



PREPARATION OF TOMATO PLANTING MEDIA, SEEDING AND INCUBATION



NAVCDP

NATIONAL AGRICULTURAL VALUE CHAIN
DEVELOPMENT PROJECT



Introduction

Artificial growing media, such as potting mixes and seed raising mixes, are made up of a mixture of inorganic and organic materials. They are used in propagating quality tomato seedlings. A good growing media has the following properties:

- Ample drainage
- Air around plant roots
- Enough water for plant to use
- Nutrients
- Plant anchorage so that it can grow towards the light.

Main Soil-less Media used

There are three main soil-less media used; namely Coco peat, Vermiculite and Peat moss.

Coco peat

Coco peat is packed in bags, blocks and in ready to use form. It is also available in compressed blocks in bundles of 10 kg as well as in 20kg bags of uncompressed Fibre intended to be pre-treated before seeding.



cocopeat packed in bags

Organic and Inorganic	Artificial Sowing media
Organic Substrate	Inorganic substrate
Peat moss	Sand
Sphagnum moss	Charcoal
Shredded bark	Perlite
Coco peat	Vermiculite
Compost	Rock
Vermicomposting	Jiffy
Leaf - Mold	
Bagasse	

Pre-sowing Treatment of Coco peat

Coco peat is obtained from coconut husks which are ground and compacted. As a byproduct, it contains sodium salts that are not required by the plants for growth. It must therefore be treated first before use. Unfortunately, many farmers do not subject Coco peat to this treatment.



Calcium nitrate added to coco peat



Treated Coco peat

Impacts of not pre-treating coco-peat

1. Poor germination rate due to the scorching effects of the roots by the excess sodium
2. Weak and yellowing seedlings due to the excess acidity
3. Retarded plants.

Procedure for pre-sowing treatment of coco-peat before sowing seeds



Untreated coco peat

Coco peat treatment involves soaking it in water and thereafter adding calcium nitrate.

- The introduction of calcium nitrate leads to a reaction that takes 12 hours and helps to remove excess salts. It also reduces the acidity of the media.
- The water is then drained, the pH and electrical conductivity of the media measured as plants take up nutrients through osmosis. Electrical conductivity (EC) is the ability of the media to allow the plant to absorb nutrients. The ideal pH should be 5.5-6.5 while the EC should be 1.6-2.0.

Vermiculite and Peat Moss



Electrical conductivity meter to determine PH and EC of coco peat



Peat moss wrapped in polybags ready for use

- Having done this, the media is potted in seedling trays or pots after which the seeds are sowed singly and put under a shade or a in greenhouse.

While coco peat needs pre-sowing treatments prior to seeding, vermiculite and peat moss are readily accessible on the market in ready-to-use states. Vermiculite and peat moss are often combined in a 1:1 ratio prior to planting, and a thin layer of vermiculite is applied



Vermiculite is packed in polybags(a) and (b)ready for use

to the tray to promote consistent germination and tomato seed establishment.

Planting trays

Growers can generate more consistent, strong, and healthy seedlings and enable field planting without damaging the root system by utilizing seedling trays. The establishment of seedlings in seed trays is a standard procedure in modern agriculture.

Quality of planting trays

- Trays are available in several categories of plastic and Styrofoam
- Model 128 or 200 or 422 styrofoam seedling trays are the most popular
- Although more expensive, larger seedling trays lead to better and more root development
- Seedlings take 26 days to reach transplanting maturity when germinated in trays
- Optimized temperature and humidity to break seed dormancy easily

Types of planting trays

Both plastic and styrofoam trays are available for use



Plastic trays 288 holes



Styrofoam trays 422 holes

Importance of planting trays

- The trays provide space for each seedling to grow
- Improves germination percentage
- Reduces mortality/damping off because of use of sterilized media

- The seedlings also have uniform germination
- Easy to carry out management practices effectively, such as irrigation.

Growing tomato seeds

There are two ways to plant seeds: using a machine or a manual seeder. While machine seeders use automation and precision seed placement with a seed placer, manual seeders place a single seed in each hole in a tray.

Post-sowing procedures of tomato seed

After seedlings are planted in trays, they are kept in an incubation room with controlled conditions that are ideal for breaking dormancy and promoting sprouting. In a locally manufactured polythene, tomato seeds require approximately four to six days to break dormancy, however in a seeder machine, the same process takes two to three days.

Manual tomato seeding



Machine seeder



A manual worker can plant up to 52 trays in a day while a mechanized seeder can plant 1000 trays in a day



Incubator made locally using polythene and tray staking

Companies selling coco peat in Kenya are Cocogrow, Kenyards, cocopeat coir pith, Grekkon Ltd, Amiran, Cocoponics Kenya and Agrodealers.





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