

# Kenya-GAP® = GlobalGAP® A FIRST FOR AFRICA

*(The only EUREPGAP benchmarked GAP in Africa for fruits, vegetables & flowers)*

**K**enya-GAP® becomes the only comprehensive (vegetables, flowers, fruits) quality assurance scheme from the African continent to acquire EurepGAP/GlobalGAP® equivalence. It is also unique in the sense that it incorporates small scale farming techniques and concerns.

For a long time, Kenya has relied on standards originating from the west. These standards have lacked practical orientation to farming conditions and practical realities in terms of practices, process and techniques that uniquely characterize community farming techniques in most parts of the country/region. To bridge this gap, the industry's premier Trade Association – Fresh Produce Exporters Association of Kenya (FPEAK) has worked in collaboration with the entire industry to revise and develop –Kenya-GAP®.

Kenya-GAP® – (Kenya Good Agricultural Practice-GAP) is a quality assurance scheme based on the principles of Good Agricultural Practice, Hazard Analysis Critical Control Point (HACCP) Principles for food handling and marketing, local regulations and International Labour Organization (ILO) conventions ratified by the Government of Kenya. Kenya-GAP® has been evolved from FPEAK Code of Practice whose first edition was launched in 1996 followed by the second edition in 1999. This edition now known as Kenya-GAP® Edition 2. Version 3 2007 becomes operational in the year 2007.

## **KENYA-GAP® DEVELOPS INTO AN INTERNATIONAL STANDARD**

Since the onset of the consultative process, Kenya-GAP® has continued to earn credibility and acceptance across all spheres of life. For the first time, Fresh Produce Exporters Association of Kenya was credited by Eurep-Gap/Food Plus for coming up with a National Quality Assurance scheme that takes care of small scale farmers concerns.

To bring this point home, Fresh Produce Exporters Association of Kenya invited independent EurepGAP appointed auditors from the German standards and certification body (DAP) to audit and benchmark Kenya-GAP® against EurepGAP, a process that has taken close to two years. Kenya-GAP® has therefore qualified as the first National scheme incorporating small scale farmers concerns to acquire EurepGAP equivalence.

Kenya-GAP® is the only scope to cover comprehensively, Flowers, Fruits and Vegetables and to have

recognized third party certification of farm production processes based on (EN45011/ISO Guide 65) product handling, processing and packaging. Only products that meet compliance level set out in the Kenya-GAP® protocol are certified.

The vision for the Fresh Produce Exporters Association of Kenya is to make Kenyan Horticulture the Global choice. Through developing the internationally recognized Kenya-GAP®, the association continues to affirm Kenya's leadership role at being a reliable supplier of high quality horticultural products to international markets.

Kenya-GAP® is a trade mark registered in Kenya for Fresh Produce Exporters

*Kenya-GAP® is a quality assurance scheme based on the principles of Good Agricultural Practice, Hazard Analysis Critical Control Point (HACCP) Principles for food handling and marketing, local regulations and ILO conventions ratified by the Government of Kenya.*

two independent auditable scopes within the same standard. Compliance to Kenya-GAP® is supported by a hyperlinked Quality Management System Manual that contains virtually all documents the grower requires to demonstrate compliance.

Kenya-GAP® has been developed through a consultative process coordinated by Fresh Produce Exporters Association of Kenya and is maintained and updated through an industry-wide technical committee appointed by the industry. It provides the standards and framework for independent,

Association of Kenya (FPEAK). Any use of this trade mark without express written permission from FPEAK constitutes a legal offence. The trade mark guarantees that the product has been produced, transported, graded, packaged and marketed under strict adherence to all principles of Good Agricultural Practices as outlined in the Kenya-GAP® documents.

The objective of the Kenya-GAP® management system and the Administration mechanism is to regulate the operation of the Kenya-GAP® and the interaction between the

Certification Bodies (FPEAK licensed Certification Bodies) and the Registered growers and product marketing organizations (PMO's).

Participation is voluntary and based on objective criteria. Kenya-GAP® is not discriminatory to Certification Bodies and/or Grower/PMO's.

### KENYA-GAP® OBJECTIVES

- ❖ To control and reduce Environmental degradation resulting from the use of crop protection products and post harvest treatments.
- ❖ To safeguard soil, water and air and ensure the general conservation of the environment.
- ❖ To maintain produce freshness and safeguard consumer health.
- ❖ To maintain product traceability.
- ❖ To ensure the Welfare and Occupational Health and Safety of workers.
- ❖ To encourage sustainable agriculture

### KENYA-GAP® DOCUMENTATION STRUCTURE

Kenya-GAP® contains the following documents:

#### *The Protocol :-*

Administration mechanism, Rules of the scheme

Requirements (Control points & Compliance criteria)

#### *The checklist*

Kenya-GAP® Interpretation Guidelines.

Kenya-GAP® Quality management system template

**The highlights of Kenya-GAP® protocol are summarized as follows:**

#### *The Kenya-GAP®*

##### *Administration mechanism*

The protocol provides instructions on how the Certificate may be applied for, awarded & maintained and the rights & responsibilities involved, with annexes



**Dr Mbithi, CEO FPEAK, Dr Noar Wekesa, Minister Science & Technology, & Dr Chagema Kedera, MD, KEPHIS, partly hidden, during Kenya-GAP launch**

that go into further detail. It describes the basic steps and consideration involved for the applicants to obtain and maintain Kenya-GAP® Certification and the role and relationship of Growers, Exporters, Growers Group; Kenya-GAP® and FPEAK licensed CBs.

#### *Rules of the Scheme*

Kenya-GAP® establishes the rules applicable to Certification Bodies licensed by FPEAK, for granting, maintaining and withdrawing certification. Certificate owners are responsible for marketing the product as a finished, and labeled product and may be an individual grower or an association of growers with access to appropriately controlled packing facilities, a packing house working with growers to establish appropriate controls, or an exporter who owns or has access to growers and packing houses and works with them to establish appropriate controls.

#### **Kenya-GAP® Control Points and Compliance Criteria (Kenya-GAP® CPCC):**

This contains all the requirements the grower needs to meet and Control Points and Compliance Criteria that must be followed by the applicant and that are audited to verify compliance.

This document is divided into Mandatory (red), Required (yellow) and Recommended (green).

#### *Kenya-GAP® Checklist:*

This contains the Control Points outlined in the CPCC document and is a tool for inspecting and evaluating and verifying compliance.

#### *Kenya-GAP® Interpretation*

The Kenya-GAP® interpretation gives the guidelines on application of the control points and compliance criteria.

#### *Kenya-GAP® quality management systems template.*

The quality management systems manual outlines the sample documents that the grower may keep in an attempt to comply with Kenya-GAP®.

### KENYA-GAP® SCOPES

There are Three distinct independent certifiable scopes within Kenya-GAP®. These are Kenya-GAP® Technical Scope. Vegetables, **Kenya-GAP® Technical scope Flowers,** Kenya-GAP® Social and Ethical Scope.

### MANAGEMENT OF KENYA-GAP®

Kenya-GAP® is owned by Fresh Produce Exporters Association of Kenya. Kenya-GAP® is managed and maintained by an industry-wide Technical Committee (TC)

# NAK AGRO

## Smallholders project in Kenya

In April 2005, NAK AGRO, in consortium with Advance Consulting and FoodCert, has initiated the project EUREPGAP for Smallholders, commissioned by the Sustainable Economic Development Department of the Ministry of Foreign Affairs (NL) and co-financed by the Central Bureau for Provision Trade (CBL-NL) and the Ministry of Agriculture, Nature and Food Quality (NL).

The ongoing exclusion from the EU market of smallholder producers in developing countries as a consequence of EUREPGAP has been the reason for the initiation of the project by the above-mentioned parties, especially as the general perception has been that the food-safety assurance was rather a form of creating a trade barrier, which now all know as untrue. EUREPGAP has been developed to assure the safety of the food stuffs destined for human consumption and aims at the implementation of Good Agricultural Practices, where issues as worker welfare and environment are emphasized.

For NAK AGRO it has been a challenge to implement the system in such a way that another hurdle would be overcome; the high costs involved in EUREPGAP certification for small scale farmers. Operating parallel to the other donor initiatives, NAK AGRO devised an approach labeled as unconventional at the beginning of the project but finally accepted as suitable for certain situations. The current status of the project, now two years underway, is 330 smallholders certified to the EUREPGAP standard and the project is increasing in speed and effect.

### THE APPROACH

Starting point for the project were 5 important conditions, being grouped into an established and officially registered Self Help Group (SHG) as the main one. As certification can only be

granted to an official entity, it would either mean the smallholders register themselves individually or the SHG registers itself as a farming business. Given the fact that literacy rate could pose a constraint and the fact that a quality system as EUREPGAP is written in a more theoretical approach, an individual smallholder could encounter problems understanding the aim of the protocol, thus requiring the assistance

of an expert for the implementation. Working in a group these possible additional costs can of course be divided by all members, where, in case of implementing an overall Quality Management System (QMS), the expenses would rise. The latter solution is referred to as an Option 2. NAK AGRO developed an approach where the entire SHG is registered as a farm. The need for a QMS is omitted and all members of the SHG are stakeholders rather than individual farmers (please refer to the EUREPGAP General Regulations for the definition of farmer). By working in this way, Option 1 certification can be applied for some SHGs.

### SIMPLE SOLUTIONS

Why should implementation be too difficult? Sustainability must be guaranteed after the project ends, making it imperative to use locally available expertise and low cost hardware. Centralized purchase and issuance of fertilizers and pesticides will reduce unitary costs, as quantities can be purchased in "bulk". A member of the SHG is appointed as the administrator of equipment and non-durables, keeping record per member of her or his usage. The agricultural engineer will calculate the amounts of fertilizer and pesticides to apply, based on the findings of the group's scouts, providing the group's administrator

*Centralized purchase and issuance of fertilizers and pesticides will reduce unitary costs, as quantities can be purchased in "bulk".*

the information required to keep up to date application records per plot. Hardware used for compliance with the control points is easy to maintain and to replace in case of damage. Hand washing facilities can be dealt with by simply having a jerry can with water and soap available at the plot, while sanitary facilities can be built from wood. On communication level it is imperative to be able to speak the local language, both verbal and non-verbal. The use of foreign consultants and inspectors will therefore not work. In order to assure the lowest communication barrier is Sanitary facilities at the main office of Vegpro-Nandarasi SHG. On the left the

enclosed area for disposal of empty pesticide containers Small scale farmer being interviewed during certification inspection, assisted by Vegpro specialists created, the project has contracted three Kenyan consultants and two Kenyan inspectors, speaking several national languages.

**THE RESULTS**

With the help of Vegpro, NAK AGRO has identified several suitable SHGs which fulfil all five basic conditions for option one. In close cooperation with Vegpro, our project counterpart, Farm Produce Technology, successfully implemented the system at the Vegpro-Nandarasi Self Help Group (200 members), certified for the first time in February 2006. Following this success, Vegpro agreed to assist with more groups, resulting in currently three groups certified and one on its way. Fulfilling certification of this fourth group, the project will have reached 80

% of the set target; the remaining 20 % will be identified in the second quarter of 2007, ideally obtaining certification by the last quarter of 2007.

**CONCLUSION**

The statement "EUREPGAP is impossible to implement in small scale farming"

approaching the situation from their own perspective. The development of a QMS manual for small scale farming has translated the complex issues into an understandable and easy to implement system. Through this initiative and NAK AGRO's, all small scale farmers can obtain certification for their specific situation

*All small scale farmers can obtain certification for their specific situation most convenient and economically feasible way.*

has been countered by many donor initiatives. Activities initiated by HCD, GTZ, BSMMP, USAID, FPEAK and NAK AGRO among others, have all contributed to enlighten the producer where EUREPGAP is concerned, all

most convenient and economically feasible way. EUREPGAP certificate for the first Self Help Group certified within the project by the Certification Body FoodCert, the daughter company of NAK AGRO.

# YOUR PARTNERS IN THE FOODCHAIN







The Dutch General Inspection Service for agricultural seed and seed potatoes (NAK) and its subsidiaries NAK AGRO & ISACert are working closely together in the agricultural & food processing market. Professionals operating worldwide through our partners in 35 countries, respond rapidly and in a flexible manner to any situation.

**NAK AGRO**

- Variety testing
- Auditing and inspecting
- Diagnostics
- International cooperation
- Training

**NAK**

- Field inspection
- Seed analyses
- ISTA certificates
- Phytosanitary inspections
- Certification

**ISACert**

- Total chain assessment
- Certification for e.g. BRC Food; BRC/loP; BRC Storage & Distribution, BRC Consumer Goods; IFS Food; IFS Logistic Standard; Dutch HACCP; GMP Board; PDV-GMP+ Feed; ISO 22000; ISO 9001; ISO 14001, Q&S
- Third party & second party audits

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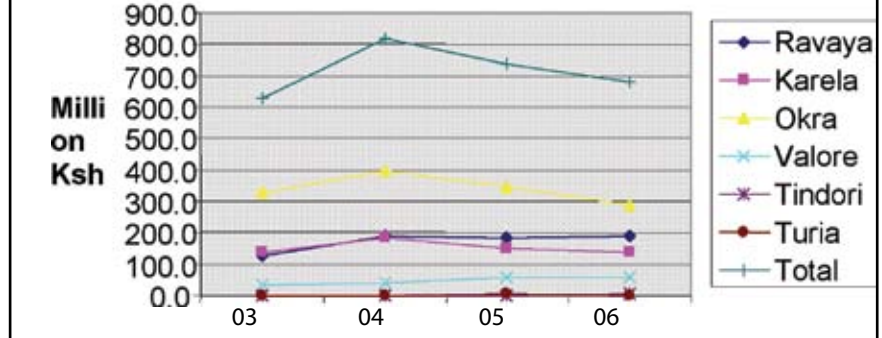
# ASIAN VEGETABLES, THE BIG 'SMALL CROPS'

By MWANGI WARIO

**A**sian vegetables' refers to a variety of products which are traditionally consumed by people of Asian origin. In Kenya, the term broadly refers to such crops as Okra, Ravaya, Valore, Tindori, Dudhi, Karela, Turia, Twer and other Indian herbs.

The value of Asian vegetables exported from Kenya, although under pressure from the strong shilling and stiff emerging competition, has remained high over the last few years, amounting to just under Kshs. 700 million in 2006. This performance is due to the growing demand for exotic produce especially in the UK, as the Asian Diaspora expands in Europe and Asian cuisine gains in popularity across the globe. Added to this, the growing local consumption of Asian food has led to increased interest in these products among farmers and the general public.

**Kenya Earnings from Selected Asian Vegetables**



As a result of their origin in the tropical climates of India, Indochina and Africa, these particular Asian vegetables take very well to the warm, humid conditions found in Kenyas' fertile, sandy lowlands. Indeed, they have their local counterparts in some of the various African vegetables such as the African horned melon, (also known as Kiwano), gourds, pumpkins, tomatoes and others.

As such, although the particular varieties may appear strange to local farmers, they will find that the agronomy does not present any particular technical challenges beyond those already known. With its proximity to Europe and its year long production season, Kenya has strategic potential for being a world leader in these particular Asian Vegetables.

Asian vegetables from the Far East, however are a different story. The Chinese lettuces, gourds and other products (such as Chinese cabbage, mustards, radish, beet, and chard; Japanese pumpkins, bunching onion, and honewort; Ceylon spinach; water spinach; loofahs; oriental mushrooms and pickling melon) would be well suited for Kenyas' cool loamy highlands, but are not as widely marketable and therefore are of less importance to Kenyan growers. They also present particular challenges in post harvest handling due to their low shelf life and susceptibility to microbial contamination. They however remain an interesting potential for development.

On the whole, Asian vegetables are still considered a minor, or 'specialty' crop under the category of 'ethnic exotics', due to the relatively low volumes consumed compared to other traditional vegetables. The six most important Asian vegetables together amounted to just 3.4% of Kenya's total vegetable exports value in 2006. As such, there exists limited information on research and production techniques, and Kenyan producers have relied on many years of experience to develop the local industry.

Despite this, the role Asian vegetables have played in fighting rural poverty in Kenya can not be downplayed. Nearly all production is by small scale, low income growers, concentrated in Kibwezi, Makindu, Matuu, Mitunguu, Mwea, Nguruman, as well as Kilifi and Taveta.

Many have made the leap from subsistence to commercial agriculture, through the production of these vegetables on contract with exporters such as Mboga Tu, Makindu Growers, East Africa Growers, Sunripe (1976),



A good crop of Okra at just before flowering.

and others. With the Governments recent revival of the Bura Irrigation Scheme in Coast Province, many more poor farmers are expected to benefit from this lucrative business.

Pest control in Asian vegetables presents the biggest challenge to growers. These are the common Tropical pests known to attack the different crop genres. By far the most important are the borers, aphids, and mites. Fungal and bacterial diseases also take their toll of profits, with damping off and mildews being significant. Soil fertility is important as most of the products are heavy feeders and quickly deplete soils if not managed well.

Another important challenge is the availability of high quality seeds. Foremost among Kenyan suppliers of certified seeds are East Africa Seeds, Seminis East Africa, and Kenya Seed Co. Ltd. Informal seed sources run a very high risk of bearing seed borne diseases such as Bacterial Blight, and should thus be avoided.

The most important Asian Vegetable for Kenya is Okra. Following is a generic guide to its production.

### GROWING OF OKRA (Abelmoschus esculentum)

Little is known about the origins of Okra, but geobotanist believe it originated from the Abyssinian center of origin of cultivated plants, an area that includes present-day Ethiopia, the mountainous or plateau portion of Eritrea, and the eastern, higher part of the Anglo-Egyptian Sudan.

It is not found wild in India, and was introduced into Asia and the Americas in the last century, where it was quickly adopted into the local cuisines. It is gradually gaining worldwide acceptance due to its culinary and industrial versatility. (See box).

### USES OF OKRA

Okra can be served raw, marinated in salads or cooked on its own, and goes well with tomatoes, onions, corn, peppers, and eggplant. Gumbos,



**Karela resembles a spiny cucumber**

Brunswick stew, and pilaus are some well-known dishes which commonly use okra. Whole, fresh okra pods also make excellent pickles. Its subtle flavor can be compared to eggplant, though the texture is somewhat unusual. Okra is rarely used "straight" except when fried with meal, just a little of it usually being cooked with other vegetables or put into soups and stews. Okra alone is generally considered too "goeey," or mucilaginous, to suit most people. Many people prefer breaded and fried okra, because the slippery substance is less pronounced.

However, the unusual sticky substance in Okra has thickening properties, useful for soups and stews. In recent years, okra has become an important commercial crop in certain localities in the South of the USA, where thousands of tons of the pods are grown for the large soup companies.

Okra is easily dried for later use. A little dried okra in prepared dishes produces much the same results as does the fresh product.

In some lands the seeds rather than the whole young pods are of most interest. When ripe the seeds yield an edible oil that is the equal of many other cooking oils. In Mediterranean countries and the East, where edible oils are less available, okra oil is well known.



**Okra: the long harvest period makes it a favourite for farmers.**

The ripe seeds of okra are sometimes roasted and ground as a substitute for coffee. A close relative of okra, roselle, is used as a source of fiber for cloth. In Turkey, the leaves are used in preparing a medicament to soothe or reduce inflammation.

The varieties of okra grown in Kenya include Pusa Sawani, Clemson Spineless, Green Emerald, Dwarf Green Long Pod, and White Velvet.

**Ecological requirements:**

Okra is grown at elevations ranging from sea level to 1600 mtrs. Optimum temperatures for growth and production of high quality pods range from 24 to 30 degrees centigrade. Temperatures below 12 degrees and frost conditions result in loss of production and death.

Okra will grow in a wide range of soil types, preferring soils high in organic matter, and pH 5.8 to 6.5. Sandy soils must be frequently fertilized as many nutrients are lost through leaching. Asian vegetable are characteristically heavy feeders requiring high levels of Nitrogen, Potassium and Phosphorus. Having generally short root systems, frequent watering is often necessary. However, okra is particularly sensitive to water-logging and salinity. To avoid problems, strict rotation and deep ploughing should be followed on all fields.



**Dudhi is a smoothskinned gourd which is easily mistaken for the local 'muratina'**

Okra will thrive in rainfall range between 400 to 1500mm per year, and is drought resistant.

**Land Preparation:**

Soil should be prepared 2 to 3 months before planting. This allows the crop residues and organic matter in the soil to decompose. This also permits weed seeds to germinate thus allowing for early cultivation as an effective means of weed control.

**Planting**

Asian vegetables can be either directly sown or established in a seed bed. Okra is mostly directly sown in low basins. Planting depth should be 1.5 cm and spacing may vary from 45X45 to 50X30, depending on the irrigation method used. Okra is commonly planted in 2X2m flood irrigation basins. Planting rate is 8 to 10 Kgs per ha.

The main planting season for okra is from July to September, as this will coincide with the main export market.

**Fertiliser Application**

Okra is a heavy depletor of nutrients and thus regular soil analysis should be carried out on all okra fields to assist in monitoring fertility levels. This will prevent making serious mistakes in application of fertilizers, which can be detrimental if over used.

General recommendations for Kenya include 15 to 20tons per ha of well decomposed manure during planting, mixed thoroughly in the soil in the planting hole. Compound 17:17:17 can be applied during planting at 120kgs per ha., also mixed in well in the soil.

Topdressing can be done in two splits, using 140kgs per ha of CAN. This can be done first at three weeks after planting, and again 3 to 4 weeks later. Care should be taken to use Sulphate of Ammonia in soil acidity is greater than pH 7. If a farmer is not sure of his soil acidity, then he should use only CAN.

If Urea is used instead of CAN, is should be applied in moist soils at the rate of 40gms per plant, and should not be used in alkaline soils.

Compound 17:17:17 can be applied again during flowering at the same rate as planting. This will assist to boost flower production and protect against abortion.

It should be noted that no chloride fertilizer should be used on okra, due to its hypersensitivity to salinity.

**Irrigation**

Although it is drought resistant, for optimal production Okra requires a lot of water due to its typical growth habit (heavy foliage). The critical times for irrigation are at emergence and from flowering to pod formation.

**Rotations**

Okra should be rotated with baby corn, maize, onions, fodder grass or small grains. This will assist to protect against bacterial wilts, damping off, root rots and soil fertility problems. Certain crops must not be included in the rotation. These are tomatoes, karella, brinjals,

pawpaw, bananas, capsicums, potatoes, squash and sweet potatoes.

**Weed Control**

Due to the long harvest period in okra, weed control is important. This is ideally done using hand cultivation and rarely herbicides. Mulching is recommended especially in semi arid areas.

**Harvesting**

Harvesting of Okra is best done by hand, where the pods are snapped off or cut off leaving a small stalk not longer than 1cm. Okra varieties are ready for harvesting 45 to 55 days after plating. Pods are harvested 6 days after flowering, while still tender. Specifications are normally 7 to 15 cm length. If over mature pods are removed regularly, then the crop will bear for several months, realizing yields of 8 to 15 tons per ha. Harvesting should be done every 2 to 3 days, to ensure specifications are met. Harvesting during wet conditions may result in mould development on the pods, and should not be encouraged.

Okra has very sensitive cuticle and thus careful handling of the pods is necessary, as bruising results in discoloration. Wearing rubber gloves will protect the hand from the irritating sap.

Ideally, pods should be pre-cooled to 10-12 degrees immediately after picking to avoid wilting. This can be achieved in a charcoal cooler.

**Sorting**

Sorting of okra is done to remove diseased, insect damaged, discolored, chemical residue, foreign odors, softness and over-maturity. Grade



**Tindori:** These can be described as baby cucumbers



**Ravaya**

sizes for the UK fall between 7-11cm, and a maximum width of 15cm.

**Pest control**

Being from the Malvacea (cotton) family, common cotton pests attack Okra, and their controls are similar. Care should be taken in chemical application, because few chemicals are registered for use on okra in Kenya, as it remains a minor crop. However, integrated management is highly successful in reducing pest populations in okra, and is strongly recommended. Some of the farmer-friendly predatory insects include ladybird beetles, lacewings, hoverflies, assassin bugs, predatory mites, praying mantis, and spiders.

Following is a table of some of the important pests and their controls. It is important to note that all chemical sprays should be authorised by PCPB, and all spray label instructions including observance of PHI must be adhered to strictly. Consult your agro-chemist for availability of the products in their trade names.

Pest/ Disease	Damage	Suggested Agrochemicals	Useful Hints
<b>Thrips</b>	Damage to the blossoms, resulting in marked and deformed pods, and flower drop.	Pyrethroid, Azadirachtin, Petroleum Oil.	This is a stubborn pest as it hides in the blossoms during sprays. Adding detergent to sprays may help increase efficacy of chemical.
<b>Flea beetles</b>	Adults feed on seeds, stem or foliage (shot holes). Larvae feed on roots	Bifenthrin, Pirimicarb, Pyrethroid, Petroleum Oil.	Treatment more effective on calm sunny days
<b>Aphids</b>	Causes stunted growth and mottling buds, resulting in lower yields.	Bifenthrin, Pirimicarb, Pyrethroid, Petroleum Oil.	Spraying with diluted soap and water solution (1 to 20) will help reduce aphids.
<b>Pod borers (African Bollworm, spiny bollworm)</b>	Feeds on flowers, pods, causing abortion, pod rot	Synthetic pyrethroids Bifenthrin, BT	Early detection before boring into pods is essential. Traps are useful
<b>Mites</b>	Heavy infestation results in stunted growth and even death.	Garlic Extracts, Spiromesifen,	Field hygiene and irrigation are important in the control of mites.
<b>Aphids</b>	Sucks out sap, excreting a sticky substance which attracts bacteria.	Bifenthrin, Pirimicarb, Pyrethroid, Petroleum Oil.	
<b>Cutworms</b>	Girdling and cutting off young seedlings causing wilting.	Soil Drench with Synthetic pyrethroids Bifenthrin, BT	This is not an important pest unless present in large numbers and does not warrant control. Ashes and bait made from maize flower are useful. Chickens are surprisingly effective!
<b>Cotton stainers</b>	Large numbers feed on developing pods and stems, sucking sap	Synthetic pyrethroids Bifenthrin, BT	
<b>Leaf hoppers</b>	feed on leaves, causing discolouration, growth retardation and yield loss	Synthetic pyrethroids Bifenthrin, BT	
<b>Mealybugs</b>	Often attack roots and aerial parts. May lead to yellowing, withering, leaf and fruit drop	Bifenthrin, Pirimicarb, Pyrethroid, Petroleum Oil.	Soap and water solutions increase efficacy of sprays
<b>Damping Off</b>	Causes death and stunted growth, thus loss of yield		Field hygiene is essential
<b>Fusarium Wilt</b>	Gradual wilting and death, crop losses		Disease is worsened by water stress. Field hygiene is essential. Fungicide does NOT control Fusarium!
<b>Leaf spots</b>	Brown subcircular spots, leaf drop and lower yields	Triazole, Copper Hydroxide, Sulphur Based	Spreads from season to season on crop debris. Clean Fields!
<b>Bacteria blight</b>	Water soaked leaf spots lead to leaf drop		Only found in Kibwezi Matuu and Mwea. Transmission is through seed and water splash
<b>Powdery Mildew</b>	Powdery substance leads to leaf scorch, flower drop and death	Tebuconazole, Sulphur Based, Difinoconazole	Made worse in high humidity.

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### Panacol International

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### Tropiflora Ltd

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### Valentine Flower Growers Co.

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## FRUIT AND VEGETABLE EXPORTERS

### Agrifresh Kenya Ltd

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### Belt Cargo Services Export Ltd

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### Bright Morning Star & Gen. Merchandise Ltd

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### Dominion Vegfruits Ltd

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### Frigoken Ltd

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### Jakal Services Ltd

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