In the recent past demand for tomatoes in the region has increased tremendously. This demand can only be met by increasing production area and yield. Better production methods, high-yielding and disease-resistant varieties will play a key role keeping up with the market demand.

Growing requirements
Tomatoes thrive in well-drained, deep, uniform clay or silty loams. They are very sensitive to waterlogged soils and prefer a soil pH of between 6.0 to 7.5. They do best in temperatures of between 20°C – 27°C. Tomato production can be adversely affected when the temperatures get below 10°C or exceed 30°C, as fruit setting is affected. When choosing the field ensure tomatoes or a related crop (Solanaceous family) has not been planted in the field for at least 2 years to avoid high diseases presence in the soil.

Choosing a variety?
The various tomato varieties that are available possess different benefits which include high yields, resistance to diseases and long shelf-life. It is up to growers to choose those that will meet needs and are also suited to climate where they are to be grown. No single variety will combine all the best features. Consider:

Resistance to Diseases: Farmers need to select varieties that are resistant to diseases. Varieties available from Monsanto Vegetable Seeds are resistant to Verticillium wilt (Vd), Fusarium wilt (Fol), Fusarium Crown and Root Rot (Fol) Nematodes (N), Alternaria solani (As) and Tomato Yellow Leaf Curl Virus (TYLCV). **Tomato Assila F1** is resistant to TYLCV.

Shelf life: The variety must guarantee that the fruit will remain fresh through the chain and especially during transportation. Monsanto Vegetable Seeds varieties have good shelf life.

Hybrids: Compared to open pollinated varieties (OPVs), hybrids produce higher yields, uniform fruits and possess other preferred quality attributes such as disease resistance and pest tolerance. It is better for the farmer to spend a little more money for Hybrid (F1) seeds but be assured optimal production.

Nursery Establishment
Because of the small nature of tomato seeds, the seedlings are first raised in the nursery then transplanted into the main field. Though some farmers carry out direct planting, it is usually difficult to maintain planting depth as well as moisture levels, leading to poor germination. In the nurseries proper care of the seedling is made possible avoiding the harsh environmental conditions that the seedlings might face if directly seeded. Seed beds also help the farmer ensure that only healthy and strong seedlings are transplanted; translating to better and uniform plants and high production. Another plus for nursery beds is that less seeds are used - 80-100gms/acre for the Nursery, compared to 250-500gms/acre for direct seeding.

Location: The nursery should be located in a flat area that is secure and accessible, to allow close monitoring. It should be established near a source of clean usable water and on well-drained soils. The area should be exposed to the sun, well-aerated, protected from strong winds and strategically located to avoid exposure to pests.

Sowing lines: Seeds should be sown at a 1cm depth marked with a finger, with 10-15 cm spacing between the sowing lines. Keep the nursery well irrigated and free of weeds; loosen soil to allow water percolation.

Transplanting
Proper field preparation is essential for optimum performance. Recommended spacing for transplanting is 60cm by 60cm.

The seedlings are hardened before transplanting by reducing water application and directly exposing them to sunlight 6-9 days before transplanting. This is done to prepare them for the harsh environment they will face in the main field. A good seedling that is ready for transplanting is usually in its fourth or sixth leaf stage (about 4 weeks old) and is vigorous and stocky. Thoroughly water the seedlings about 12 hours before transplanting to the field. Transplanting late in the evening is recommended to allow the seedling longer cooler hours to increase chances of survival.

Continued on pg. 3...
**Richer Harvests with Pepper Tycoon F1**

**By Jared Onduso**

**Monsanto Vegetable Seeds is proud to introduce Tycoon F1, a new hybrid pepper, into the market. It is a high-yielding variety with green, deep, bell-shaped peppers.**

**Suitability**

This variety is suitable for open field production.

**ATTRIBUTES**

- Hybrid California Wonder type
- Tolerant to anthocyanin (pulling).
- Plant has good leaf cover
- Ideal for open field production
- Green blocky fruit.
- Tolerant to heat. Flower can establish even during high heat periods of the year.
- Yield potential: 8 tonnes/acre
- Maturity: 75 days (green)
- Fruit ripening 90 days from transplanting.

**BENEFITS**

- High market demand
- Early maturing
- Reduced pesticide usage
- High returns
- Good shelf life

**Resistant to**

- Tobamovirus (PMMV) Tobamovirus Pathotype P0
- BST/Bacterial spot caused by Xanthomonas campestris pv.seselactoria Race 1-3
- PVY/Potato virus Y caused by Potato virus y strain 0

**Growing Tips**

Sweet pepper requires heat in order to give optimum yield. However temperatures that exceed 32°C over a prolonged period can cause abortion of fruits leading to small misshaped fruits and low yield. On the other hand too low temperatures below 12°C can lead to fruit deformation. Proper fruit establishment requires pollination in case of poor pollination the fruit shape can be affected. In some cases this can result in “button” shaped fruits.

Care should be taken during transplanting as the plants are sensitive to injury. Transplanting should be done at the right stage; survival of overgrown seedlings is highly reduced and the leaves can lead to diseases especially early blight.

Observe minimum 2-year rotation

**Pest and diseases** remain the greatest challenge in Tomato farming especially when high seed density is used in the nursery which have reduced survival chances. Depending on the area a spacing of 45 x 60 cm and 30 x 45 cm can be used.

**Field practices**

Irrigation: Tomatoes must be regularly watered especially during critical periods like flower-setting and growth of the fruits. Watering should be directed towards the end of a crop. Excess moisture on the leaves can lead to diseases especially early blight.

Weed management: Depending on the type of weeds and growth stage of both the weeds and the crop, appropriate control measures can be adopted. Manual weeding can be done on small fields but use of herbicides can be considered in extensive farming.

Plant Nutrition: To optimize performance, soil nutrition management is necessary. It is a requirement that farmers do a soil analysis which will serve as a base for coming up with a fertilizer program.

Apply farmyard manure at a rate of 8 tonnes per acre during land preparation to improve soil structure.

A guideline to fertilizer application will include:

- Basal application of Phosphorus during the early stages for root and shoot development. This can be applied before transplanting.
- Top dressing with Nitrogen based fertilizers such as Urea and CAN for vegetative growth.
- During flowering and fruit formation use of compound fertilizers (NPK) is recommended. Plants require the three primary nutrients; Nitrogen, Phosphorous and Potassium at various levels; fertilizer with high K (Potassium) in formulation will give best results.
- Weekly application of foliar feeds (can be mixed with pesticide sprays) can also foster better plant development. During flowering and fruit formation, the farmers can use high N (Nitrogen) foliar feed and during flowering, K (Potassium) foliar feeds are ideal.
- Magnesium and Calcium fertilizers can be applied to ensure better fruit development but also when symptoms of blossom end rot manifest.

Staking and pruning: This is done to reduce excess canopy as well as to get rid of old leaves which contribute to high moisture accumulation leading to increased disease incidences. This can be done by using posts and wire rail, but sticks can also be used.

Management of pest and diseases

Major tomato pests include white flies, aphids, thrips, bulbworm. Whiteflies are known to transmit Tomato Yellow Leaf Curl Virus (TYLCV). While major tomato diseases comprise the blights, wilts and rots.

Pest and diseases remain the greatest challenge in Tomato production. The general principles in pest and disease management include:

- Practicing crop rotation. Observe minimum 2-year rotation program.
- Growing resistant/tolerant varieties, use certified disease-free seed treated with an approved fungicide to control seed rots and post emergence damping off.

Other Methods

- Using proper crop production practices that provide the right growing conditions for plants (sufficient water and balanced fertilization), particularly when crops are young. Strong healthy plants are more likely to withstand pests and diseases.
- Irrigation management; poor irrigation timing and scheduling may lead to disease, overhead irrigation in the evenings can encourage early blight.
- Regularly scout the crop for pest and disease as well as weed and nutrient deficiencies.
- Use registered products at the recommended rates.
Realising the ‘Full Benefits’ of Victoria F1 in Naromoru
By Mr Joel Mwangi with Isaac Nzuka

W hen it comes to horticulture, Monsanto Vegetable Seeds sells more than just seeds, it also offers solutions to fit all sorts of farming situations. These are words of Joel Mwangi, a 36-year-old farmer from Naromoru in Laikipia County. He has known no other cabbage, apart from Victoria F1 from Seminis. Mwangi found out about Victoria F1 through a distributor in Naromoru, who informed him of its benefits.

"Since then I have never looked back. From one acre, I have been able to harvest 45-56 tonnes, with each cabbage having a head weight of 4-5 kilogrammes. The cabbage is also an early maturing type, ensuring that it is available in the market for sale. This has given me high profit margins. The proceeds have also enabled me to pay school fees for our children.

Initially, I started farming on a one-acre piece of land, which I have since expanded to two acres. I hope to purchase more land from my proceeds.

My success in cabbage farming would not have been possible without the dedicated technical team from Monsanto. The proceeds have also enabled me to purchase conservation agriculture products.

Mr Peter Twerandu, a beneficiary of these trainings. Each season he has 6 acres under maize but his yields have never been good. With the training he has received on conservation agriculture he is optimistic that he will finally see an increase in his maize yields. "From my 6 acre farm I only get 18 bags per acre and my biggest headache is weeding. Now I want to practice conservation agriculture especially since we have been warned that the rains may not be enough. This time round my DK8031 crop will be the best. I have learned that it is possible to get 32 bags per acre if one follows all the principles we have been taught, and this is what I plan on doing. I'll be using Guardian Max for weed control and also to reduce nutrient competition, just as we were trained."

If done well, conservation agriculture can increase maize yields up to 50 percent. The main steps to conservation agriculture are as follows:

- Land preparation using Roundup Turbo to get rid of existing weeds
- Plant your maize (DK8031)
- After the first downpour, wait for two days then spray Guardian Max on the bare soil.

You can do conservation farming even on small land sizes:
- DK8031-packeted at 2kg packet, Roundup Turbo in 150mls pack and Guardian Max at 250mls, are enough for planting quarter of an acre. These are available at any agroveto shop stocking Monsanto products.

Prepare for the Season

Choose a variety that suits your region.
- DK8031- mid-low altitude zones
- DKC80-53 –mid altitude zones
- DCC90-89-Mid altitude zones.

Preparation:
- Purchase your maize seed early enough to avoid late planting or running out of seed.

Mr Arthenas Tuiyot with Nathan Koskei

I t was during the Eldoret ASK show that Mr. Arthenas Tuiyot of Chepkanga in Uasin Gishu County saw onion Jambar F1 - he was impressed by the variety. Tuiyot had been in formal employment for the past 27 years but always had a soft spot for farming; ultimately he knew that it would be the one thing he would opt for upon his retirement.

"The challenge that I faced after seeing the variety was finding the seeds. I finally bought 200gms from one of the Monsanto distributors in Eldoret town. I didn’t have much space at the time, so I seeded 150gms which I transplanted in Dec. 2009 into a tenth of an acre, sharing out the remaining seedlings among my neighbours.

My harvest came in April 2010, and I couldn’t believe it! Out of the small space I managed 2.5 tonnes. This was impressive. The spacing I had used at the time was a bit big and thus my harvest consisted of large bulbs which I comfortably sold to the hotels in Eldoret town.

For my next crop, I sought advice from Monsanto’s area representative on spacing and general crop husbandry. I’m pleased to say this was my dream crop. My advice to the farmers in the North Rift region is onion Jambar F1 is a good yielding variety, fast in maturity and thus a better crop for small scale farmers instead of cereals; it will drive us out of poverty.

Mine would also be to let farmers know that hybrids are better by all means since its production is unmatched, with resistances or tolerances which means less is spent on production. It’s time we embraced the principles we have been taught, and this is what I plan on doing."

Retirement Bliss for Jambar F1 Farmer in Eldoret

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Empowering Farmers through Trainings

By Peter Kiburii

Farming is the back bone of many African economies. In propelling the wheels of development, a country’s citizenry must be well fed - not with donations but through local production; this calls for appropriate technology to produce enough for an ever increasing population amid changing climatic conditions. Spawning from this need is Monsanto’s vision to empower farmers.

"I have learned that it is possible to get 32 bags per acre if one follows all the principles we have been taught, and this is what I plan on doing.”
RECIPE: Creamy Potato Salad  By Nashone Mukabane

Ingredients:
- 6 medium potatoes (preferably the waxy kind that doesn’t get mushy when cooked)
- 2 stalks of celery ( thinly sliced)
- 1/2 cup finely chopped onion
- 1/3 cup sweet pickle relish
- 2 teaspoons sugar
- 1/4 cups mayonnaise or 1/4 cups salad dressing
- 1/3 cup sweet pickle relish
- 1/2 cup finely chopped onion
- 2 stalks of celery ( thinly sliced)

Method
1. While eggs are boiling, peel and cube potatoes, boil potatoes until they are just slightly fork tender. Do not overcook potatoes as this will make your potato salad mushy.
2. Start eggs to boil for 10 minutes.
3. Mix chopped onion, celery and green pepper in a bowl.
4. Add mayonnaise, sugar, apple cider vinegar and mustard.
5. Remove eggs from boil, cool and peel them. Chop eggs, reserving some egg for garnish. Add eggs to mixture in bowl.
6. Add drained potatoes to bowl and stir gently but thoroughly until potatoes are well incorporated. Add salt and pepper to taste.
7. Transfer potato salad to serving bowl. Garnish with leftover egg, paprika & dried parsley to garnish.

Tips & Warnings
- This salad can be made even more colorful by adding red or yellow or orange peppers.
- Any product with mayonnaise should be kept cold. If you are serving this dish outside, be sure to keep it cool on ice or put out only small amounts that will be eaten in a reasonable amount of time.

How do I manage this?
By Daniel Musyoka

TOMATO YELLOW LEAF CURL

How do I Manage this?

What is it?
Tomato Yellow Leaf Curl is a destructive viral disease of tomato. The disease is caused by Tomato yellow leaf curl virus (TYLCV). It is locally known as ‘Ngumi’, ‘Gaathuri’ or ‘Kvakunza’.

Spread of TYLCV
The disease is vector transmitted and whiteflies (Bemisia tabaci and Trialeurodes vaporariorum) are the main agents.

Symptoms
Plants infected at an early stage can be stunted and with short internodes, develop erect branches, and have small chlorotic leaflets which cup and twist upward. Severely affected plants generally do not set fruit. Yellowing of leaflets, leaf cupping, failure to set fruit and flower abortion can also be common when infection occurs at a later stage. Fruit that has set before the plants become infected often ripens normally.

Conditions for Disease Development
The virus is acquired from infected tomatoes or several solanaceous weeds by the larvae of the sweet potato whitefly. The disease is vector transmitted and whiteflies (Bemisia tabaci and Trialeurodes vaporariorum) are the main agents.

Disease management
- Use of tolerant or resistant varieties greatly reduces losses from this disease (Tomato Assila F1 from Monsanto Vegetabe Seed is resistant to TYLCV)
- Removal of Solanaceous weeds which are in the vicinity of the tomato crop.
- Rogue diseased plants and destroy by burning.
- Control white flies to discourage spread of the virus. Use of oil sprays helps control whiteflies.
- Practice a good crop rotation program.
- Planting a maize crop around the tomato field reduces the possibility of white flies accessing the crop.

How can you control whiteflies?
Applying mineral oil on a regular basis may help slow the rate of spread of the disease by reducing the acquisition and transmission of the virus by the whitefly.

Covering plant beds with yellow plastic mulch which attracts the whiteflies and then spraying on a regular basis with insecticides which has proven effective in some areas.

UV-reflective mulch can also be effective at deterring whiteflies from landing on crops.

Biological control options such as the use of Encarsia formosa and Entomopathogenic fungi such as Beauveria bassiana and Verticillium lecanii. Physical control options including crop rotation, ploughing infested crop at night and weed management which can help bring the whitefly population below threshold levels.

Use of effective insecticides such as, Oxamyl, Imidacloprid, Azadirachtin, Dinethoate, Lambda-Cyhalothrin, Deltamethrin, Acephate, Pyrethrind and Thiacelord among others. Farmers MUST adhere to the recommended dosage and observe the pre-harvest intervals as advised on the product label.
Meet our

Farmers’ Price Centre

Farmers Price Centre is located in Mwea town along the Nairobi-Meru highway. The store was started with an aim of providing animal health products, agrochemicals and seeds to the farming community in Mwea and the surrounding areas of Kirinyaga County. During the early years of their business, Farmers Price Centre used to sell Onyx, Cal J e.t.c from Seminis. They later expanded their business and currently stock a wide range of Monsanto products which include Tomato Assila F1, Eden F1, Anna F1, Cabbage Blue Dynasty.

F
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The success of the Monsanto products at Farmers Price Centre is to a large extent the result of the excellent after sales service offered by the Monsanto team.

With the increase of horticultural practices in the region, Monsanto has played a big role in providing quality seeds and technical support to both the farmers and our staff.

WORD SEARCH

How well do you know our hybrid (F1) varieties, see if you can spot them in the puzzle below. Find them: horizontally, vertically, diagonally, forwards, backwards, intersecting.

Ambassador,
Anna,
Assila,
Blue Dynasty,
Dekalb,
Early Butternut,
Eden,
Heritage,
Jambar,
Mercedes,
Oxylus,
Tycoon,
Victoria,
RedKnight

by Erastus Matete

Events

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