEDF's CEO Juma Mwatata and the Chairman James Gitau Singh

With the aim of offering the Amiran Farmer's Kit (AFK), which has captured the imagination of so many in Kenya, to the youth, the Youth Enterprise Development Fund (YEDF) has entered into partnership with Amiran Kenya Ltd launching the AgriVijana Loan, which in its first phase has been allocated Ksh 150 million.

At the celebratory MOU signing between the two organizations, Mr. Juma Mwatata, CEO of the Youth Fund said, "The reason for giving these sector specific loans is that despite strides towards industrialization, Kenya is still an agri-based economy".

At the signing, attended by members of the YEDF Board, senior Amiran representatives and representatives of the Media, the Chairman of the Fund Mr. James Gitau told those in attendance: "Starting last year the Fund has focused on providing sector specific loan products to the youth, to enable them take advantage of their talents as well as resources in their locality. To this end the Fund is actively exploring partnerships with likeminded institutions. We are therefore glad to formalize this partnership with Amiran Kenya Limited. Under this arrangement the Youth Enterprise Development Fund has established a new loan product, AgriVijana Loan."

He revealed that the programme is expected to involve over 5000 youth in the first phase, "This new project will create instant jobs for them and will also improve the country's food security considerably".

The loan will finance two youth groups per constituency to buy a complete AgriVijana Amiran Farmers Kit from Amiran Kenya. "We expect that thousands of youth will be attracted to this cool farming concept and therefore be gainfully engaged", asserted Mr Gitau.

The AgriVijana Amiran Farmer's Kit, contains 2 greenhouses, a drip irrigation system for the greenhouses and 400m of open field, a water tank, plant support system, Gold Medal Seeds to be grown inside the greenhouses and in the open field, high quality fertilizers for one season, crop protection products for one season, a farmer's sprayer, nursery set, health and safety protective gear, training, agro-support, and AFK insurance from CIC Insurance.

In his speech during the celebration to mark the 5th anniversary of the founding of the Youth Enterprise Development Fund, President Mwai Kibaki advised the youth to take advantage of the AgriVijana Loan and to engage

YEDF Chairman James Gitau Singh speaking during the launch of the AgriVijana Loan

in modern farming saying that the move would guarantee them a good income and enhance the country's food security.

Most youth perceive farming as something one does to survive or when one retires. As part of the AgriVijana loan, YEDF and Amiran will embark on an advocacy campaign that aims to raise awareness among the youth to the financial opportunities that modern agribusiness offers.

Pinhas Moskovich, Managing Director Amiran Kenya Ltd said, "The average age of farmers is very high, this is because youth do not see a future in agriculture, they see it as work to do in retirement, yet it's an industry driving other industries." He expounded that technical support is needed to make farming profitable and attractive to the youth. "Using new technologies, we can show how Kenyan youth can make lots of money for themselves from farming. They wouldn't need to move into towns anymore to look for jobs".

Mr Moskovich said that the AFK was created with the aim of allowing small scale farmers affordable access to modern agricultural technologies. He added that Amiran will always be ready to work towards ensuring that the country is food secure through agriculture.

The loan allocated by the YEDF to acquire an AgriVijana AFK is Kshs. 358,344. The group is expected to raise 10% of the loan amount. Repayment will start after a 4 month grace period, which is adjustable in the case that the crops planted by the group take longer to mature. The loan shall be repaid in three cycles totaling 3 years. The security of the loan will be the financed equipment, assignment of sales and personal guarantees by group members.

The groups will be picked through competitive bidding having met a set of conditions like the group's composition must be 70% youth (18-35 years) with the leader being youth and must be registered in the constituency it's applying the loan from. Other qualifications include access to land and water and knowledge or experience in agriculture.

Amiran's Managing Director Pinhas Moskovich and YEDF CEO Juma Mwatata signing the AgriVijana Loan MoU

President Mwai Kibaki advised the youth to take advantage of the AgriVijana Loan and to engage in modern farming saying that the move would guarantee them a good income and enhance the country's food security.

The Amiran Farmers Kit available through the AgriVijana Loan

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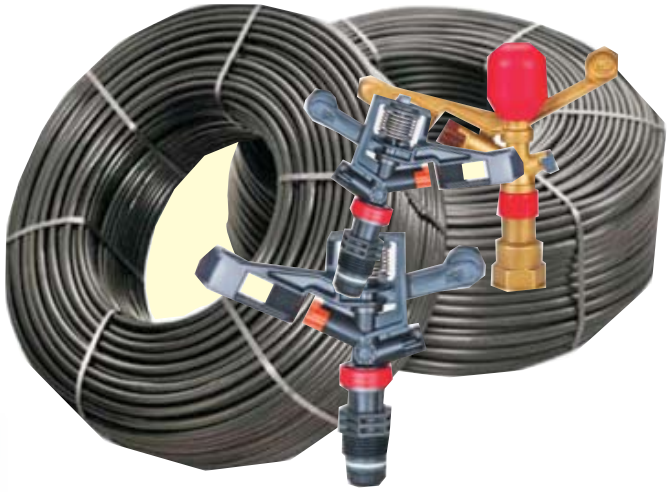
Expert in Water Solutions

Elgon Kenya ltd eyes small holder coffee farmers



By Nelson Maina

The change in fortunes of the country's coffee farmers, which has seen who had uprooted their trees get back to growing one of Kenya's major cash crops and foreign exchange earners, is compelling major agricultural input suppliers to take a keen interest in the sector.

One of the firms is Elgon Kenya ltd, which has for long been known as a distributor of horticulture and floriculture inputs supplier has from 2011 diversified its product range to include coffee products and services.

Mr Ashok Reddy, Elgon Kenya ltd product development manager said that the firm previously focused in the floriculture industry but has diversified into coffee, tea and cereals "due to the demand in the market and because the company has the products to service the other crops as well."

Apart from chemicals and fertilizers, Elgon Kenya ltd, which prides itself to offer a complete suite of services, also provides hardware, seeds, plastics bags, cartons, baskets and drip irrigation kits.

"Our products for the coffee farmers include fungicides (Cupravit); an insecticide (Tricel); a growth promoter (Aminosol) and herbicides (Glycel and Clinic). Elgon Kenya ltd acts as the distributor of the products in Kenya and within the region," said Ashok, adding that the biggest challenge for coffee production is the coffee berry disease.

Coffee trees and berries attacked by the coffee berry disease do not exhibit good characteristics as they have stunted growth and under-size, are not healthy and also not attractive to buyers thereby fetching reduced prices in the market.

To address the problem, said Ashok, Elgon Kenya ltd has introduced into the market Cupravit (which is available in as low as 500 grammes and can be accessed by even those farmers with just 30 coffee trees) in partnership with the fungicide's Europe-based manufacturer.

"Cupravit was previously not available to small-scale farmers as it was through Bayer East Africa which focuses on large scale farmers. But now, we have partnered with the manufacturer, Spiess Uranus of Hamburg and are acting as the regional suppliers and distributors of the product," stated Ashok.

The product, imported during the off-season before distribution into the market, is targeted at coffee farmers from the country's main coffee growing areas of Mount Kenya and Rift Valley.

To further enhance small-holder farmers' coffee production, Elgon Kenya ltd has deployed its own agronomists to the target areas to work with the farmers and complement efforts of the government's agricultural extension officers. The company holds farmers' field days where farmers get an opportunity to learn new and appropriate farming practices.

"Elgon Kenya is serving coffee farmers through a novel product which is a boon to the farming community and coffee sector. We offer a complete coffee calendar and endeavor to empower farmers by providing crop protection and production information during the farmer field days," stated Ashok.

Elgon Kenya's drive to provide services to coffee farmers comes at a time when the crop is attracting significantly better prices in the market, with a kilogramme currently retailing for between Kshs 100 and 150 depending on the quality of produce and the factory that produced it.

The industry regulator, Coffee Board of Kenya, also projects that the coffee sector's exports will grow by 7 per cent in the 2011/2012 season, mainly due to high international prices and increased volumes.

Kenya earned about Kshs 26 billion from coffee exports in 2010/11, up from 16 billion shillings a year earlier. The ministry of agriculture expects the earnings to rise to about Kshs 28 billion this season.

Kenya's coffee production is mainly driven by small-scale farmers who make up over 70 per cent of the sector but the country has gained international recognition for its specialty beans known for their high quality which make them has made them popular for blending with coffee from other producers.

ELGON KENYA LIMITED

THABITI

Product Range For Coffee

Adjuvant

Silwet Gold

Composition
Organosilicone

Rates
0.2 - 0.3ml / Ltr

Action
Spreading & wetting agent

Herbicide

Glycel 480 SL

Composition
Glyphosate 480g/l

Rates
2.5 - 3Ltr / ha
180-200ml/20Ltr

Target Disease/ Pest
Broad leaf weeds,
Annual and Perrenial weeds

Controlled Release Fertilizers

Agroleaf High N 31+11+11+Traces
Agroleaf High P 12+52+ 5+Traces
Agroleaf High K 15+10+31+Traces
Agroleaf Total 20+20+20+Traces

Fungicide

Cupravit 50WP

Composition Copper Oxy Chloride

Rates 2 - 4 Kg / ha
140-180 gms/20Ltr

Target Disease/ Pest Leaf Rust,CBD

Insecticide

Tricel 48EC

Composition Chlorpyriphos

Rates 1Ltr. / ha
40ml/20Ltr

Target Disease/ Pest
Cut worms, Aphids and antestia bugs

Botrac 150

A concentrated Boron product for foliar application
Guarantee:Boron 10.9% ,150g/l
Application Rate: 1 Ltr/Ha

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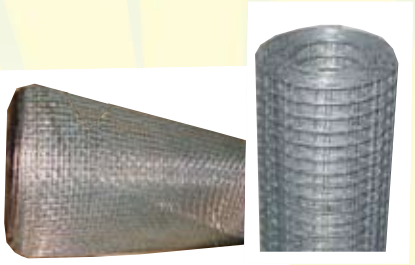

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Your Leader In Crop Protection

As population increases, demand for food increases. The need to produce more on less land, less water and with less chemicals have seen the technology of greenhouses come of age. Due to benefits accrued to the wooden greenhouses, they have fast gained popularity in Kenya as compared to metallic.

Wooden greenhouses are low in cost since they utilizes the locally available materials mainly wood and have low maintenance cost. They are easy to construct, modify and repair. They are also flexible in sizes and can fit land of different terrains and sizes. A well-constructed wooden greenhouse can last for up to 5 years and even more with good construction.

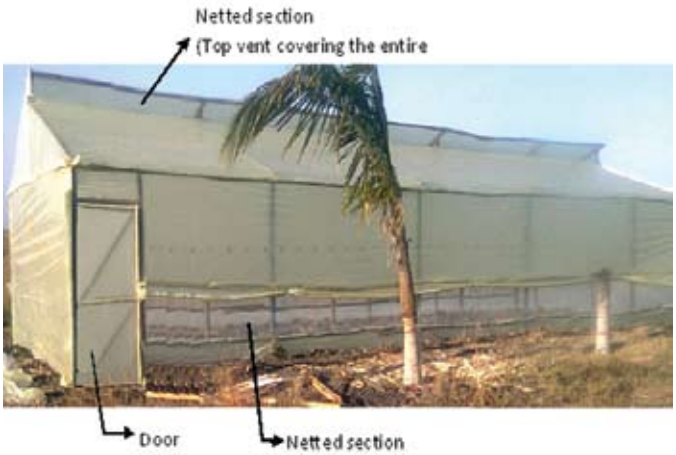
The wooden frame provides natural insulation. The wood absorbs the rays of the sun during the day and holds in the heat at night thus providing constant temperatures opportune for crop growth. Where crop support is needed, it is easy to install.

Fine touch Construction Limited, a leading agricultural construction company is pioneering and promoting construction of wooden greenhouses as an alternative low cost.

The company which also does other agricultural structure was motivated by the need to promote the utilization of locally available material to enhance the modern agricultural technology.

According to the company's projects coordinator Mr. Gideon Mwaita, an Agricultural engineer by profession, most farmers especially the small scale holders are embracing the use of wooden structures particularly because of their low cost while attaining their set goals.

The wooden greenhouse comes in handy also to those who are trying out as a temporary source of income in town plots or leased parcels. At least it will be easy to dispose off at an ideal time. Most plots often lie idle for too long before owners develop them. Quite a number of such plot owners are constructing greenhouses to be disposed off when ready to develop.



Wooden Greenhouse photograph: Constructed by Fine Touch Construction Ltd for a clients in Birika near Isinya (February 2012).

Note: *Ventilation provided on three fronts Covered by an insect net: From top by provision of a 30cm vent covering entire length and on the long sides 1mX15 m on both sides of the length.*

Fine Touch Construction Ltd does custom designs for specific places and sizes. The smallest most common size being 6X15m (90m2)which goes with a drip irrigation system, a water tank of 500L and installation for only KShs 99,000.00. Any other size can be done depending on the client's needs and suitability of the land.

The bigger the surface area, the cheaper the greenhouse which means it is more economical.

Although the wooden materials are readily available with timber dealers in the urban centres, where the client provides wood, the cost comes down by up to 20%.

Fine Touch Limited does greenhouses that are ample in height with the minimum being 2.5 metres and a maximum of 4 metres; an adequate height for one to work and tend crops without struggling. The structure are also good for long crops such as tomatoes. For areas that are hot, very appropriate designs are made to suit the area.

Most of the structure is done using blue gums poles, for they are readily available, strong and has smooth surfaces.

The support posts are treated and concreted to make them firm on the ground.

The company which also does the metallic greenhouses sees most of their orders and enquiries directed at the wooden signaling the acceptance of the alternative low cost structures.

"I see a situation where food security will be significantly enhanced if other stakeholders take more focused strategies to promote and empower the rural areas through wholesome trainings which also includes the actual construction of the greenhouses other than the limited basic crop production trainings" Mr. Mwaita said.

Due to overwhelming demand for agronomic support services, the company partners with selected agronomists to help farmers to get the necessary services such as getting the right seeds for planting, soil analysis, supply of seeds treatment of soil and crops for best results.

The growing demand for their wooden greenhouses has seen the company recruit experienced and train a pool of technicians in a bid to enhance the company capacity to handle big/many projects at ago.

Kenya Flower Farms exertions to reduce Carbon emission

According to World Bank study on the impact of climate change in the flower industry; it established that growing zones have shrunk due to global warming. It recommended that flower farms pool together to form a grand carbon credit scheme and collaborate in various environmental-friendly activities such as planting more trees, collecting and recycling water.

Following the report the flower industry in Kenya is setting up a pooled carbon credit scheme. Kenya Flower Council Chief Executive Officer, Jane Ngige, said that the industry is looking at counting all trees planted by each farm to form a "flower industry forest" and front the numbers as a single carbon sink.

"We are in the process of auditing existing clean energy schemes with a view to replicate these in all farms to collectively earn credits that would be ploughed into more activities so that in the final analysis, the entire industry can lay claim to being a major player in climate change intervention measures," she said.

The Ministry of Environment is already working with Simbi Roses in Thika and PJ Dave in Kitengela on a pilot scheme to convert farm waste into biogas, which can serve as models to be replicated in others farms.

Simbi Roses farm manager, Jefferson Karue, said though the initial estimates of the project short up, they are expecting that by April the project will have kicked on.

The flowers produce substantial waste which, if converted into biogas, would save the country considerable hydro electricity units.

Naivasha, the hub of flower growing has seen collaborative efforts by the flower farms and community in rehabilitation of the water catchment areas serving the lake. Groups such as Imarisha Naivasha, Lake Naivasha Growers among others have proved that this shouldn't be one man's responsibility but government, businesses, communities and local authorities, all whom have a role to play.

Oserian Development Company Ltd one of the largest flower farms in the region has shown a lot of emphasis on how to treat nature. The company is currently undertaking afforestation. Their tree nursery generates over 50, 000 seedlings a year which they plant in their farm while the rest they supply to the community for various tree planting projects.

"The drought of 2009 strengthened people's to resolve and manage the precious resource of Lake Naivasha collectively. This is when farms started implementing efficiencies, like stopping overhead irrigation," says Hamish Ker, Oserian production director.

Oserian, has also joined the Climate Neutral Network (CN Net), an initiative of the United Nations Environment Programme (UNEP), aimed at reducing the carbon foot print worldwide. Their participation in the CN Net project is part of the company's greater strategy to achieve its goals of a sustainable farming practice that currently encompasses the use of geothermal power in the flower farms. Their geothermal greenhouse heating project is currently the largest in the world.

Another cooperation that is making a difference is a "payment for environmental services" scheme, or PES. Under the plan, the 21 members of the Lake Naivasha Growers' Group, reward subsistence farmers in the surrounding hills for their efforts to improve the quality and quantity of water reaching the lake.

The growers provide farmers with vouchers for agriculture inputs such as improved seeds and supplements for their livestock. Many also donate tree seedlings to participating farmers to reduce erosion on the hillside. "Now we aren't waiting for crisis. We're alert and we're taking action," says Ker.

Another farm that has invested in clean energy is Bilashaka Flowers, through their mega solar energy plant. They use solar to heat water and the steam is used in their greenhouses.

In Timau, Kisima farm and Timaflor farm collect rain water from their greenhouses during rainy season and use it throughout the seasons. They have also planted a lot of trees.

"If you marry yourself closer to nature, it's a win-win. Nature has been honing its system for millennia. So, it's going forward by going back to the past. We're more efficient and cost effective, the plants are healthier and it's a better working environment," says Ker.

Sametract

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Lady expertise in Growing Lady's Fingers

Okra grows well in tropical and relatively warmer regions with well-drained soils. In Kenya it is year round grown at Kajiado, Yatta, Kibwezi and Magadi regions.

Mboga Tuu has a lot of experience in growing vegetables. In our previous issues we featured their main plant eggplant, Karella and Chillies. In this issue we feature Okra a flowering plant in Mallow (*Malvaceae*) family that is closely related to cotton plant and hibiscus.

Okra is a pretty, heavily foliaged plant which grows up to a height of approximately 2 metres and has big yellow or white flowers.

It is grown for its green pods which resemble the fingers of a lady; no wonder its name 'lady's finger' which rightly describes its delicate and feminine nature.

Its origin is disputable, with some supporting South Asia others Ethiopia and others West Africa. It is referred as Okra in United States, a cognate of okwuru the name it is known by in Nigeria, Igbo language. In other parts of the world, it is known as okoro, bamia, bhindi and also gumbo in Southern United States which is apparently its Kiswahili name.

Okra grows well in tropical and relatively warmer regions with well-drained soils. In Kenya it is year round grown at Kajiado, Yatta, Kibwezi and Magadi regions. The plant is sown directly in the field through direct seeding. Thorough ground preparation prior to planting is recommended. Gap filling is done after one week to 10 days.

According to Daniel Agawo, Mboga Tuu farms Group General Manager, the plant do well when planted 10 -15cm apart with DAP (Diammonium phosphate) and top dressed with CAN (calcium ammonium nitrate).

They can be planted two rows in a raised bed. However, CAN should be applied only in soils with acid or neutral soil pH. In alkaline soils sulphate of ammonia (SA) should be used.

Urea is an alternative to CAN but it should be applied only in moist soils with a pH 8 or higher as high volatilisation of ammonia could occur.

Fertilisers containing chlorides should be avoided, since okra is sensitive to salinity. Quantities of the fertilizers to be used will depend upon soil analysis results for the blocks in question.

"The main challenge is getting the right seeds; many farmers have burned their fingers by planting wrong seeds, one should order seeds from reputable companies. Most of our clients order for the deep green fingers of 5 definite spines free from bruises and we have to get the right seeds". Said Daniel as he introduced us to Nisha, an out grower contracted to grow lady's finger for Mboga Tuu just next to their Isinya Farms.

Nisha who formerly worked with Irrico International and PJ Dave among others; gained interest in farming after she got convinced that what she was telling clients, especially when selling greenhouses during demonstrations was feasible and there was gain in it.

She would take people to farm sites and this is when she got motivated even though none of their family members is a farmer. "Farming is very challenging especially at the beginning but I find it very fulfilling" she said as she jovially took us round her farm located about 5 kilometers from Isinya.

At the farm she has planted tomatoes, onions, watermelons and chillies; but it is the healthy looking lady's finger in different stages that made us appreciate that 'what men can do, ladies can do it even better'.

She has employed a number of people to look after the farm and at one field ladies were picking the okra pods which she told us they are harvested twice daily depending on the temperatures. "The plant will continue to produce flowers at the internodes which will within no time become fruits as long as they are harvested, they are getting moisture and nutrients required. The hot Isinya weather is very appropriate for the lady's finger" she said gazing to the scorching sun.

Due to market sensitivity, the surface of the fingers should not be touched since this removes the tiny hairs making the fruit to lose glamour and darken the skin. To avoid this, Nisha told us that they handle the pods at the stalk where they are snapped.

The harvested pods are allergic to cold and freezing though they stay a couple of days before they can be spoilt; they should be harvested within a day to marketing.

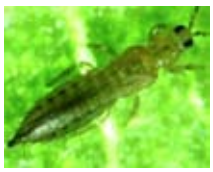
When cut the fibrous pods contain round white seeds, releases a sticky substance with thickening properties and is used in stews and soups or for salads. It is a powerhouse source of vitamin C, low in calories and is fat-free. Perhaps it is the nutritional value that has made the fruit popular particularly with the Indians dosa and Pilau.

At Nisha's farm she crop rotates lady's finger with baby corn, chilli and onions or any other of brassicas family. She controls weeds by hand hoeing. "We control sting bugs - that stings the fingers leaving them with pimples at flowering stage using systemic and repellant insecticides" said Daniel.

"Wet weather is a challenge to the crop since it is highly vulnerable to powdery mildew and leaf spots. We use sulphur based fungicides and other broad spectrum curative fungicidal (Triazols) sprays to cure" Daniel answered when asked about the pests and diseases that affect lady's finger.

"There is a huge market since the import from India is threatened in Europe, so there is high demand" Daniel noted.

INTEGRATED THRIPS MANAGEMENT-DUDUTECT'S STARTEGY



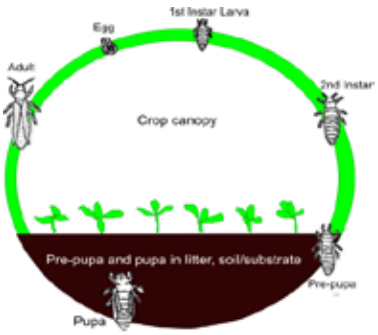
Thrips are tiny, slender insects with fringed wings usually less than 2mm in size. They range in color from translucent white – yellow – black depending on the species and life stage. Certain thrips species are beneficial and predate on mites and other insects, others are innocuous and feed on pollen and fungal spores while majority are pests which feed on plants by puncturing their host and sucking out the cell contents scarring plant leaves, flowers, fruit surfaces and distorting the plant.

Crop damage

Pest thrips feed on a wide range of vegetables, fruit and flower crops as well as cereals. Some species are specific to particular host plants while others feed on many host plants. The characteristic symptom of attack is a silvery sheen on the attacked plant tissue, and white or silvery patches and streaks on leaves, fruits and pods. Affected tissue will dry up when the damage is severe. A further indication of attack by thrips is small black spots of faecal material on the infested parts of the plant. Damaged leaves may become papery and distorted. Infested terminals lose their color, roll, and drop leaves prematurely. Feeding on fruits leaves a roughened silvery texture on the skin. Additionally, Thrips feeding causes injuries to flowers which serve as entry points for plant pathogenic fungi and bacteria. Thrips may also transmit plant viruses causing great damage to crops.

Life Cycle

The thrips life cycle includes elongate, cylindrical–kidney-shaped eggs inserted into plant tissue, two actively feeding larval (nymphal) stages on leaves and inside flowers, non-feeding pre-pupal and pupal stages found in the soil and litter on the ground (for most pest species) and an adult. The life cycle from egg to adult may be completed in as short a time as 2 weeks when the weather is warm.



Control Strategy

Thrips are difficult to see as they feed in protected areas such as inside flower buds, rolled leaves, underside of leaves and in young shoots. A good long term management program of thrips will include monitoring and early detection as well as an integrated approach that combines the use of good cultural practices, physical/mechanical measures, biological control measures and use of least-toxic insecticides such as narrow-range oils and insecticidal soaps as a last resort. Conserving naturally occurring populations of beneficials by controlling dust and avoiding persistent pesticides is the most important way to encourage biological control of pest thrips. Use of synthetic pesticides with a quick knockdown and long persistence in the environment will only provide a short term solution.

Monitoring and early detection – yellow and blue sticky cards can be placed in the fields at about 15cm above the crop canopy to trap thrips that may be in the growing area. These should be inspected frequently to ensure that thrips are spotted as soon as they arrive in the crop.

Cultural and physical control methods – the environment around the growing area can be modified in order to make it difficult for pest thrips to establish while at the same time encouraging beneficial organisms to establish. This can be through use of reflective mulch, increasing moisture content in the soil, pruning, weeding, removal of open flower buds (for some crops) and plant debris. Pests may also be barred from the crop by using insect proof netting, use of sticky traps and sterilizing the soil.

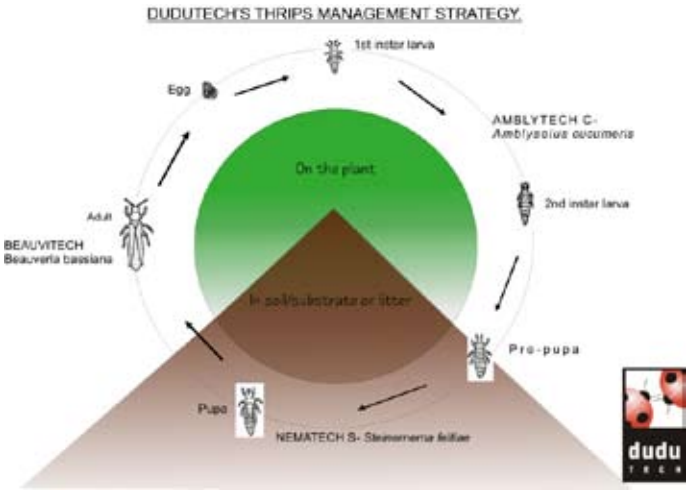
Biological control – natural enemies, in particular predators are often found feeding on thrips. They include predatory mites e.g. *Amblyseius spp*. minute pirate bugs -*Orius spp*. which will normally feed on the eggs, adults and larval stages found on the crop. Predatory mites in the soil such as *Hypoaspis miles* forage on the soil stages. Entomopathogenic nematodes such as *Steinernema spp*. infect and kill thrips. Entomopathogenic fungi such as *Beauveria bassiana, Lecanicillium lecanii, and Metarhizium anisopliae* are also important in biocontrol of thrips. These beneficial organisms are most effective when used early before large thrips populations have built up or before thrips are spotted on the crops.

Chemical control – The active ingredient used should be such that it breaks the thrips life cycle through targeting the right life stage. Care should be taken when choosing products to ensure that the mode of action of the chemicals does not encourage build up of resistance. Chemicals with high level contact, systemic and oral activities and insect growth regulators (IGRs) should be selected when targeting the feeding stages above ground. Drenching pesticides through the media can also effectively control soil stages as well as the feeding above ground stages. Addition of sugar can help lure thrips out of their hiding places when sprayed before or mixed with insecticidal sprays. The right nozzles should be selected to ensure proper coverage. Time of application should also be selected carefully to ensure that sprays are done at a time when thrips are most active within the crop e.g. early morning and late afternoon.

Dudutech's Thrips Management Strategy

Dudutech IPM Solutions has developed and implemented a thrips control package that is often more effective than the conventional control, as it overrides any pesticide resistance in the thrips population. Dudutech's strategy is a very comprehensive three pronged thrips management program which effectively provides long term management of thrips in protected crops and at the same time has added benefits in reduction of aphids, whitefly, caterpillars and mealy bugs.

The added benefit of using biological thrips control is the reduction of insecticides in the field; this increases the efficacy of biological control of spider mites. Due to incidences of thrips migrating from outside of the greenhouses which can lead to mass thrips infestations it is recommended that growers should keep a quick acting knockdown and safe pesticide on standby, for occasional use



We grow through ... Partnerships

ORBIT QUALITY PRODUCTS

AMINO ACIDS

The bridge to a bumper harvest

By Njeru muriithi-Orbit chemical industries limited

Introduction

The potential growth of any crop is achieved when water, plant nutrients and the environmental conditions are optimum and when pest and disease problems are minimized or prevented. Every grower encounters the challenge of properly managing these factors to ensure high crop quality and yields.

With the advancement of crop production technologies and research, the grower can have a better control of the crop by understanding the biochemical aspects of the plants.

The basic component of living cells is protein with amino acids as the building block. Proteins are formed by sequence of amino acids which are fundamental ingredients in the process of protein synthesis. About 20 amino acids are involved in the process of protein synthesis thereby influencing directly or indirectly the physiological activities of a plant.

The availability of amino acids in essential quantities during crop production leads to increased crop quality and yields. They can be availed to crops through foliar application or by incorporating them into the soil.

Foliar nutrition in the form of *protein hydrolysate* that is contained in PRONTO® provides readymade building blocks.

PRONTO® has been formulated with purity in mind and is packed with vital amino acids in form in which plants can readily absorb the available proteins through the foliage or their root system.

Unlike most other liquid proteins sources PRONTO® is produced via a unique ambient temperature process which preserves the amino acids.

Importance of Amino acids in plants

- Strong and healthy crop
  Amino acids are the essential building blocks for plant growth. The foliar application of amino acids in PRONTO® will assist the energy required by the plant to convert these proteins into new growth.
- Stress resistance
  Stress such as pest attack, high temperatures, frost, low humidity and floods suppress plant metabolism consequently reducing crop quality and quantity. Rejuvenating crops in such stressful conditions can be a challenge to many growers. Application of PRONTO® before, during and after the stress conditions supplies the plant with amino acids which are directly related to stress physiology and thus has a preventing and recovery effect.
- Increased pollination
  L-Proline helps in pollen fertility and in combination with other amino acids, they facilitate increased pollen germination. Foliar application of PRONTO®during flowering and fruiting stage is ideal for increased flowering, better fruit formation, fruit quality and proper ripening.
- Increased micro nutrients absorption
  Amino acids have a chelating effect on micro nutrients. When applied together with micronutrients, the absorbed and transportation of micronutrients inside the plant is easier. Application in combination with foliar fertilizer has double advantages

  With the immense impact amino acids have on crop growth, they can be applied in different stages of growth and in all types of crop; vegetables, fruit trees, flowers, cereals and ornamentals

Product Benefits for Your Business:

- Healthy plants are better able to withstand environmental stress such as pest and disease.
- Improve shelf life of fruits.
- Pronto® can enhance the uptake and assimilation of trace minerals to rapidly correct minor micronutrient deficiencies.
- Improving soil microbial activity can aid the reduction of bulk **fertilizers** use and assist with unlocking built up nutrients.
- Pronto® has a Nil with holding period.

Pronto® Shelf Life:

Pronto® should be stored at ambient temperature conditions between 18 and 30 c. It should be stored out of direct sunlight.

Compatibility & Use:

Pronto® can be mixed and applied with most commonly used pesticides, however we strongly recommend checking labels for compatibility as well as pre testing in a small area prior to widespread application.

Packaging:

Pronto® is available in the the following containers:

- 100ml
- 250ml
- 1L
- 5Lt
- 20Lt

Application Details:

Pronto® is suitable for use in a wide range of market sectors – some are listed here:

- Horticulture/sugarcane
- Turf / Golf Courses/Lawns
- Floriculture

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E-mail: orbit@orbitchem.com, **Website:** www.orbitchem.com

The Beauty of Chrysal

Technical Support
Anytime , Anywhere

Chrysal Africa'sTechnical Consultants are available year- round to support all Chrysal customers in their post-harvest processes.

The team has extensive combined experience in post-harvest processes, flower growing, soil and water analysis,water management and an excellent understanding of what it takes to be a grower in the region.

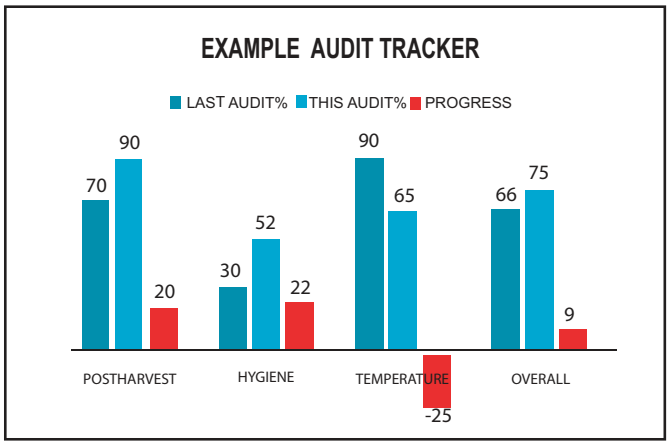
Travelling around East Africa to growers and bouquet makers,the team provides:

- Private, personalised audits with progress tracking,
- On farm and off farm training,
- Experience support,
- Support for trials and R&D,
- Backup for trials and testing in Nairobi and Holland,
- Post-harvest water use management,
- Links to buyers and processors in Europe, the Americas, Australia and the Far East.

Chrysal Africa's confidential audits cover post-harvest solution quality, hygiene, temperature and humidity, packaging and handling.

Audit reports score each section according to the performance at the audit using a traffic light system, and provide a progress tracker so growers can track how well they are performing.

Chrysal Africa's technical team is intergrated with that of Chrysal International to bring you the most up to date technical innovations and information from Australia and Japan through Europe to the Americas.



Trials and tests can be undertaken in Chrysal Africa and Chrysal International in Holland; Further follow ups can be requested in each of the locations mentioned above.

For any technical queries, support and information, the Chrysal Africa technical team is available to visit your farm, check your processes,recommend improvements, provide international backup networks and lend a hand when and where you need it the most.

Contact us at: info@chrysal.co.ke, steve.mbogo@chrysal.co.ke,anniemarie.dolier@chrysal.co.ke

The Beauty of Chrysal

Chrysal Africa now offers-: pre-treatment chrysal RVB Clear intensive 1 ml/L

NEW

General

- Post- harvest product for Roses Chrysanthemum and a wide range of summer flowers
- Does not contain Aluminium sulphate, therefore less risk of leaf scorching and leaf drop- enabling a longer storage period in the solution.
- Available in 10L and 100 l sizes

Effects

- Stimulates water uptake, thus preventing " bent-neck" in Roses.
- Prolongs vase life of flowers.
- Lowers the pH of the water
- Maintains the quality of flowers.
- Dissolves clearly and without odour in water.

Applications

- Suitable for all types of water, For soft water we recommend RVB clear Soft Water Intensive.
- Can be dosed automatically.
- For use by growers and flower importers

Savings

- Reduced flower wastage.
- Prolonged distribution and sales period possible.
- Reduced water consumption and labour costs, as the solution can be re-used.

RVB Clear Intensive

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Dipchem East Africa products are developed and manufactured in line with International standards, and undergo extensive research with precise evaluation / testing to ensure they local environment and farming conditions prior to commercialization.

Foliar fertilizers:

When root activity is disturbed...

Nutritional sprays have been used for a long time as a source of plant nutrients. Supplementary foliar feeding can provide the essential nutrients for normal developments of crops in cases where absorption of nutrients from the soil is insufficient. Weeds, poor aeration, low soil temperature or any other reason may cause such disturbance.

When deficiencies need correction...

Nutrients uptake through the foliage is considerably faster than through roots, foliar sprays is also the method of choice when prompt correction of nutrient deficiencies is required.

When top quality of crops is desired….Foliar sprays are much more than a cure to poor growing conditions. It is well known that certain plant development stages are of higher importance in determining final yields.

Foliar sprays with fully water-soluble fertilizers during these critical stages will dramatically increase yields and improve yield quality.

Fertigation:

One of the most important challenges facing advanced farmers is to provide crops with optimal quantity of water and nutrients throughout the growing cycle in the most efficient manner possible.

The best answer to this challenge is "Fertigation", whereby both water and nutrients are delivered to crops simultaneously through the irrigation system. Fertigation ensures that essential nutrients are supplied precisely at the area of most intensive root activity.

- Well-balanced fertigation program will satisfy the exact needs of the plant as they change along the season.
- Fertigation implies the following advantages:
- Improving nutrient availability to the plant.
- Enhancing nutrient uptake.
- Reducing fertilizer application rates and water requirements.
- Minimizing by leaching Losses.
- Preventing salt injuries to roots and foliage.
- Reducing soil compaction due to fewer field operations.
- Decreasing weed population.

The overall result of these advantages is higher yields with improved quality. Furthermore, the savings in time and labor associated with practicing fertigation help to increase the grower's profits.

Keeping up-to-date with most recent scientific and agricultural research, Dipchem East Africa continuously broadens its product line to better meet the requirements of crops and cropping environments. Dipchem's soluble fertilizers offer the complete range of plant essential nutrients. Hundreds of thousands of satisfied growers are familiar with our innovative range of products.

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Spodoptera exigua

pest management with Dipchem Agronomist

Spodoptera exigua is to Lepidoptera which belongs to the super family of the Noctuidae. This is a plague of a polyphagous nature which affect such as horticultural produce as pepper, Tomatoe, Augergines, Cucumber, Beans, Water melons, Roses and other plants.

The female worm is extremely fertile THROUGHOUT seasons of warm temperatures and as a result is able to lay eggs up to 1.700, with a level of decreasing fertility in the cold season to around 500 eggs.

The eggs are laid underneath mainly on the part of the leaves. Upon emergence, the larvae immediately begin to eat the newly formed leaves and flowers, moving together in first phase clusters. However, THROUGHOUT their development, they separate themselves and continue to devour both leaves and fruit.

At the end of the larvae cycle, the larvae drop down onto the ground in order to pupate; burying themselves in the shallow ground and forming a silky cocoon. The length of the chrysalis stage depends on the temperature and from this point onwards and the new adults emerge or a new generation cycle begins.

The length of the complete cycle will vary according to atmospheric conditions. However, the average cycle will be thirty to forty days between.

Damage to leaves can be observed as perforations, which are almost circular in shape. These are found in the blade or edge of the leaf and tender to be located in the area of the leaf veins. The small caterpillars eat only the parenchyma of the leaf, leaving behind the epidermis. However, the larger caterpillars cause a decrease in the size of the surface area of the leaf, which in turn will affect the growth of the vegetative plant.

Significant damage is extremely on the fruit with regards to Capsicum, Roses and water melons.

Perforations are produced in from the point at which the caterpillars make their entrance. They feed inside the produce causing rotting, and with regard to water melons, gnawing caterpillars cause the surface to the peel of the fruit.

As a preventative measure it is important to take care of the first phenological stages of plant growth, especially by carefully eliminating the remains of prior crops and weeds. Also it is important to place nets over the strips of ground so as to prevent the possible entrance of butterflies. The use of light traps and pheromones can also help to control the adults.

With respect to chemical control, the use of Applications which reach the underneath parts of the leaves is highly recommended. These should be made with select materials such as Legacy and Pentagon.

Biological control with applications can be undertaken with Bt and with the use of nuclear polyhedrosis virus for the control of Spodoptera exigua during laying the egg stage or the first stage larvae. This should be REPEATED treatment every seven days taking into account any natural enemies and the effects caused by general predators.

Control

LEGACY 5% EC

Lufenuron 5% min. W/V

Use: Insect growth regulator for control of Lepidoptera and Coleoptera insect pests

Mode of action: chitin **synthesis Inhibitor.** Acts mostly by ingestion; larvae are unable to moult, and also cease feeding. Also it also acts by reducing fecundity and egg hatch.

Crops: Ornamentals, vegetables, cotton, maize and citrus.

Pest: Lepidoptera and Coleoptera larvae – caterpillars, western flower thrips, whitefly etc

PENTAGON 5% EC

Lambda cyhalothrin 5% min.

Use: Non-systemic pyrethroid insecticide with rapid knockdown effect and long residual activity on a wide range of insect pests. Provides good control of insect-borne plant viruses as well.

Mode of action: Acts on the nervous system of insects and disturbs the function of neurons by interaction with the sodium channel. It's Non-systemic, with contact and stomach action, and repellent properties.

Crops: cereals, ornamentals, potatoes, vegetables and other crops.

Pest: aphids, beetles, thrips, caterpillars, coleopteran larvae & adults

Corpion 500sc

(Clofentezine 500g/l)

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Greenhouse

Farming Insights

The market

Until the appearance of this new concept of greenhouse farming, most of the crop growth was done in the open fields, thus leaving the grower and his crops exposed to the fluctuations of nature. The weather conditions directly influenced the length and success of crop growth seasons.

The introduction of indoor crop growth in controlled climate conditions neutralizes the impact of weather hazards and, theoretically, enables year-round growth. This new approach marked the world's introduction to the concept of intensive agriculture. A significant concept change, greenhouse production has become a new, technology-based industry, involving new types of technical equipment capable of achieving predictable results and profits.

Kenya is currently experiencing a mushrooming of wooden greenhouses, some of which are not standard as per recommendations. Farmers need to be well informed before undertaking a greenhouse project.

The competitiveness in markets and the ever-increasing quality standards for growers have increased the importance of each small agricultural production unit being issued with the right information. It is within these that I did this editorial article to you plus a module for modern greenhouse production systems. The notable advantages for modern structures are the ability to control crop growth, growth schedules and yield, almost regardless of external factors, while protecting the high quality of produce year-round and ensuring the farmer a stable flow of income.

How to choose the right structure, the right location, the right planning

Think about future growth when planning a greenhouse operation. Plan for the long term. Not thinking about the future can be a costly mistake if your operation expands and you have to tear down existing greenhouses to add these features later.

Develop a master plan that takes into consideration at least the next five to 10 years. Many greenhouse businesses will survive much longer, so it's good to consider growth for the next 10 years.

Determine you Farming business needs

First determine what your business will need to be successful. If you have been in business for some time, this may be easier. If you operate a new greenhouse business, here is a list of questions you should be able to answer.

- What is the purpose of the business?
- What are you planning to grow?
- What size products are you going to produce?
- Who are your customers and how will you get product to them?
- How will you irrigate your crops?
- In what climate will you greenhouse be located?
- What type of soil conditions exist where the greenhouse will be built?
- What can you afford?
- Do you want to automate the greenhouse or operate it manually?

The purpose of the greenhouse

Will you be selling the produce wholesale or will you operate a retail business? The purpose of your business will determine things such as customer accessibility, seasonality and growing patterns. You may also want to have a more eye appealing building if it will be used as a retail garden centre. If you are building a structure for commercial production, you will want to tailor it to the specific structure that offers flexibility to produce crops depending on your customers' future needs.

What are you planning to grow and what light levels, temperatures and humidity levels are needed? If airflow is important, will natural ventilation do the job?

Crop, customer choices

What size product are you planning to produce in the greenhouse? There are many choices and special needs for certain sizes of produce, eg cucumber, pepper etc.

Irrigation concerns

How do you plan to irrigate your crops? You may think you can connect your facility to local water and Sanitation Company and then just turn on the tap. You could find you need more water than the local authorities are willing to supply. You need to plan for this situation and make sure you operation is near an ample water supply.

Over the last few years there has been an increasing amount of regulation related to water and its use. You should calculate your water needs at least over the next five years and become familiar with the local water authorities.

Some growers in the Eastern & Central province have used

well water for 10-20 years. I hope the local authorities will not come in and put meters on the wells and started charging growers for water. Unfortunately, the well water may be at times too salty at places as Makindu.

Increasingly, growers are required to install retention ponds to collect water runoff from irrigation and rainwater. With the increasing cost of municipal water supplies, it may be more economic to collect water runoff and to pump the water from a retention pond the master plan should include details on where a retention pond would be located and how much water it can hold.

Climate and codes

In what type of climate will your greenhouse be? The natural temperatures and light levels help determine what crops are economical to grow. Be sure to consider severe weather conditions including the frequency of high winds and rainfall amount. What are the soil conditions where you plan to build? Is there adequate drainage at your site or will you need to install a drainage system? The soil can be very porous, allowing for easy drainage. Some clay soils tend to hold water, which can result in muddier conditions for longer periods. Be sure the land is graded for proper surface drainage and the soil is sufficiently porous for adequate subsurface drainage. Land that has a 0-to 5-percent grade will support drainage and reduce land prep or excavation costs.

Buying the "right" structure

When it comes to greenhouse structures, cheaper is not always better and is not really cheaper in some cases. You might be able to get by with a cheaper structure for the short term, but if you are considering a long-term plan for the greenhouse and its value over many years, you might want to invest in a structure that is built to last.

There is more to the overall cost than just the price of the greenhouse itself. Some structures are more labor intensive to erect. When looking at structure costs, compare the total cost including construction costs. I recently encountered a greenhouse construction job where the grower constructed several wooden cheaper houses. They did not last for 3 years.

Module 2 continues in next publication on structure orientation, Temperature and humidity regulation.

By: Joseph Muli

jkmuli@live.com

The writer is a Professional expertise with a leading Agricultural based company in Kenya.

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Low fruit & vegetable intake is a health hazard

Health Digest

Low fruit and vegetable intake is killing hundreds in their prime and if the trend does not change, many will go to an early grave.

Global, insufficient intake of fruit and vegetables is estimated to cause around 14 per cent of gastro-intestinal cancer deaths, about 11 per cent of anaemic heart disease failures and nine per cent of deaths as a result of stroke.

The WHO and Food Agriculture Organisation estimates 27 per cent of all deaths that occur in the East African region are an attributable of low fruit and vegetable consumption.

"Low fruit and vegetable intake are among the top 10 selected risk factors for mortality," WHO's senior expert, Godfrey Xuereb recently said in a workshop.

A recent WHO/FAO expert consultation report on diet, nutrition and prevention of chronic diseases, sets population nutrient goals and recommends intake of a minimum of 0.4 kg of fruits and vegetables per day for the prevention of chronic diseases such as heart diseases cancer, diabetes and obesity.

The report states there is convincing evidence that adequate consumption of fruits and vegetables decreases the risk of obesity, stomach and colorectal cancer and diabetes.

Further, there is convincing evidence that fruit and vegetables lower the risk of cardiovascular diseases.

Mr Xuereb, a WHO technical officer on surveillance and population-based prevention in the Department of Chronic Diseases and Health Promotion says fruits and vegetable consumption in the EAC stands at 38 per cent of the recommended ratio.

The experts recommends 146 kg per capita consumption of fruits and vegetables, but Kenya, Uganda and Tanzania's consumption stand at 80 kg per capita, equivalent to 38 per cent of the recommended amount.

"The East African populations are not eating nearly enough fruits and vegetables, despite the fact that they are the major producers," Mr Xuereb explained. Most people in Kenya consume 0.3kg of fruits and veggies a day per person, 0.1 kg below the recommended dietary guidelines.

WHO report show that Kenya's fruits and veggies consumption stands at 115kg per capita, equivalent to nearly 79 per cent of the required ratio. Non-communicable diseases are estimated to account for 28 per cent of all deaths in Kenya.

Ugandans eat nearly 0.2kg of vegetables and fruits per day per person.The per capita consumption for Ugandans of 65kg, accounts for around 45 per cent of the 146kg recommended by WHO and FAO. As a result non-communicable diseases (NCDs) are estimated to account for 25 per cent of all deaths in Uganda.

In Tanzania, Mr Xuereb says, the situation is worse as every Tanzania eat 0.164kg per day or only 60kg per capita consumption. This is 41 per cent of the recommended consumption. Tanzania's Minister for Agriculture, Food Security and Co-operatives, Prof Jumanne Maghembe, said, diets rich in fruits and vegetables lower the risk of many types of cancer, stroke, heart disease, type 2 diabetes and other chronic diseases.

The chairman of the Horticulture Development Council of Tanzania, Felix Mosha, decried the "microwave" revolution that drives a number of people into junk food with deep fried potato chips mixed with scrambled eggs, popularly known as "Chips mayai" becoming a staple, among mostly urban youths and women.

Mr Mosha cited Netherlands where fruit and vegetable intake is much higher; some 8,000 people die annually from its deficiency, while the entire European Union records about 26,000 deaths a year. The Director of Crop Development in the Ministry of Agriculture, Geoffrey Kirenga, said the majority of people go for over a month without eating a single fruit, adding that deaths from fruit and vegetable deficiency could be alarming.

Other findings in the report indicate that only 3 per cent of all fruits and 15 per cent of all vegetables are consumed by people when they go to restaurants.

Horticulture Development Council of Tanzania executive director, Jacqueline Laisser said, "In our case, affordability and accessibility of vegetables and fruits is not an issue, the issue is attitude...for many people, to eat veggies is regarded as poverty. We must change" Ms Laisser noted.

Find Inspiration

Being positive to yourself

- Learn to like yourself
- Be your own best friend
- Do not judge yourself too harshly
- Always think positively about yourself and your situation
- Appreciate the good that you are
- Do not dwell to much on your weaknesses, as that shall make you suffer from inferiority complex which undermines the way you relate with others and even yourself

Tough times never last, but tough people do

Problems are not stop signs, they are guidelines

When you can't solve the problem, manage it

Always look at what you have left. Never look at what you have lost

What would you do if you knew you could not fail?

Today's accomplishments were yesterday's impossibilities.

Robert H. Schuller -

Formal education will make you a living; self-education will make you a fortune -

Jim Rohn -

All labor that uplifts humanity has dignity and importance and should be undertaken with painstaking excellence -

Dr. Martin Luther King

I had to make my own living and my own opportunity! But I made it! Don't sit down and wait for the opportunities to come. Get up and make them!

C.J. Walker -

The definition of salesmanship is the gentle art of letting the customer have it your way

Ray Kroc -

There is one rule for industrialists and that is: make the best quality goods possible at the lowest cost possible, paying the highest wages possible

Henry Ford -

Profit in business comes from repeat customers, customers that boast about your project or service, and that bring friends with them

W. Edwards Deming -

It is in the agribusiness sector that the battle for long-term economic development will be won or lost

Gunner Myrdal - Nobel Laureate in Economics

Thinking is the hardest work there is, which is probably the reason why so few engage in it

Henry Ford -

The greatest glory in living lies not in never falling, but in rising every time we fall-

Nelson Mandela -

We are advised to speak only after our words have managed to pass through three gates At the first gate, we must ask ourselves, "Are these words true?" If yes, we let them pass; if not, back they go. At the second gate, we ask "Are these words necessary?" At the last gate, we ask "Are these words kind?"

Esnath Easwarn - Author

A famous journalist realized that he depended entirely on his ability to ask "open" questions when he wrote this rhyme:-

"I keep six honest serving men. They taught me all I knew. Their names are What and Why and When And How and Where and Who"

- Rudyard Kipling

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