



Editorial & Administration

PUBLISHED BY

Tech Era Communications

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ISSUE OF:

January - February 2011

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PUBLICATION FREQUENCY

Bi-monthly

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.

The editorial team welcomes articles and photographs for publication. The right to edit any material submitted is reserved to Hortfresh Journal team.

The editor have taken every care to ensure that the contents of this magazine are accurate as possible. However, the authors are responsible for accuracy or authenticity of the advertisements or contributions. Views expressed by the contributors are not necessary those of the publisher.

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2011 Outlook

Many growers are upbeat that 2011 will be a bumper year, with hope that the upturn in global economic recovery that lifted commodity prices in 2010 will be sustained.

Twenty Eleven will have its share of challenges and opportunities but the presumption is: opportunities will be more than double as challenges become minimal.

The year has started well especially with regard to good prices of vegetables and fruits. There is increase in production and international prices of crops such as mangoes, French beans and chilies. This is hoped to be a boon to farmers.

The flower industry which last year bore the brunt of several supply interruptions, weakened purchasing power as well as disruption of flights is still yet to recover. But all is not lost since prices and quantities in FloraHolland's auctions are much better than they were in January last year.

Valentine Day is around the corner; reports from the various markets are generally positive with tension toward the day already in the air. The positive sign is that some clients have placed early orders and are willing to take commitments in advance.

In the past years, one of the biggest challenges that have been facing farmers is accessing finances to acquire costly, but necessary farm equipment, such as tractors and irrigation systems. However, this time round there is a sign that financial institutions are more than willing to finance agro enterprises.

Though many are confident of achieving success, challenges such as unpredictable markets with lingering economic weaknesses in Europe, the high cost of agro inputs such as chemicals and other farming equipments have dampened the expectations.

The weather outlook also suggests that 2011's weather could be grim as the moderate La Niña conditions, which have been evolving since July 2010, will be more established. The Department of the Meteorology says the normally dry season of January to February is expected to be longer and drier than normal.

Every man should gird himself with his face to the front, and take no interest in the things that were and are past and as Oprah Winfrey says it is cheers to a new year and another chance for us to get it right.



dorothy rwaro

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PanAAC hold an Innovation Fair a UniBrain Programme



From left: Mr. Gilad ,Business development AMIRAN Kenya, Mrs. Lucy Muchoki, PanAAC Executive Director and Dr. Manu Chandaria , chairman COMCRAFT Group, Posing for a photo during Pan African Agribusiness and Agro industry Consortium innovation.

Pan African Agribusiness and Agro industry Consortium (PanAAC), held an innovation Fair of Universities, Business and Researchers in Agribusiness at the Hilton Hotel, Nairobi on the 26th and 27th of November, 2010. The theme of the conference was "Fostering Innovation through Strategic Partnerships".

PanAAC is a private sector driven platform that seeks to bring together agribusiness and agro-industry Value chains and support services to enable them easily access information, knowledge, strategic partnerships and financial remediation. PanAAC's constituents comprise of input suppliers, producer organizations, processors and packagers, logistic providers, wholesalers, retailers, financiers, exporters, and business development providers.

According to Pan AAC Executive Director in Kenya Mrs. Lucy Muchoki they work together with Forum for Agricultural Research in Africa (FARA), NEPAD-CAADP, FAO, ECOWAS, COMESA among others. Mrs. Muchoki said they had received from the Royal Government of Denmark 20 million Dollars which will be invested in building Business incubation for some selected Universities innovations .

The Fair was one of the activities in the ongoing Universities, Business and Research in Agricultural Innovation (UniBRAIN) programme.

This initiative is being implemented in Nine Danida Priority Countries in Africa on behalf of African Commission. It is in response to the recommendations by the African Union to strengthen linkages between Universities, Research and Business. This will help in ensuring that the institutions of Higher learning churn out graduates that are marketable and can be gainfully employed in the private sector or start their own viable businesses that are profitable and run professionally.

Some innovative ideas from the Universities and research institutions in the East African region were selected and displayed at the fair for the private sector to witness the potential of the youth and explore the possibilities of up scaling the most viable ones through partnerships. This was an ideal platform to tap the unexploited innovations which can be transformed to successful business entities for eventual commercialization. Some of those who showcased their products are University of Nairobi, JKUAT, Kenyatta University, Egerton University, Mbarara University FIT, Makerere University, EQUITY Bank, Amiran Kenya, Uganda Industrial Research Institute (UIRI), KIRDI,



Mrs. Lucy Muchoki, PanAAC Executive Director

Esther Kapsoot of Egerton University showcased her fresh cut rose harvesting basket (Frecurhab) which she says will reduce the damages and provide a cost effective method of harvesting and sizing of cut roses stems in the greenhouse. She said the basket will help improve the quality of marketable rose stems within the post harvest value chain and improve labour efficiency. With her innovation Esther won an award during the fair for the marketability of her idea.

Participants of the event came from different countries including Kenya, Zimbabwe, Zambia & Uganda. Dr. Manu Chandaria, chairman COMCRAFT group who was the guest key note speaker, said entrepreneurs are engines and backbone of tomorrow urging all the sectors to create case studies to be able to know the challenges and how to attend to them.



Esther Kapsoot Horticulture Egerton

Amon Anderson of Acumen Fund asked the participants to invest in business with social and financial impact. Acumen invests in businesses that serve the poor and are interested in investing in drip irrigation in an improving smallholder sector here in Kenya. They invest in old companies

(7 years and above) but not to incubators or young businesses.

Other who made their presentation included Mr Gilad Millo of Amiran, Dr, Assetou Yaye Executive Director of African network in for Agriculture, Agro forestry and Natural Resources Education (ANAFE), Mr Waciira, Marketing Director- Equity Bank, Marketing Director- UAP Insurance, Managing Director- KIE, Managing Director- kirdi, Managing Director- Uganda Industrial and Research Institute among others.



FRESH CUT ROSE HARVESTING BASKET

By Esther Kapsoot, MSc Horticulture Egerton and Dr. Mariam Mwangi

Cut rose is the number one cut flower exported from Kenya and accounts for over 50% of horticulture's contribution to the country's Gross Domestic Product. Rose production involves intense culture and care of produce, rose flowers grown in Kenya are mainly for export to the European market and customer requirements are strict that the European retailers came up with a code of practice that growers must abide to in order for to market to Auctions based in the Netherlands. Flowers are sold by the clock, based on its physical quality, hence, the pressure on producers to export high quality flowers with minimal physical damages. The rose bloom is the most important part sold and any petal damage due to prickles or thorns may result in reduced quality hence, reduced price of the flower stem. During the harvesting of flowers the practice by farmers is to cut the stems and bulk them together for transportation to the pack house, however, the different lengths of stems causes damages on the blooms, the longer ones with thorns/ prickles damage the shorter ones on the petals hence the need to develop a mechanism of separating them according to their lengths, also referred to as sizing.

The harvesting basket is designed to:

- Separate the different lengths of fresh cut stems each in its respective length size
- Reduce petal damages caused by the stem prickles or thorns
- Eases handling and thus, improves the efficiency of handling the cut roses
- Enhances provision of quality cut roses to the pack-house and cold room



Advantages

The use of the harvesting basket allows for simultaneous harvesting and sizing of the stems, thereby reducing the cost of labour. If the produce is to be sent to the Auction, then bunching can also be done in the greenhouse before sending to the cold storage hence, saving time and reducing costs.

The harvesting basket is made of materials that can be recycled and easily found locally and within the rose flower growing farms hence, low cost of its manufacture and can be reproduced in different lengths and widths to fit the specific person using it.

Researchable Studies Envisaged:

Determination of: -

1. The Cost –benefit ratio of using the new innovation as compared to contemporary methods.
2. The effects of using the cut rose harvesting basket on the quality of roses and handling efficiency of cut rose.
3. Study the feasibility of mass production by Egerton University, vis-à-vis the Jua Kali Industries and other conventional small-medium scale industries.

Growers to **pay** **Packaging** Tax



Import Handling Organizations will have to start implementing a levy towards their growers in 2011 to cover the packaging tax. They will implement a levy of € 0.18 /1,000 stems. This levy will be charged 4 times per year over the handled stems, in the weeks 10, 22, 40, 01.

In a letter written by FloraHolland, in 2008 the Dutch Tax Administrations announced the intention to implement a tax on packaging materials for all industrial companies in The Netherlands, including the flower industry. Since then, FloraHolland has put great effort in discussions with the authorities to try to prevent high taxes in the international flower chain and/or huge administrative burdens.

Although FloraHolland has not been able to prevent the tax as a whole, they have limited the tax, and have prevented a difficult and expensive administrative system regarding the tax return.

In 2008, 2009 and 2010 Import Handling organization decided not to implement a levy towards growers, unlike other parties in the industry. Flora Holland's effort and aim was to prevent the negative consequences of this tax towards growers.

During the course of 2010 FloraHolland has tried again to limit the tax for the industry, but their discussions were not as successful as they hoped for: in 2011 they expect the same tax as in 2010.

Why would growers put a **label** on their flowers



Fair trade labels on flowers are becoming more common, especially in supermarkets. But why would growers have to put a label on their flowers if they are already fair trade?

Consumers in the European Union are becoming increasingly aware of the consequences of their shopping behaviour on suppliers at the other end of the chain. In the flower market, consumers realise that they have the power and responsibility to influence production methods on the flower farms.

Consumer concerns about flower growing methods have been fed by media coverage in recent years. Several reports were published on low salaries, dangerous working conditions and discrimination on flower farms in developing countries. The reports upset consumers and damaged the image of the flower sector as a whole.

It is now clear to the flower sector that consumers demand fair labour conditions and measures have been taken to prevent further damage to their image. Importers demand fair labour conditions on their suppliers' farms and require a guarantee. They visit and audit the flower farms themselves, but increasingly rely on 3rd parties to verify if labour conditions are indeed fair.

Auditing by third parties is already a common procedure in the flower sector. Certification of several management systems, such as Milieu Project Sierteelt (MPS), are invaluable to most flower farms. Auditing on labour conditions was thus a logical step for the sector.

The following certificates for fair labour conditions are available: Max Havelaar, FLO (Fair Trade), Flower Label Programme (FLP), Fair Flowers and Plants (FFP), MPS Socially Qualified (MPS-SQ), Ethical Trading Initiative (ETI) and SA 8000.

These certification schemes differ in product coverage, countries where the certified products are sold, labelling options and, of course, standards.



New business deal to facilitate airlift of Kenya's flowers abroad

Airflo Kenya has partnered with Martinair Cargo of Netherlands in a deal that will see more efficient and cost effective delivery of Kenya's flower exports to international markets.

Under the new deal, Airflo will outsource its flower transport needs to Martinair Cargo while it concentrates on managing the supply chain. The partnership will offer a crucial link between customers and markets of flowers by ensuring that the product received and delivered maintains its pristine fresh state, guaranteeing efficiency, accountability and security from reception to delivery.

Airflo is a freight logistics company that specialises in delivering quality fresh flowers to worldwide destinations, while Martinair Cargo is a well established cargo airline, operating scheduled and charter services on a network covering almost all continents.



Mr Peter Zwager, Director Airflo Ltd and Mavuno Group Chairman (left) and Mr Paul Gregorowitch, Martinair International President and CEO, shake hands after the sign up of the partnership at Oserian, Naivasha.



Speaking during the partnership signing ceremony, Mr. Peter Zwager, the Chairman, Mavuno said, "Airflo is greatly honored to enter into a new partnership with Martinair Cargo which will be mutually beneficial to both companies. This partnership is in line with the company's strategy to "contract non-core activities to improve efficiency," Mr. Zwager said. He noted that the horticultural industry which continues to be Kenya's biggest foreign exchange earner today, raked in more than KShs72 billion in exports of cut flowers, fruit and vegetables annually. Last year, Mr. Zwager said, the flower sector, which is a significant contributor to this bottom line, generated over KShs36 billion from 90,000 tonnes of produce. The industry employs an estimated 3 million people directly and indirectly at farm level and through other related activities.

"Kenya, and specifically Nairobi- today stands as a major transport hub for the African region, with Nairobi's Jomo Kenyatta International Airport, the hub of African Air transport and a key cargo handling centre" Mr. Zwager said.

Over the last one decade, air cargo transport has become increasingly important to the Kenyan economy and to the region. Indeed, infrastructure development is a key plank in Kenya's economic blueprint, Vision 2030, which hopes to transform Kenya into a newly industrialized, middle level income country by the year 2030.

This partnership comes at a critical point when the three East African countries are working on the modalities of economic integration and a common market. This will see members of the East African Community come up with ways of eliminating tariff barriers and increasing trade. Kenya therefore stands to further boost her hub capacity in East, Central and Southern Africa for transporting flowers to world markets.

Speaking on behalf of Martinair Cargo, Mr. Paul Gregorowitsch, who is the CEO said Martinair Cargo, with over 50 years experience, was a well established cargo airline, operating scheduled and charter services on a network covering almost all continents.

He said the company operates a fleet of modern freighter aircraft in a network that encompasses well over 250 destinations. Martinair creates value for the people we deal with through professionalism and a passion for our work. We take great pride in being part of flower deliveries that create smiles all over the world, creating value in each country that we deal with; and every bunch of flowers that is around we are honoured to be part of those delivering flowers all over the world.

*We grow through ...
Partnerships*



A New Generation of Energizer Foliar Fertilizers in Crop Nutrition



Foliar Fertilization

Foliar fertilization is a particularly useful technique when you understand the principles behind it. First it enables you correct deficiency, strengthen weak or damaged crops, speed growth, grow better plants in essence you are in control of production.

Foliar feeds are designed to meet plant specific needs and are best applied at nutritional stress periods; that is periods of great growth activity or plants changing from vegetative to reproduction stage.

Nutrients are generally only absorbed while still wet on the leaf preferably during cooler time of the day, early morning when humidity is up and leaves are wet with dew. At this period the stomata are open. Spraying in a hot day will give you reduced effectiveness in absorption.

Always mix the spray thoroughly and apply in a fine mist as possible to facilitate absorption on leaf surfaces.

One of the first signs you see in a crop after application of foliar fertilizer is the leaves turning darker green. By applying a foliar fertilizer

directly to the leaf it increases the activity in the leaf at the same time increasing chlorophyll and photosynthesis. Because of this increased activity, it increases the need of water by the leaf. In turn this increases water uptake by plants vascular system which in turn increases the uptake of nutrients from soil. By increasing photosynthesis we increase production and efficiency.

Rapid Plant Food

Rapid Plant Food products are designed to meet immediate needs of plants and has 3 main objectives;

- Control
- Correction
- Acceleration.

- You have Control of your crop from the start to finish and every stage- rooting, vegetative, flowering & ripening.

- You correct the nutrient deficiency in your plants for healthy and high yield crop.

- You can accelerate the transition between crop stages to improve final build up of yields.

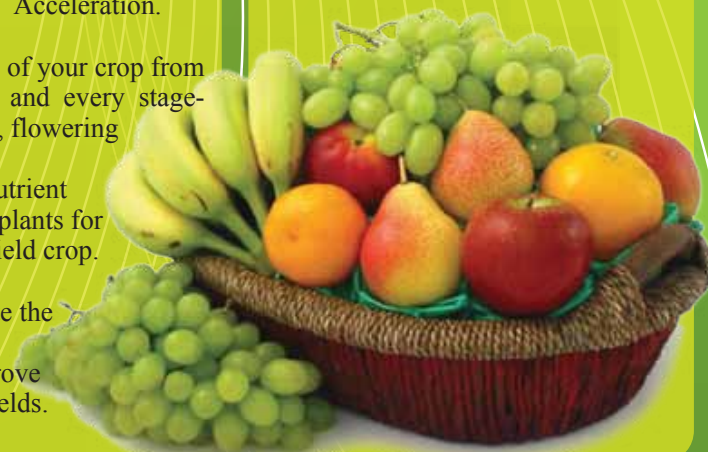
Why Use Rapid Plant Food Series:

Rapid plant food are EDTA chelated, the nutrients are bind together and released within the plant. This organic coating around the chelated nutrient allows it to penetrate through the waxy cuticle of the leaf.

This chelation in Rapid Plant Food allows the nutrients to "maintain its own identity" within the spray tank to avoid precipitation by other nutrients or pesticide being used with it.

Range Available on Rapid Plant Food:

We have 3 Rapid Plant Food Range that we recommend for various crop



development stages and one multipurpose product for all crops

Rapid Plant Food Range:

Product Name	Analysis	Functions & Recommendation
Rapid Plant Food- Root Energizer High P	12:40:15+Micros	Stimulates rooting and plant initiation
Rapid Plant Food – Leaf Energizer High N	27:11:9 + Micros	Boosts productivity of green tissues
Rapid Plant Food –Fruit & Flower Energizer High K	15:5:35+ Micros	Accelerates fruit formation, ripening and colour
Rapid Plant Food - Complete Crop Energizer Triple 19	19:19:19 + Micros	For general use to improve nutrition status of all crops

When To Use Rapid Plant Food:

There are 4 instances that Rapid Plant Food will show you salient benefits;

1. To correct nutrient imbalances.

Imbalances in the crop nutrient status are caused by factors that are difficult to manage. For example, soils can have incorrect pH levels, cold temperatures can limit nutrient uptake, antagonism between cations (K, Ca, Mg, and NH_4) can occur, and even excessively wet or dry soils are problematic. A fast and efficient way to correct deficiencies is to use Rapid Plant Food as a foliar

application.

2. To stimulate each crop stage.

Crop yield is the sum of each crop development stage. Therefore, maximizing the productivity of each stage gives maximum final yield. Specific Rapid Plant Food products are designed for each stage to help build the final yield.

3. To correct “Silent Deficiencies”.

“Silent deficiency” is a term that describes a common condition where there is a deficiency, but the crop does not show symptoms. In this condition where the deficiency is undetectable an application of Rapid Plant Food

is a quick and simple method to reveal and correct silent deficiencies

4. To relieve stress and boost productivity.

Crop stress robs the productivity of plants. Stress comes in many forms such as irregular weather, heavy fruit production and even herbicide applications or crop maintenance (pruning, etc.). In each situation, Rapid Plant Food gives the crop a “kick” to help beat the stress and resume productive and healthy growth.

Benefits and Rate Of use;

The flexibility of use and benefits are key to the success of our products,

- Suitable for Green House Nutritional programme and outdoor/field situations
- Guarantees precise formulation and prevents error
- Gives immediate results
- Safe for use for all leaf crops
- Easy and quick to dissolve
- Does not block spray equipments
- Can be tank mixed with pesticides

A general recommendation of 2 – 4kg/ha or for knapsack sprayers 30 – 60gm. Rapid Plant food Products are compatible with common pesticides. Avoid lime sulphur, white oils and copper based formulations.



To be certain of chemical and biological compatibility make compatibility test first.

Packaging:

They come in 250g, 500g, 1kg & 25kg bag.

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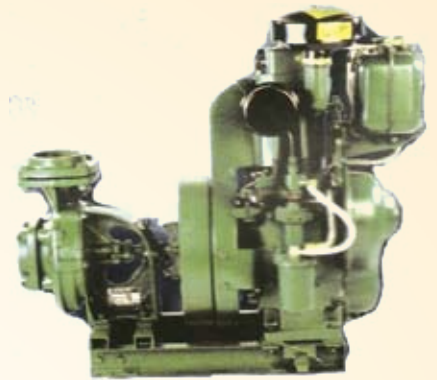
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Kenya's Horticulture Earnings

Kenya's earnings from key flower exports fell 15 percent in 2010 after volcanic ash and heavy snow in Europe disrupted trade but the industry expects to recover those losses this year, officials said on Wednesday.

The earnings in 2010 fell 15 percent from 36 billion shillings in 2009, after the global economic slump curbed demand and disruptions in air traffic to European buyers slowed shipments, Kenya Flower Council said.

Kenya Flower Council, Chief Executive Jane Ngige said that Kenya hoped in 2011 to match 2008's flower export earnings of 40 billion shillings, but said changing weather patterns might dent that ambition.


The volume of flowers produced was about 100,000 metric tons, almost on par with 2009 even as flights to Europe in April were cancelled for several days after a volcanic eruption in Iceland that spewed ash into

the atmosphere. Heavy snow in parts of Europe in December again temporarily stopped air travel, while the global financial crisis reduced demand as people cutback on non-essential spending.

Flower income for Kenya, the largest exporter of the product to Europe, fell to 30.6 billion shillings (\$378 million) in 2010 from 36 billion shillings a year earlier, Mureithi

"2010 was certainly a hard-hitting year for the flower industry owing to the largely unprecedented difficulties," Mureithi said. Flower growers said they lost 400-500 tonnes in exports a day, worth \$1.5 to \$2 million, during the volcano days.

"The biggest problem we have at the moment is La Nina," said Mureithi. "The summer flowers are mostly going to be affected because small scale producers may not have access to water."



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Crowing Spinach

Spinach is a leafy green vegetable that grows best in cool weather. Usually thought of as being packed with iron, spinach is even higher in vitamins A and C, thiamin, potassium and folic acid (one of the B complex vitamins). Spinach, like most dark green leafy vegetables, also contains the carotenoids lutein and zeaxanthin. Oh, and it tastes great eaten fresh or cooked.

Pests and problems

Because spinach is grown when the weather is cool and damp, several fungus diseases, like downy mildew (blue mold) and fusarium wilt, can become problems. Space your spinach plants so they get good air circulation and try to keep water off the leaves in the evening. And plant disease resistant varieties, like: Melody, Nordic IV, Olympia, Tyee and Wolter.



Soil: Spinach prefers a well draining soil with a neutral pH and won't be happy in a pH lower than 6.0. Because it is such a fast grower, it is also a heavy feeder. A fertiliser high in nitrogen, the first number on the fertiliser package, will help produce dark, healthy leaves. Fish emulsion and soy meal are good organic choices.

Planting: You can start spinach indoors or direct seeded in the garden as soon as the soil is workable. Spinach grows quite quickly, so don't start plants indoors more than two to three weeks before you plant to transplant them out. Spinach also matures and goes to seed quickly, so it is better to re-seed every couple of weeks than to try and plant a large crop to harvest over time.

Sow the spinach seeds thinly in rows spaced about one to one foot apart or simply scatter the seeds in blocks. Cover lightly with soil, firm in place and water well. Keep the soil moist until germination. Once the plants have grown their true leaves, you can begin to thin the plants to about six inches apart. Of course, you can eat your thinnings.

Demystifying Morbidick

Morbidick, is a small yet leafy plant, featuring small buds that hold its seeds. It is a feral herb used for curing common cold. The juice crushed and squeezed from its leaves, when thrown into a stuffy nose prompts a person to sneeze out the flu virus. In its more conventional form, it is a nondescript plant that is used to fill the gaps in bouquets featuring its more famous plant cousins like roses or carnations.

While growing morbidick, spacing and pinching are some of the aspects that determine the quality; wider spacing leads to production of thick stems which are disadvantageous to the farmer since they occupy large area, are heavier and affect the packaging rate for export as only few stems can be contained in a box.

Some clients abroad grade the branches according to the number of buds it has between the first 70 centimeters, while others grade them according to the branch thickness and leaves it contains. To get the best season to grow the crop, previous year prices should be checked in order to ascertain when the price is high.

Farmers in Siaya have discovered a new way to eke out a living outside the norm of growing maize, beans, sweet potatoes and fishing from Lake Victoria by growing morbidick. Depending on the season the plant matures, they are reaping between Sh15 and Sh75 per branch; which is higher than what the get from fishing and other commercial activities.



FMD East Africa

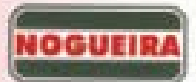
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Greenlife Agroscience..

Environmentally friendly solution working with all nutrients

Greenlife Agroscience E.A Ltd, the newest kid on the multibillion Agro-inputs sector, is turning tables by putting science to work via creating sustainable solutions essential to a better, safer, healthier life for the farming population. Situated strategically in an ultra modern facility in the expansive Mombasa road near City cabanas, the company places a great deal of time and resources on quality and believes that Agriculture sector is key to our economy's prosperity. Quality farm inputs are fundamental to our farmer's success, and thus Greenlife has devoted a considerable amount of time and resources to product development.

The strategic focus is on development of products that meet or exceed their customer's current needs. Through strategic alliances with various groups including direct interaction with leading manufacturers, growers, processors and produce buyers, the research & Development team endeavor to anticipate and meet future needs. Integrated pest management and Good Agricultural practices are important in all their programs.

Management

Greenlife has a lean and simple management structure, unique in the market, and has heavily invested in staff development, with qualified and seasoned product development (RnD) and marketing team of professionals.

Our people

"We acknowledge that our success lies within our people and therefore we do not only encourage, but also demand their total involvement in all levels of the business. We value and respect each individual and provide an environment in which people can succeed as winners. This in turn enables us to continuously improve the service provided to our customers" states the Technical Director.

Our partners

And quickly adds "We are currently nurturing a reputation as a credible player in the market, with professionalism, Integrity and customer focus being our key values. To realize our mission, we aim to focus on new market niches, providing product knowledge, training and technical support to growers and dealers. Consequently, they are our partners and

an extension of Greenlife sales function. Within our entire operational philosophy there is an increasing emphasis on customer service so as to achieve similar product stewardship, and provide information and assistance to support their efforts to their activities. In brief, they are our partners and an extension of Greenlife Agroscience sales function".

Product Profile

For-Sure®

For-Sure® is a new generation crop nutrition foliar supplement formulated for improved cellular structure, strength and the health of crops as Flower, Horticulture, Cereal and Fruits, working with all nutrients, in all systems and in all mediums.

What it contains

For-Sure® avails that much needed nutrition that cannot be supplied in 'stand alone' nutrient formulations inform of Potassium Silicate, and has Amino acids and trace elements added to stimulate the plant to increase uptake of Micro-nutrients. It's designed to help restore the natural plant levels of main nutrients and the general nutrition so that your plant can build strong cell walls especially around trichomes and guard cells resulting in a well-formed plant.

What For-Sure® does

- For-Sure® substantially strengthens plants ability to transport nutrients and other elements in the roots and internal plant cells.
- For-Sure® helps increase cell wall stability, speed up root cell replication, build stronger and more extensive root systems, increase nutrient absorption, resist stress and drought.
- For-Sure® is a balancing and buffering substance that also helps your plants to deal with potentially toxic levels of minerals, salts and pollutants.
- For-Sure® will help to give your plants a stronger, larger, and more vigorous growth

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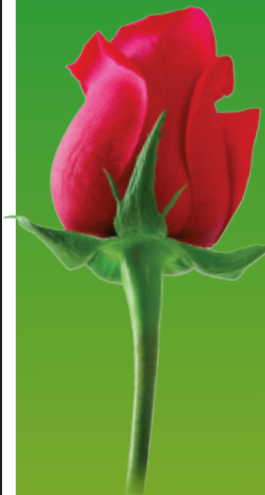
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Extending the vase life & quality of cut flowers - Growers Circle



In order to extend vase life and quality in cut flowers, it is important that every stem is treated with the correct post harvest treatment solution, immediately after harvesting – this should be fresh, clean and with the right product (of course this is true for all processes within the production chain).

Why pre-treatment?

There are important reasons why flowers must be treated and conditioned after harvest at each stage of the floral chain, i.e. through the grower's cycle; the trade cycle (such as supermarkets), and onto the final consumer.

What Problems does a Grower (or Flower) face during Post-Harvest?

After harvesting the flower stems, problems can occur, these classically being:

The Food balance

After cutting the stem from the mother plant, there is often a lack of food (sugars) for continued optimal flower development. This can result in a general fading of colour; a lack of scent development; and poor bud-shape growth appearing in certain species. Gypsophila and Roses are crops that are very sensitive to the correct food balance.

The Plant's Hormone balance

There are three types of symptoms of a poor hormone balance:

• Bud or Flower/Petal drop and shrinkage

For flowers that are sensitive, excessive Ethylene (caused both internally and externally) causes buds or flowers to drop and shrink. Flowers produce this hormone themselves or absorb the ethylene from

external sources like fruit, smoke or carbon dioxide emissions.

• Leaf yellowing;

This is caused by lack of plant hormones (such as gibberellins) after cutting, which causes the leaves of flowers to turn yellow prematurely.

• Lack of such hormones can also cause browning of the leaf tips and stems elongation.

The Water Balance

After dry transport or long, dry storage; water uptake can be disturbed and insufficient. Water uptake is important as it serves as the transport media of sugars and other nutrients up the stem.

There are several reasons why water uptake can be reduced in flower stems; these include infections, air bubbles and microbial pollution in the stems – and will result in flower Bent-Neck, wilting, and reduced shelf life - a problem which is common in roses.

Chrysal's Products



*RVB Clear Soft Water Intensive
UNIVERSAL CLEAR HYDRATING
TREATMENT*



*AVB Booster
HYDRATING TREATMENT*



*AVB
ANTI-ETHYLENE
TREATMENT*



*SVB
ANTI-LEAF YELLOWING
TREATMENT*

Effect of pre-treatments

Chrysal has developed a range of pre-treatment products for use by Growers, Supermarkets and Consumers. For post-harvest, they have specially developed products directly targeting the three mentioned problems;

A. The Food balance

RVB ClearSW and AVB together with additional 30-50 Gms of sugar per litre of solution are used on Gypsophilla to achieve full opening of the flowers and to bring out a pure, full colour.

B. The Hormone balance.

Pre-treatment of Carnations with Chrysal AVB is used to block the overproduction of ethylene, allowing for normal bud and flower development. When AVB is used together with AVB booster, the solution is kept clean for a longer period, lowers the solution pH and hence encourages better water uptake; delivering maximum usage of the active ingredients to the flower. A mixture of AVB, AVB booster and Chrysal BVB is the best formula for bulb flowers, especially Astromeria and Lilies for preventing leaf yellowing during transport, sales and vase life.

C. The Water balance.

Chrysal RVB Clear intensive (both Normal and Soft Water) is the optimal treatment for drooping heads and bent necks on roses.

RVB Clear intensive helps improved water uptake by the stem keeps the water clean and prevents wilting

and bent necking by managing Bacterial pollution which causes vascular blockage in roses.

The absence of Aluminium and Chlorine compounds in RVB Clear water gives an eco-friendly solution to the treatment and management of Cut Flowers.

Dosing

Correct dosing is very important. Under dosing will result in a significant reduction of effectiveness of the product, while by overdosing, not only wastes money, but can also lead to quality loss. When mixing, it's important to use buckets and mixing containers that are clean, use the best quality water available and always check the expiry date of the concentrated solution. If dosing levels are a problem, it is possible to dose very accurately with an automatic dosing machine.

Conclusion

To guarantee good flower quality to consumers, flowers should have an optimal treatment in every step of the flower chain.

A good pre-treatment after harvesting of the flowers (with the correct dosage and the correct treatment time) is a very important first step towards achieving consumer satisfaction.

Chrysal offers Growers a modern, effective pre-treatment solution for all their Cut Flower requirements.

Chrysal Cares



Why Celebrate Valentine on February 14?

Valentine's Day - February 14th - is the one day out of the year where we get to show those we care about most how much they mean to us. It is a day to display affection. People send cards, called valentines, give rose flowers to their friends, family, and loved ones. Verses on valentines often rhyme and express love and affection. Sometimes valentines contain humorous pictures or puns - but almost all ask, "Be My Valentine. So why is it we celebrate Valentine's Day?

Although the mid-February holiday celebrating love and lovers remains wildly popular, the confusion over its origins led the Catholic Church, in 1969, to drop St. Valentine's Day from the Roman calendar of official, worldwide Catholic feasts. (Those highly sought-after days are reserved for saints with more clear historical record. After all, the saints are real individuals for us to imitate.) Some parishes, however, observe the feast of St. Valentine

The history of Valentine's Day is actually a bit of a mystery but there are a few facts and myths that have been handed down over the years. St. Valentine, a Roman Priest who was martyred and executed on February 14, 269 A.D is associated with the holiday. The church currently recognizes at least 2 different saints with the name of Valentine, one of whom was actually buried after his death on February 14th. From the stand point of history, they are all recognized as having been martyred for various reasons.

Stories suggest that the priest Valentine, was executed on Feb. 14th about the year 270 AD, for performing secret marriage ceremonies for soldiers in opposition of Claudius II (aka Claudius the Cruel) who prohibited marriage. The Roman

Empire's golden era was coming to an end and civil unrest required the Romans to shield itself from its aggressors. Because the emperor felt that married men were emotionally attached to their families and thus were less effective soldiers and less likely to enlist, Claudius the Cruel issued an edict that forbade soldiers from marrying and enlisted single men ensure his armies were staffed with quality soldiers.

Others say St. Valentine was responsible for sending the first "valentine" himself when he sent a note to a girl he had fallen in love and signed it "from your Valentine". Yet others say he was killed for helping Christians escape from Roman prisons.

The next theory is that Valentine's Day was manufactured in order to displace the pagan holiday Feast of Lupercalia, which was celebrated on Feb. 15. During the festival, women would write billets (love letters) and leave them for men to draw - lottery style. These women would then be their partner for the duration of the festival. But Pope Gelasius wanted to change this and move away from pagan ceremonies and reversed the lottery by having men and women draw names of saints they would emulate for a year and one

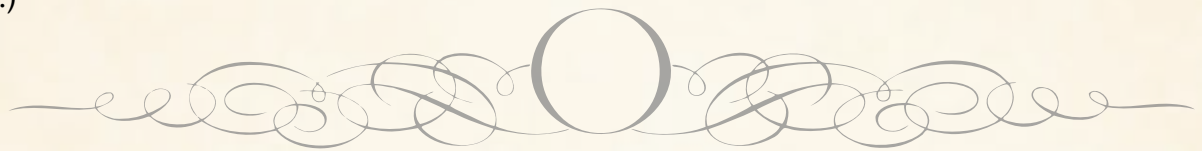


of those saints was St. Valentine. Obviously the men were disappointed and continued the practice of writing billets, handing to women they sought affections from. For Roman men, the day continued to be an occasion to seek the affections of women, and it became a tradition to give out handwritten messages of admiration that included Valentine's name.

There was also a conventional belief in Europe during the Middle Ages that birds chose their partners in the middle of February. Thus the day was dedicated to love, and people observed it by writing love letters and sending small gifts to their beloved. Legend has it that Charles, duke of Orleans, sent the first real Valentine card to his wife in 1415, when he was imprisoned in the Tower of London. (He, however, was not beheaded, and died a half-century later of old age.)



Regardless of what you elect to believe, the fact is - February 14th has become a mass culture, acceptable as a day for celebrating love for friends and family; be it wife, husband, girlfriend, mom, dad or the like. This universal phenomena; celebration of being in love has been there perhaps from the time of evolution; it's only that Valentine's Day offers a perfect opportunity to celebrate its existence. Valentine Day after all, gives the message of spreading love, perhaps the only magical word which can heal this world of all its atrocities. Be it a valentine's day or any other day; celebrate love, the most powerful emotion on earth.



Epitome of Love



Some find Love late; some find him soon, some with the rose in May, Some with the nightingale in June, and some when skies are gray; to some love comes in summer to others in autumn; Love comes to some with smiling eyes, and comes with tears to some; for some Love sings, for some Love's lips are dumb.

Love reckons not by time- it may be days of delight. It is swifter than the falling stars that pass beyond sight. Reckons not by time-its moments of despair are years that march like prisoners, who drag the chains they wear. Love counts not by the sun- it hath no night or day- it's only light when love is near- 'tis dark with love away.

Love hath no measurements of height, or depth, or

space, but yet within a little grave it oft hath found a place. Love is its own best law- its wrongs seek no redress; Love is forgiveness- and it only knoweth how to bless.

Love is like playing the piano- Love me little, love me long. First you must learn to play by the rules; then you must forget the rules and play from your heart.

Celebrating love is a vase upon the mantelpiece, a ship upon the sea, a goat upon a mountain-top, others melon jam, picnics by the creek, apple pies or pantomimes and the list is endless.

Love excitement is date of Magna Charta or The doings of the Dutch, capes, towns, verbs, nouns; others mention motor rides-- down by the sea, chasing games, chocolates and the voice continues.

Life is love. Love is a driver ...bitter and fierce if you fight and resist him, easy-going, once you acknowledge his power. Don't wait until it's too late to tell someone how much you love, how much you care. Because when they're gone, no matter how loud you shout and cry, they won't hear you anymore.



Diagnosis and Control of Plant Diseases

Someone who has a plant problem asks two questions: What is the problem, and how do I correct it? These are hard questions for beginners and experts alike. Diagnosis is the process of determining the cause of a problem. It can be a long or short process depending on one's ability and the nature of the problem. Once the cause is known, an appropriate control strategy can be developed.

In the previous edition we discussed on different approaches to diagnosing plant disease problems. Plant pathologists take many different approaches to diagnosing plant disease problems: deciding whether the problem is a plant disease, checking symptoms and signs, using experience all these and more are used to diagnose the plant disease.

It is easier to diagnose plant problems by making a personal, on-site inspection through Systematic Approach. Once you have determined that a real problem exists and is caused by a living organism, you need to decide what type of organism may be causing the damage.

Begin by establishing which plant part or growth stage is showing symptoms. Are symptoms showing on roots, tubers, bulbs, corms, seedling, foliage, stem, branches, trunks, flowers, fruit, or on the entire plant?

Root Symptoms

External root symptoms include galls, discoloration, or death of roots or parts of roots. Crown gall caused by the bacterium *Agrobacterium tumefaciens* is common on many plants. Some fungal diseases, such as club root of cabbage, also cause galls. Root-knot nematodes, *Meloidogyne* spp., can cause large or small irregular galls. Small discolored, dead areas may be caused by a large variety of fungi and root-lesion nematodes, *Pratylenchus* spp. General

death of the entire root system or just feeder roots is indicative of many fungi. Remember, injury to the root system often includes yellowing, stunting, or wilting of aboveground parts. Many fungi, such as *Verticillium* and *Fusarium*, will cause an internal vascular discoloration as will some bacterial wilts.

Symptoms on Storage Organs (Tubers, Bulbs, Corms, etc.)

Discolored or dead areas that penetrate deep into the storage organs are caused by many fungi and some bacteria. Dry rots are often caused by fungi which may produce mycelia or spores. Soft rots are usually associated with bacteria such as *Erwinia* and can be accompanied by strong, repulsive smells. Many times bacterial soft rots will closely follow rots caused by fungi, making diagnosis difficult. Scurfy dead tissue on the surface may be caused by a variety of myxomycetes, such as powdery scab of potato. The filamentous bacterium *Actinomyces scabies* causes common scab of potato. Galling of storage organs can be caused by both fungi and nematodes. Internal problems, such as ring rot of potato, can be caused by bacteria fungi or by several viruses.

Seedling Diseases

If seedlings fail to emerge, or fall over and die, this is usually referred to as damping-off. Fungi such as *Rhizoctonia*, *Pythium*, and *Fusarium* are common and affect seedlings just at or below

the soil line. Dead areas on cotyledons, the first leaves or stems, are usually caused by fungi but occasionally by bacteria. Spots caused by fungi may contain hyphae or fruiting bodies while spots caused by bacteria may appear water soaked around the margins. General yellowing, or mottled or patterned yellowing, can be caused by several viruses. Ringspots, blotches, and streaks of yellow or green may also occur with viral infections. Nematodes such as *Ditylenchus* can cause swelling or galling of stems or leaves. Rusty red, brown, or black spots or stripes are indicative of rust and smut fungi. White moldy growth can be caused by powdery mildew or downy mildew fungi.

Leaf Symptoms

Discoloration (yellowing or shades of green), which is localized or in distinct patterns, usually indicates a virus. Other leaf symptoms may occur with viral infections. A general or uniform yellowing may indicate a root rot of some kind, so remember to examine the entire plant. Dead areas on leaves can be caused by fungi or bacteria. Necrotic areas caused by fungi may contain hyphae or fruiting bodies, particularly after incubation in a warm, moist environment. Necrotic areas caused by bacteria may be distinguished by water-soaked margins or bacterial streaming. Small rusty red, brown, or black spots or stripes may be caused by rust and smut fungi. Distinctive spores can usually be found in these spots. Leaf distortion (elongated, dwarfed, etc.) can be caused by several viruses. Leaf galls usually are caused by fungi, such as peach leaf curl and azalea leaf gall. Viruses and nematodes rarely cause galls on the leaf. Moldy white appearance of leaves indicates powdery or downy mildew. Wilting indicates lack of water which may be due to one of the vascular wilt fungi, root rots, or bacterial wilts. Other parts may need to be examined for an accurate diagnosis.

Stem, Branch, and Trunk Disorders

The leaf disease remarks above pertain to most stem disorders of annuals or herbaceous perennials. Complete or partial death of woody stems or branches, usually referred to as cankers, can be caused by a large variety of fungi and a few bacteria. Cutting into the wood with a knife may reveal a sharp border between healthy and infected tissue. Look for spore-bearing structures of fungi



or induce sporulation in a moist chamber. Some bacterial cankers will excrete a sticky ooze in the spring. Wood rots and decays are caused mainly by fungi which may produce large conks or bracketlike fruiting structures. Galling can be produced by the crown gall bacterium *Agrobacterium tumefaciens*. A few galls or swellings are caused by fungi, such as white pine blister rust and *Exobasidium* sp. Witches' brooms (excessive branching) can be caused by several fungi and by a group of parasitic plants called mistletoes.

Flower Symptoms

Abnormal color changes and/or distortions can be caused by several different viruses. Partial or complete death of flower parts can be caused by fungi and bacteria. Fungi usually produce characteristic spores; bacterial infections can appear water soaked. Smut of grasses convert individual flowers or whole inflorescences into masses of black spores. Ergot, stamen blight of blackberry, and anther mold of red clover are other fungal examples of converted flower parts. Some nematodes can also convert flower parts for their own use.

Fruit Symptoms

Fungi cause a wide variety of decays, rots, and superficial spotting or russetting. Important symptoms include specific color of rotted tissue, firmness of the tissue, and signs such as spores or spore-bearing structures. Viruses can cause discolorations and malformations. Bacteria may cause discrete spots on fruit in certain field situations or soft rots in storage.

By Joseph Muli (Bsc. Hons)

The writer is a Technical expert on Crop Protection in the East African farming Industry. He has over 10 years experience on Crop Protection and Seed business management and could be contacted via email – jkmuli@live.com



Mboga Tuu

Experience in Disease and Insect Control affecting Aubergines

Article by Mr. Daniel Agawo – Mboga Tuu Farms General Manager

Mboga Tuu, a limited company is well specialized in growing and exporting of Asian vegetables such as Aubergines or better known as Eggplants. With over 40 years of experience, and more than five farms, they have encountered various challenges in controlling diseases and insects that affect aubergines.

Damping off

The fungus attack usually starts on the germinating seed, spreading to the hypocotyls, basal stem, and developing tap root. The affected seedlings are pale green, and a brownish lesion is found at the basal portion of the stem that



girdles the stem. The affected tissue rots and the seedling collapse. The disease is soil-borne. The disease may be controlled by soil sterilization and seed treatment with fungicides or hot water.

Phomopsis blight

Phomopsis blight or fruit rot is probably the most serious and widespread eggplant disease. It occurs in the stems, leaves, and fruits. The fungus attacks the stems of the young plants at the soil line, often girdles the stem and causes the plant to break off, or at least to wilt and die. The fungus could also attack the stems of older plants at any point, causing sunken, oval, dark-brown cankers. Leaf infection first appears as round, brown spots; the centers of the spots later turn gray. Fruit spots are pale and sunken. The spots frequently originate on the calyx and expand into the fruit pedicel and then into the fruit. Fruit decay is soft and spongy and may penetrate rapidly throughout the fruit.

Leaf spot

There are four different types of leaf spot in eggplant caused by *A. inelongenae*, *A. solani*, *C. solani-melongenae*, and *C. solani*. The *Alternaria* leaf spots produce the characteristic leaf spots with concentric rings. The spots are mostly irregular, 4-8 mm in diameter and may enlarge and cover a large area of the leaf blade. The leaves may drop off due to severe infection. The *Cercospora* leaf spots are characteristically chlorotic lesions, angular to irregular in shape, and later turn grayish brown with profuse sporulation at the center of the spot. Severely infected leaves drop off prematurely resulting in the reduction of yield. The leaf spot disease may



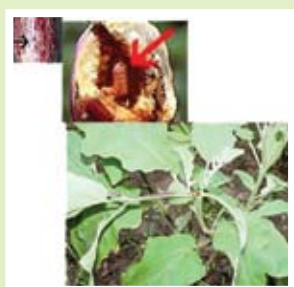
be primarily controlled by maintaining proper field sanitation. If the general control measures suggested for Phomopsis blight are followed, the leaf spots should be much reduced.

Verticillium wilt

The most characteristic symptoms of Verticillium wilt are found on the stems and roots. The infected plants become stunted in growth and generally, do not flower and set fruit. If the infection takes place after the flowering or fruit setting, the flowers and fruits are deformed, flaccid and finally drop off. The lengthwise cut of the infected stem shows dark-brown discoloration in the vascular tissue. The affected leaves turn yellow and then brown between veins followed by wilting and dropping off. After the plant is thoroughly invaded, the roots and the base of the stem may decay. The pathogen is soil-borne and the primary inoculum usually comes from the soil. Soil sterilization and crop rotation in which crops other than potatoes, tomatoes, and peppers are grown are recommended as a control measure.

Bacterial wilt

Bacterial wilt disease causes a severe problem in eggplant cultivation in the subtropics and tropics. Once it has become well established, it can be one of the most destructive pathogens known. The symptoms of



bacterial wilt on susceptible plants are yellowing, curling and wilting of leaf; disintegration of stem and root; and dying of the plant. When newly infected stems or roots are cut crosswise and left for a short time or are pressed strongly, a dingy gray to yellowish ooze appears from the darkened circle

Little leaf

Little leaf disease of eggplant is caused by mycoplasma. The infected plant is generally shorter 'but possesses a large number of branches, leaves and roots than a healthy one. The leaves are malformed into tiny chlorotic structures. Many lateral shoots develop in the



axils leaf and with the shortened internodes give the plant a bushy appearance. The mycoplasma is transmitted by leaf hopper Hishimonus phycitis and also transmitted artificially by grafting.

Mosaic virus



There are several viruses which can infect eggplant under natural conditions and produce mosaic symptoms.

They are cucumber mosaic virus (CMV), potato virus Y (PVY), potato virus X (PVX), tobacco ring spot virus (TRSV), etc. Plants infected with the virus are generally stunted in growth and show mosaic symptoms on leaves.

Insect pests

Fruit and shoot borer

The larva attacks the terminal shoots and bores inside, resulting from withering and drying of the shoots. It also bores into the young fruit and feeds inside which makes the fruit unmarketable

Thrips

Thrips have become serious pests of many vegetable crops. They attack eggplant mostly in dry season. Certain insecticides seem to cause resurgence in thrips population. Therefore, we at Mboga Tuu do not spray the crop until it has been identified that thrips are the cause of the damage.

Cotton leafhopper or Jassids

Cotton leafhoppers feed mainly on the underside of eggplant leaves. The infested leaves curl upwards along the margin. Their feeding results in small yellow patches on the foliage. They also transmit mycoplasma disease like little leaf.

Two-spotted spider mite

These small, polyphagous insects feed on the underside of eggplant leaves in large colonies. Resulting from white specks that appear on the leaves. These specks coalesce and -appear as white patches. Ultimately, the entire affected leaf are discolored and withered



Aphids

The aphid is small, soft, yellowish green or greenish brown found in colonies on the tender shoots and the undersurface of young leaves. They feed on leaves and stems by sucking the plant juice. Black sooty mould develops on the honeydew excreted by the aphid and covers on the leaves and adversely affects the photosynthesis. As a result, infested plants appear weak.

Epilachna beetle

The beetle is brown to red, small, spherical and mottled with black spots. They feed voraciously on the leaves and tender parts of eggplant and often cause serious damage when they appear in numbers. As a result of their feeding, skeletonized, lacelike patches are developed on leaves and later the leaves dry away.

Root-knot nematodes

Eggplant is highly susceptible to the nematode. Attacked plants become stunted, reduced growth, and their leaves show yellowing or chlorotic symptoms. The infestation is also easily recognized by the characteristic root galls. Proper crop rotation with other crops resistant to root-knot nematodes such as marigold, will help in reduction of nematodes population.

Use of plant protection products is strictly done with very serious conditions and as a last resort. Our preference is on biologicals like the Trichoderma (Note- if you need more biological then I can list the ones we use.)

Mboga Tuu Wealthy Experience in growing aubergines was featured in July-August 2010 issue of Hortfresh Journal



Sweet potatoes gaining popularity

The consumption of sweet potatoes has gained popularity in the recent past as consumers move away from the refined foods to traditional foods due to the promotion of the traditional foods and their high nutritional benefits. According to Kenya Ministry Agriculture figures the price of sweet potatoes has been on the rise as Kenyans shift to healthier, natural food diets.

“As people become more health conscious, the trend in consumption of traditional foods including sweet potatoes is increasing” the report added.

Food and health experts say that as awareness on lifestyle diseases such as diabetes and hypertension especially increases, the popularity of traditional foods is expected to continue rising especially among the affluent.

The tuber has been finding its way to urban consumers as a breakfast delicacy due to its nutritional value as compared to refined bread and other foods such as mandazis (buns).

“The fundamental issue is that food inflation has been going up across the board over time and the cost of roots and tubers has been higher than that of other staples such as maize because they are not produced in bulk and are more labour intensive,” said James Nyoro, the Managing Director of Global Development Group Rockefeller Foundation in Africa, and a food security expert.

“Their demand has been increasing especially with the

higher class particularly because of increasing incidence of diabetes and other lifestyle diseases,” he said.

Mr Nyoro said the rise in demand for traditional foods is not as strong among the poor due to their relatively higher prices than comparable alternatives.

He said as incomes increase people move away from basic staples and spend more on other healthier foods.

According to the Ministry of Agriculture data, sweet potatoes are grown mainly in Nyanza, Western, Rift Valley and in some parts of Eastern, Central and Coast Provinces.

Total hectareage under this crop was about 61,000, producing 880,000 tonnes in 2008 with marginal changes in hectares from year to year.

“But there has been a steady increase in yields to due to improved farming practices” notes the Ministry.

The orange fleshed sweet potato varieties provide daily requirements of Vitamin A and can be processed into juice or composite flours that can be used in making baked products and weaning foods.

“Due to health concerns by the consumers and the subsequent improvement of its food value in some varieties, its utilisation as a snack and for breakfast is on the increase especially in urban areas” said the report.



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New Year's Eve, what is right?

A little more persistence, a little more effort, little more steps, and what seemed hopeless failure may turn into glorious success. Sometimes in life it is difficult to decide what is correct. A lie that brings up a smile...! Or truth that brings tears...!

People are so worried about what they eat between Christmas and the New Year, but they really should be worried about what they eat between the New Year and Christmas.

New Year's eve is like every other night, there is no pause in the march of the universe, no breathless moment of silence among created things that the passage of another twelve months may be noted, and yet no man has quite the same thoughts this evening that come with the coming of darkness on other nights.

New Year's resolutions can't technically be expected to begin on New Year's Day. Since, because it's an extension

of New Year's Eve, smokers are already on a smoking roll and cannot be expected to stop abruptly on the stroke of midnight with so much nicotine in the system. Also dieting on New Year's Day isn't a good idea as you can't eat rationally but really need to be free to consume whatever is necessary, moment by moment, in order to ease your hangover. I think it would be much more sensible if resolutions began generally on January the second.

And ye, who have met with adversity's blast, have been bowed to the earth by its fury. To whom the twelve months, that have recently passed were as harsh as a prejudiced jury. Still, fill to the future! And join in our chime, the regrets of remembrance, and having obtained a New Trial of Time, shout in hopes of a kindlier dozen. Rather than focus upon the thorns of life, smell the roses and count your blessings!

Cheers to a new year and another chance for us to get it right (Oprah Winfrey).

Love Famous Quotes

"Love is composed of a single soul inhabiting two bodies." - Aristotle

"Age does not protect you from love. But love, to some extent, protects you from age." - Anaïs Nin, French author

"The best and most beautiful things in the world cannot be seen or even touched.

They must be felt with the heart." - Helen Keller,

"Life is not measured by the number of breaths we take, but the places and moments that take our breath away" ~ Anonymous

"Whoso loves, believes the impossible."

- Elizabeth Barret Browning, =

"Love never dies a natural death.

It dies because we don't know how to replenish its source.

It dies of blindness and errors and betrayals.

It dies of illness and wounds;

it dies of weariness, of witherings, of tarnishings." - Anaïs Nin,

"Love is patient, love is kind.

It does not envy, it does not boast, it is not proud.

It is not rude, it is not self-seeking.

It is not easily angered, it keeps no record of wrongs.

Love does not delight in evil, but rejoices with the truth.

It always protects, always trusts, always hopes, always perseveres.

Love never fails."

-Bible,(I Corinthians 13:4-8)

Name										Date											
Valentine's Day - Word Search																					
How many words can you find in the puzzle using the word bank below?																					
H	E	A	R	T	S	W	E	E	T	O	K	I	K	A	F	L	O	W	E	R	S
M	A	R	R	Y	C	D	G	X	L	I	C	H	H	L	Z	U	L	I	E	O	K
D	A	M	A	R	P	O	V	G	V	L	A	P	N	J	W	I	N	E	E	E	R
T	P	K	D	M	D	R	O	S	E	S	E	Y	T	Y	Y	H	U	G	Y	D	C
CANDY					FLOWERS					HEART					MARRY						
CUPID					GIVE					HUG					ROSES						
DATE					HAPPY					LOVE					SWEET						

**Wishing you
a Happy
Valentine**

