



bulungula incubator

Masilime Ngqo! vegetable seedling nursery

A tool-kit for establishing your own seedling nursery

prepared by Dave Martin, January 2018



1. Introduction

Small farmers generally prefer to grow vegetables from seedlings and not seeds. In areas where seedlings are not available locally, it can be a sustainable business/project to produce and sell vegetable seedlings.

2. Choosing a site for your nursery

Select a site near a reliable water source that can supply about 2000L of water per week every week. If there is no municipal pressurised water supply, then it is helpful if the site has a natural slope to allow for a header tank to supply water under pressure.

3. Water Source

Critical to the successful production of seedlings is irrigating with the use of water containing soluble fertiliser (Qula Nursery Mix). The easiest way to do this, is to have a dedicated Jojo rainwater tank which is filled with water and fertiliser. This tank should be about 7m above the seedling trays to ensure that you have sufficient water pressure for irrigation. The easiest way to do this is to situate the tank on a hill above the nursery.

The pipe from this Jojo tank should run down to the nursery. There must also be a second source of clean (non-fertilised) water running down to the nursery from another Jojo tank at the same height as the first. This is to ensure equal water pressure for the sprinklers.

The seedlings should be sprayed with fertilised water for three days followed by clean water for one day.

The length of time for watering is best calculated by timing how long it takes for water to begin dripping out the bottom of the seedling tray holes.

Seedlings must be watered every day in the morning or evening. The best way to ensure this happens reliably is to use a irrigation timer. These can be bought cheaply on Amazon/Ebay or more expensively at the local nursery. Have one timer for clean water and another for fertiliser water. Make sure they are programmable for multi-day cycles (e.g. Mon + Tue + Wed = fertiliser, Thur = Fresh water, Fri + Sat = Fertiliser, Sun = Fresh).

The two water source pipes and their respective timers can be connected through a T join into the the single irrigation pipe. These timers don't allow water to travel in the reverse direction so there is no risk that water fresh water will flow to the fertiliser Jojo and vice versa.

Prior to the first sprinkler there must be a 100 micron in-line water filter installed to ensure no dirt blocks the sprinkler holes.

4. Nursery design

Our nursery is 4m wide and 11m long. It is built with treated poles sunk into the ground and treated and varnished rafters making a frame around the top. The poles are secured by high tensile wire stays on each corner to protect against wind damage. These stays are tensioned with stainless steel tensioners (non-coastal areas can use cheaper, galvanised tensioners).

The entire structure is covered with insect netting. A door that closes snugly with few gaps is important. This is to prevent pests entering the nursery and thus reducing (but not eliminating) the need to use pesticides.

High tensile wire "benches" run the length of the nursery with a central walking passage. Galvanised wire benches are preferable as they will not run in the constantly damp conditions. Each bench comprises of 6 lengths of tensioned wire which can carry two seedling trays deep (3 wires per tray). An 11m long nursery can contain two rows of about 60 seedling trays (200 holes each) giving a total of 120 trays. The central walking passage is about 1.3m wide. The benches should be about 80cm above ground level.

About 1.2m above the centre of the tray benches should run a 20mm class 4 LDP pipe along the length of both benches. A gate valve should be inserted into the pipe every 5m to allow only section of the nursery to be irrigated at once.

Test a variety of rain mister fittings to test which type will water the whole tray without wasting too much water spraying beyond the trays. The correct mister will depend on your water pressure. Fit the selected misters using 6mm hanging pipe connected to the overhead 20mm LDP pipe.

An indoor working area and store-room about 5m x 5m will also be needed to work in and store supplies.

5. Additional supplies required

- 120 seedling trays (200 holes)
- **Hygromix** – 20kg bag (seedling mix) – you need 1 bag for every 30 trays
- **Vermiculite** – 8kg bag (to cover seeds) – you need 1 bag for every 110 trays
- **Seeds** (initially at least, choose the same seeds that your nearest seedling nursery uses so that there are no complaints about your seedlings versus that of the nearest competition).
- Fertiliser: **Qula Nursery Mix** 25 kg bag – 1 bag to bring 350 seedling trays to 5 weeks' maturity.

6. Operational instructions

6.1 Fertiliser

It is important that the fertiliser is mixed correctly in the Jojo tank. A 2500L Jojo tank will need 2.5KG of fertiliser. Premix this in a bucket with water and then pour it into the Jojo while stirring with a thin pole/paddle.

You will need to have a way to accurately measure how empty the Jojo tank is at all times. One easy way is to have a clear plastic pipe connected with a T join to the tap at the bottom of the Jojo. Fasten this pipe to the side of the Jojo. The water level in the clear pipe is the same as the water level in the tank. Make markings for every 100L of water volume on the pipe. Thus if you have a 2500L tank and it is currently at 1000L, then you will need to add 1500L of water and thus 1.5KG of fertiliser to fill the tank correctly. Find/make a fertiliser scoop that when full contains 100grams of fertiliser. It is then a simple matter of counting the number of 100L intervals that the tank is below full and then adding that same number of 100g scoops of fertiliser.

6.2 Planting

Fill each tray with Hygromix (seedling mix). Press down with your thumb and refill. Make a small hole in the mix and drop a seed inside. Fill the whole with vermiculite (to keep the moisture level perfect). Put the trays out on to the benches (experts advise that after the first irrigation that you stack these trays on top of the other for about 36 hours indoors and then place them outside – apparently this improves the germination rate). Typically you should only place one seed in each hole, but if for some reason germination rates for a particular seed are low then you can use two or more seeds. Most seeds cost a fraction of 1 cent so it is preferable to use 2 seeds that to have a tray with numerous holes where no seeds have germinated and thus wasting space and fertilised water irrigating for a whole month.

Seedlings are mostly mature after 4 weeks. They can be popped out by using the back of a large nail or a smooth blunt tick of the correct diameter.

Plant once a week to ensure that you have a constant supply of seedlings.

6.3 Pests

Try keep the nursery door closed at all times to prevent pests entering. However, it is inevitable that they will enter at some point and you will have to have an effective pesticide that will kill pests quickly as farmers won't buy pest-damaged seedlings. We use a mixture that we believe is ecologically low-impact but effective against most pests.

2L water (e.g. plastic soft drink bottle)

0.7ml Closer

0.7ml Agrimec Gold

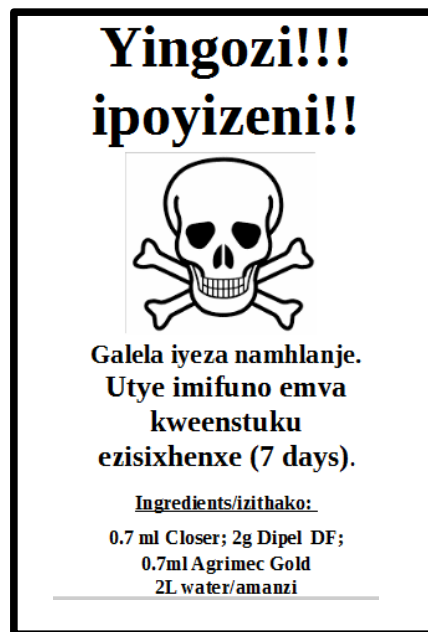
2 grams Dipel DF

This mix must be used on the same day as it is mixed.

going to waste.

Besides walk in sales, we sell excess production at the SASSA pension payout points as well as in local markets. Walk in Sales can be quite unpredictable. If you are located in an area that lacks a local supply of seedlings then you can get large sales initially followed by a lean spell while these seedlings are maturing in the farmers' gardens. Sales will pick up again when those vegetables have been harvested. With this in mind, encourage farmers not to plant their whole garden at once but to rather plant fewer seedlings every month so that they have a constant supply of vegetables coming out of their gardens rather than the more common "feast followed by famine" approach.

We suggest you sell the above pesticide ready-mixed in 2L bottles. The cost price is about R4.20 so you can decide on the sale price. There is nothing more dispiriting to farmers than to see their crop destroyed by pests. Remember to print a pesticide warning label (a normal address label that can be printed on a normal computer printer) to avoid accidents:



7. Suppliers

- Insect Netting: Happy Veg (Owen), Gonubie. Tel: 082 822 6547
- Seedling supplies (trays, seedling mix, seeds, fertiliser, etc): Inteligrow (Derek), Tel: 043 732 1222
- Irrigation equipment (pipes, sprayers, inline filters): Amatola Irrigation, EL, 043 732 1927/074 799 7581. Amatola Irrigation can also be contracted to build the nursery.
- High tensile wire: Farmarama, 043 732 1633
- Tensioners: East London Bolt & Nut, 043 7229723
- Yardeen Electronic Water Timer : Amazon: [click here](#) Ebay [click here](#)
- Seedling bags (bread bags): at most local spaza shops and cash and carry wholesalers.