



MKULIMA WA SEVIA

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THE ESSENTIALS OF NURSERY MANAGEMENT

“Handle seed and seedlings with utmost care”, is our advice. It all starts with good nursery management.

by Tyrrel Chisenga and Herman de Putter



First grow seedlings in a nursery

- Tomato
- Sweet pepper
- Cucumber
- Watermelon
- Cabbage
- Lettuce
- Chillies

Seedlings or direct sowing (both is possible)

- Onion
- Parsley
- Celery

Direct sowing

- Beans
- Okra
- Carrots
- Spinach
- Red beet

In our previous Newsletter we explained why quality seeds and varieties, together with appropriate management, are key to generating a higher yield of higher quality vegetables. We are picking up now by addressing nursery management.

Many advantages

In a nursery seedlings are raised before they are transplanted into the field. Some vegetable seedlings need extra care. Currently many farmers raise seedlings in a corner of the field. This is cheap and easy, but can turn out to be very expensive: a complete sowing can get lost due to rains, pests, diseases or other circumstances beyond the control of the farmer. Raising in a good nursery has many advantages: by using a nursery the loss of seeds is reduced and the quality of the transplants will be higher. The method – direct sowing or growing seedlings in a nursery - depends on the vegetable (See examples above).

Calculate the number of seeds

Before you start sowing calculate the number of seeds based on the required number of plants in the field, the germination rate of the seeds (mentioned on the package, about 90 to 99%) and percentage of success (should be at least 90%). As a rule of a thumb sow 10% more seeds.

How to manage the nursery?

In addition to high quality seeds, a good nursery, trays and media (the mixture of soil, organic material and nutrients) are required. When re-using trays make sure that they are clean and disinfected (by chlorinated water). Alternatives for trays are home-made banana leaf pots or a soft plastic tube filled with growing media, cut into lengths to create small pots in which sowing can be done. The latter methods need more labor, but will save money.

Make sure that the nursery has a good cover to protect the plants from heavy rains and direct sunlight. Use a quality net to prevent nasty insects flying in.

Buy or prepare good quality potting soil or media

Buy or prepare good quality potting soil or media (mixture of cocopeat, soil, sand and manure). It is important to sterilize the media, to make sure that it is free of plant diseases. Sterilizing can easily be done by filling up a drum with the soil or media and heat it for 45 minutes at 80°C.



Protect the plants from heavy rains and direct sunlight

Fill the tray* with the media, but do not compress too much, since this will reduce the aeration capacity and roots of the transplants will not grow well. Make small 0.5 cm holes and place one seed per cell or pot. Cover the seed with media.

After sowing gently spray water until the medium is moist but not soaking wet. Cover the tray with a perforated plastic sheet or put sand on top. Germination is best at rather high temperatures in a dark spot, with high humidity. Remove the sheet when the first signs of the seedlings are visible and place the tray in a spot with more daylight. After emergence, water once in the morning and once around noon. When using manure in the tray further fertilization during transplant raising is not necessary.

When plants are almost ready for transplanting put them in an open space to have them acclimatized to the open field conditions. During this 'hardening off phase' watering of the plants should be reduced. After a couple of days the seedlings can be planted out in the field.

**By mentioning 'tray' we also mean 'pot'*



A healthy seedling

A stem with good leaves and a good root system

It takes some practice to grow a good transplant, but once mastered seedlings will be of higher quality and showing a nice developed stem with leaves, and a good root system. After transplanting in the field less plants will die and plant growth will be faster compared to bare root transplants raised in field bed nurseries. And the final gain? Better crops, a higher yield and more profit.

For more detailed technical information please consult the SEVIA team ●

Do not miss our next issue of Mkulima wa SEVIA where we will talk about crop specific management.

Who is...? **Herman de Putter**

IMPROVEMENTS WITHIN REACH

by Anita van Stel

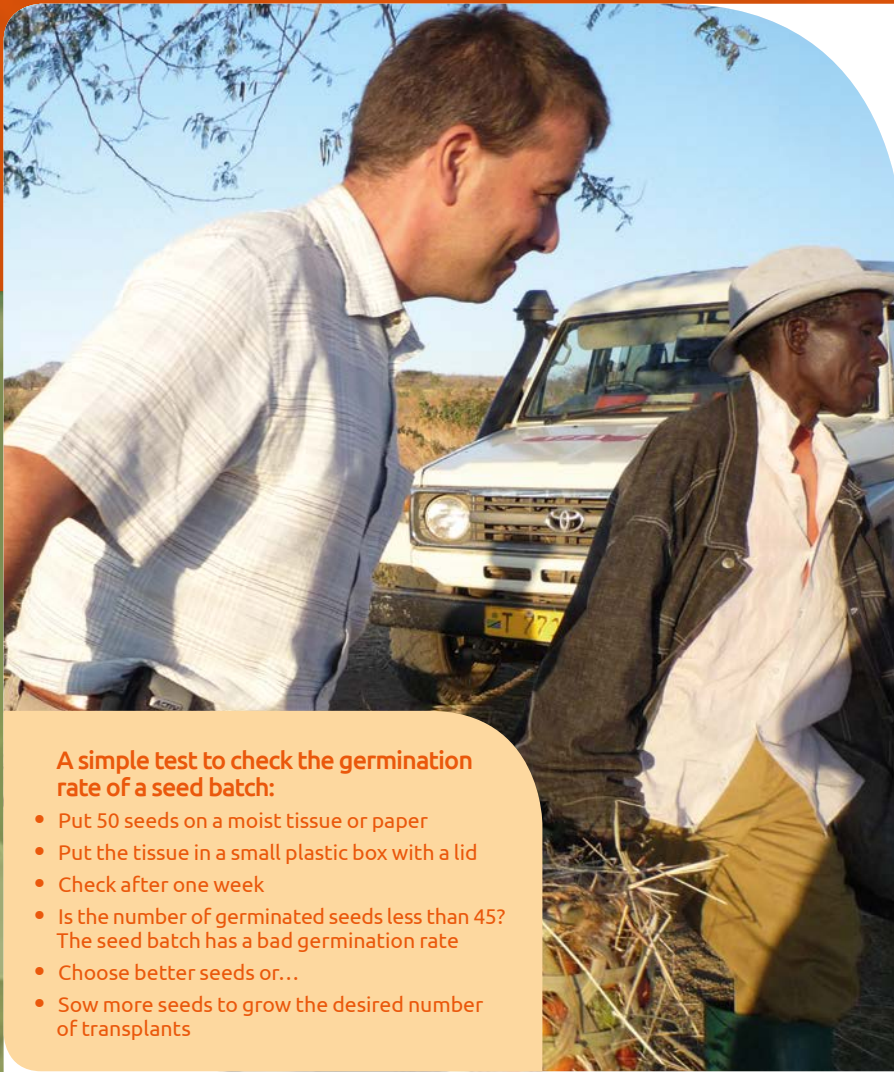
Herman de Putter works at Applied Plant Research (PPO) of Wageningen University in The Netherlands.

As a scientist he is thrilled whenever he can compare inputs in agriculture with outputs, after having done some tests in a field. "But", states Herman, "for me these analyses have to serve a goal: improvement of the agriculture practices. I am especially happy when I discover a new treatment, to the benefit of many farmers." In 2004 he started training

sector professionals including extension officers in Asia, Ethiopia, Kenya, Ghana and Tanzania. In Moshi (Tanzania), the people working with SEVIA have their questions ready whenever Herman shows up.



"When I first came to Tanzania I wondered if I could really contribute and mean something to farmers. Soon I recognized that they grew crops based on how their parents used to. I also found out that they were very eager to learn about almost every aspect of their farming practice. For instance, whether applying fertilizer was the right thing to do or how to conquer



A simple test to check the germination rate of a seed batch:

- Put 50 seeds on a moist tissue or paper
- Put the tissue in a small plastic box with a lid
- Check after one week
- Is the number of germinated seeds less than 45? The seed batch has a bad germination rate
- Choose better seeds or...
- Sow more seeds to grow the desired number of transplants

pests they had been dealing with for a long time. Many farmers live in remote areas and they are far from knowledge centers. Usually their only advisor is the local agro-dealer, who may not know everything.”

“SEVIA is dispatching knowledge to the farmer. This works out really well. I always advise the SEVIA staff to find out about the farmers’ concerns by speaking to them, to make sure our advices hit the target. Many times farming is a family business, so if a technique is promoted needing hired labor, they probably cannot afford this. Cultivating a smaller field with good techniques and high quality plants will result in higher yields than growing crops on a large field with too little attention. If farmers are producing 8 to 15 tons tomatoes per ha now, they could increase to 60 tons, without much (high tech) effort.”

“Agronomists like me, usually do not pay enough attention to costs, and

costs happen to be the most important issue for farmers. ‘Buy better seeds’, we say, ‘or trays for raising seedlings’, but these are expensive. We have to convince them that the spending of today will lead to more earnings tomorrow. And that it is in their interest to bridge this gap and be somehow patient.”

“To have better crops, with less fertilizer and less pesticide, is good for everybody. I am always looking for new techniques, which are easily applicable for farmers. An example? Germination of seeds can be tested on a tissue in a box. Of course I also derive information from scientific publications. I like to combine the two. At the SEVIA farm we set up trials to test practices before we disseminate them in our demonstrations to the farmers.”

“I just returned from a visit to Moshi, where I trained extension officers on crop protection. Do we apply pesticides, biological products or pheromones, to control pests and diseases in tomato, I asked them beforehand. We analyzed the data they gathered from farmers. After this we developed some demonstrations based on their experiences, about improvements for farmers within reach ●”



Tips and tricks

Know your pesticide and how to safely use it

by Epaphras Milambwe

Do you know that the success of your pest & disease control depends on your knowledge of the pesticide and how it works? SEVIA helps you to get to the bottom of correct mixing and spraying techniques, utilising good conditions and the safe handling of your pesticide.

Do you know that:

Knowing the active ingredient is important?

Which pest or disease are you targeting? It is important to carefully read your pesticide label to know the active ingredient of your pesticide. Some pesticides contain the same active ingredients but have different (trade) names.

Weather has an influence on spraying?

The best weather to spray is calm weather, with no wind, no rain, and a lower temperature. If the wind



is too strong (drift), the pesticide is blown away. Your plants are not evenly sprayed when there is drift. The pesticide blown will affect other crops, people, animals and the environment in general. Drift will cost you much more pesticide. When dust is whirling in the air, the wind is too strong to spray. Spray in the morning or later in the afternoon.

Mixing of pesticides cause damage to your crops?

In some cases mixing of pesticides is possible. But in other situations the mix of pesticides damages your crop, because the pesticides react with each other and make a toxic mix. Read the labels of the pesticides to know if they can be mixed. Some pesticides do not work effectively when mixed.

Protective gear is important when mixing and spraying pesticides?

Pesticides may enter your body through skin, mouth or nose. Therefore, it is very important to wear protective gear like gloves, coveralls, masks, respirators and gumboots. Safety first! Clean your gear after using it.

Quality of water can affect the effectiveness of your spray?

Use clean water. Dirty water can damage your crop. Water from ponds and ditches may contain high levels of organic matter or clay, and this can make the chemical inactive. Check on iron or chalk in the water since this also may affect the quality of the active ingredient. Little stones in the water can clog the nozzles.

The pH of water also can influence your spraying?

The pH of the water is the acidity or alkalinity. If the pH of your water is too low (pH lower than 5) or too high (pH above 8), the water can react with the pesticide and this can reduce the efficacy of the chemical. You need a pH meter. Do you want to know the pH of the water? Ask Sevia how we can assist you.

Pesticide bottles or packets can cause harm to living organisms?

Do not leave your pesticide bottles open in the field. They can fall; the pesticide can drip on the soil or into the water and this can harm plants, animals and the environment. Collect, burn or bury empty bottles, tins and packets. After use, lock your pesticides in a



Do not leave your pesticides bottles open in the field

In some cases mixing of pesticides is possible



closed cupboard or storeroom, so that your children can not touch them.

That nozzles can affect your spraying?

Nozzles are very important. When a nozzle is defective the spraying pattern varies. Some droplets are bigger than others and the nozzle does not spray evenly on all sides. Therefore, some plants will get too much pesticide and others not enough. This may lead to variations in crop development.

There is a waiting period between spraying and harvest?

It takes time before the pesticide residues are below a safe level for consumption. If you harvest too soon the vegetables are toxic. Read about the period on the label of the product.

Spray as a last resort, after exhausting other methods. Use pesticides safely ●

Stories from the field

'Hybrid seeds are the future, for me and all vegetable farmers'

by Clara Mlozi

Mr Kilindi had been a tomato farmer at Kiterini, Moshi for a period of at least three years. He would grow up to one acre of tomatoes, but like many farmers, he would only harvest once or twice as the plants no longer produced a significant amount of tomatoes. After hosting a demonstration with our extension officers Nurdin Mndoholele and Lewis Mlekwa in his district, his perception of vegetable farming changed. Mr Kilindi was keen to learn how to grow other vegetables. A demonstration of sweet pepper was established to show the performance of hybrids (Mekong and Tycoon) versus an open pollinated variety (Yolo Wonder). The additional treatment was to show the advantage of trellising. Some plants were trellised, while others were not. The crop was planted on raised beds. A

watermelon demonstration was also set up to show the performance of hybrid varieties Andaman, Aditi and Colombia.

"I didn't want to miss out in any aspect of the training" said Mr Kilindi. "So as the SEVIA expert was preparing the



demonstration plot I also made raised beds on $\frac{3}{4}$ of an acre and bought Mekong seeds. I did everything as advised by the extension officer, except the trellising. To

date I have harvested over 100 bags in the last three months from this $\frac{3}{4}$ acre plot. All I had to do was irrigate, fertilize and observe pest control. However, I did not trellis my crop because I wanted to see what was so important about it. My crop was falling, with broken branches. I also noticed that my sprays were not as effective as in the trellised crop.

I have lost quite a number of plants and fruits from the untrellised crop. Now I know when I trellis, my crops will be supported and will last longer in the field."

Name: Salehe Kilindi

Place: Kiterini Village, Moshi Rural District

Crops: Watermelon, sweet pepper and onion



Furthermore, one of the reasons his branches were breaking off is because of the fact that the pepper crop produced too much fruit for the plant to hold. Though the seed was expensive he managed to get his return on investment, from his weekly harvests so far. The hybrid sweet pepper variety he grew, proved to be tolerant to a number of bacterial and viral diseases.

Mr Kilindi urges SEVIA to continue spreading the knowledge to vegetable farmers who will benefit from it: "Through the SEVIA demonstration in my plot, over 30 farmers in my village have established vegetable nurseries with hybrid seeds. The adoption rate will grow in time once my fellow farmers go through a life changing, vegetable farming experience, as I did. The seeds are expensive, but worth it."

Mr Kilindi is now cultivating three and a half acres of hybrid vegetables including onion (Neptune), watermelon (Mshindi F1) and sweet pepper (Mekong). He also plans to learn how to grow hybrid tomatoes in a skillful manner, to avoid losses and make profit. He has now resorted to using hybrid varieties only as he believes that it is the future, not only for him, but also for Tanzania's vegetable industry ●

People @ Sevia

Name
Janeth Mollel



Name
Janeth Mollel
Year of birth
1992
Function
Administrative & HR assistance
From
Arusha
What I like about my job
Attend the inquiries and channel them to relevant people or team
Favorite vegetable
Water melon

Name
Joseph Pallangyo



Year of birth
1992
Function
General worker
From
Kilimanjaro
What I like about my job
Irrigation
Favourite vegetable
Tomato

Agenda

JUNE

- Training of farmers in the fields
- Advisory Board Meeting
- Training of agro-dealers
- Field days at SEVIA in Lambo Mferejini

JULY

- Training of farmers in the fields
- Field days in the demonstration plots/farmers' fields (in 10 districts)
- Expecting interns from Sokoine University and the Unitera programme
- Field days at SEVIA in Lambo Mferejini

AUGUST

- Continuation of field days in the demonstration plots/farmers' fields (in 10 districts)
- Participating in NaneNane agricultural fair in Arusha, Morogoro and Dodoma
- Deployment of extension officers to Mwanza and Manyara regions

Smile

KNOWLEDGE IS KNOWING A TOMATO IS A FRUIT. WISDOM IS NOT PUTTING IT IN A FRUIT SALAD.
-MILES KINGTON-

Mahanjumati how to prepare Okra



Ingredients

- 1300 grams of okra (tender and equal size)
- 2 large tomatoes, finely chopped
- 1 onion, sliced
- 2 tablespoons (tbsp) of cooking oil
- 1 teaspoon (tsp) of salt
- 1 tsp of curry powder or any other spice of your choice (optional)
- 1 tsp of garlic paste
- 1 tbsp of tomato paste
- 1 lemon

Preparation

Finely curve the bottom of the okra and cut the tip of the okra. Boil until till tender enough to eat, yet not too soft. Remove from hot water, sieve and put aside. Put a pan on the stove and heat the oil. Add onion and garlic paste and fry until lightly brown. Add the tomato paste and let it simmer for two minutes, add a little water if the ingredients seem to burn before they cook.

Add the tomatoes and salt (together with any other spice of your choice like curry powder), mix and cover to cook. Once the tomato is thick and cooked, add the okra and let it cook for 2 minutes. Then squeeze in the lemon. Let it simmer for 5 minutes and remove from stove. Serve when hot. It can be served with rice, ugali or simply plain.



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