

NARO introduces grafted tomatoes

By Pressey Nandudu

Tomatoes are a high-value commodity that is capable of sustaining one's household for the whole year owing to its demand.

Tomatoes have lycopene, a substance that can destroy cancerous cells in the body. They also add colour to food and salads.

However, their production is being hampered by pests and diseases, especially bacterial wilt.

Resistant plants

The National Crops Resources Research Institute (NaCRRI) is working with Korea Programme on International Agriculture (KOPMA) to graft tomatoes that are resistant to diseases.

Scientists are working with rootstock from Korea and Holland which is being grafted with those in Uganda, to come up with plants that are resistant to the wilt and other pests and diseases.

Grafting is a technique of cutting stems of plants with desired traits such as resistance to pests and diseases as well as, high yield, nutrition levels and joining them to those that suffer challenges.

"Previously, grafting was used in improving the survival of different varieties of citrus, mango, avocado and passion fruit that are resistant to pests and diseases," Rehema Naluyimba, a senior technician at NaCRRI explained.

Process of grafting Plant seed

For those planning to practise this at home, they are advised to plant both the rootstock and the scion in a nursery preferably using seedling trays.

The seedlings are ready for grafting when they have obtained four to six mature leaves.

Grafting

For the plants to be grafted and remain healthy, they should be watered the previous night so that when cut or grafted the next day, they are able to heal from the cut.

Before grafting, ensure that the razorblades and clips have been cleaned and sterilised.

"Prepare a jar of disinfectant (Sodium hypochlorite/bleach solution) mixed with water. Keep knives in that jar. Change knives during grafting to kill germs or bacteria," Naluyimba explains.

Grafting must be performed in a shade.

Cut scion between the first and second true leaves at 45°. Cut the rootstock right above the first true leaf at 45°.

After cutting, attach them with a clip immediately without touching the cut ends otherwise they will dry.



A research scientist demonstrates to participants and researchers how grafting and planting of tomatoes is done



KOPMA director explains to researchers from Namulonge how the seeds are cared for to maximise yields

BACTERIAL WILT

Tomato grafting shows how researchers want to address the problem of bacterial wilt.

Suhosin tomato variety being used in this case has been found to be resistant to the wilt, while most of the varieties on the market are susceptible.

"So we are moving away from planting a seed to planting grafted seedlings with a tray having 105 plants, when planted at a spacing of 2x2ft (60x60cm), can cover at least 11 decimals of land," Idd Ramathani a pathologist from National Agricultural Research Organisation (NARO) said.



A grafted seedling with its soil from the tray

He added that for those with small compounds, they can bypass the hustle of raising seedlings and buy a tray of grafted ones.

"If you take a grafted seedling, you dig a foot deep hole and plant, this means that the root systems are not disrupted through transplant because you get the seedling with its soil from the tray and just insert in the hole. This enhances their survival and this why it can be adopted by those in urban areas," Ramathani added.

and the base is made up of ordinary soil or sand.

The chamber blocks out sunlight to suppress transpiration to the maximum and to keep them in a high humidity (100%) if necessary.

While in the chamber, the seedlings should be watered from the bottom not directly. When watered directly, the seedlings' roots will grow upward instead of at the bottom.

The seedlings should be watered from the bottom not directly

"The other option is to first water the humid chamber base then place the grafted seedlings in the trays above," Naluyimba said.

After three days

After three days in the chamber, the polythene covering is removed for at least 30 minutes every morning for four days and to keep them dry. Do not water the seedlings. The aim of such

EXPERT ADVICE

Rehema Naluyimba, a senior technician at National Crops Resources Research Institute (NaCRRI) explained that the grafting technique is considered one of the best ways of getting disease-resistant seedlings for fast-maturing crops.

This is opposed to other systems such as breeding of new varieties which takes about 15 years.

"The technology involves cutting a tomato of any variety that is of the same stem size and attaching it to rootstock grown specifically for its vigour and disease resistance," she said.

Naluyimba added that through partnership with Korea, they have identified a rootstock called Suhosin from Korea which is resistant to tomato bacterial wilt.

Grafting can be done in two ways. In this case, Naluyimba says NaCRRI is using the slicing method where a tomato stem is cut across and then joined to a cut scion or stem of another tomato variety of superior quality to get high yields.

a step is to harden the new plant.

Transplant

Seven days after grafting and staying in the humid chamber, the seedlings can now be watered directly and when the seedling acquires eight to nine leaves, it is time to transplant.