



Tomatoes growing on soilless media, COURTESY PHOTO

Even with the healthiest soils, it is still possible to find pests and other pathogens that attack crops and likely to lower your crop yields.

Soilless growing media have been proven to be sterile and free from pathogens that are soil-borne and applicable for urban farmers who grow plants on rooftops and containers.

In urban horticulture, almost all containerised plants are grown without any soil (hydroponics).

Soilless media, as the name suggests does not include soil; plants are grown in different organic materials. Soilless media are getting more popular.

According to Winfred Opio, an agronomist at Naro, for a good growing media, it is necessary that the plant gets a healthy balance of water and air.

The soil sometimes has harmful bacteria and fungi so the crops are prone to pests, weeds and soil-borne diseases.

How to make a soilless media

Depending on the choice of crops you can prepare your own mix. A sterile soilless mix is made from organic components such as chicken waste (a combination of chicken droppings and coffee husks or sawdust after cleaning chicken houses) and organic household refuse that can easily decompose.

"You may add a small amount of fertiliser since the soilless mix does not have much fertility by itself. You may need to provide fertiliser from outside. The mixture is first left for in a place to decompose like you would make compost manure for about two to three weeks," she says.

Decomposing this will help

Using soilless media to grow vegetables

With the rising human population causing reducing farming land due to human settlement, farmers who practice soilless culture in their limited space have equal and sometimes better, growth and yield results compared to those with big space of field soil, writes Beatrice Nakibuuka.



CLIMATE

"With the soilless media, you will be able to beat the problem of climate change including - temperature, humidity, light intensification, the composition of the air because you can control the amount of water your plants require and can equally provide for them sufficiently. This will enable you grow crops throughout the year even during dry spells and will maximise your profits," says Winfred Opio an agronomist.

reduce the heat in the medium and break down the amount of urea in it because if used the way they are got from the chicken house, they are likely to burn up the plants.

Before planting, ensure that you lightly moisten the mix before filling the containers where you will plant the vegetables.

Do not pack the mix too tightly when planting and ensure that your media has enough water and moisture.

Water is transported through the growing medium into the roots and plant xylem towards the plant canopy where it eventually transpires into the atmosphere.

The continuous uptake of water is essential for the growth and survival of plants.

"This medium will surely provide a place for root structure to develop, give hydroponically-delivered nutrients maximum for root exposure, allow plenty of air space for healthy root structure and accelerate the growth of nutrient-absorbing root hairs for the vegetables," says Opio.

Less labour needed

The soilless media gives you better control over irrigation and fertilisation. This is because the uptake of water and nutrients is controlled which will reduce the

frequency which you will have to water your crops had they been planted in the soil.

Also you save yourself the burden of applying fertilisers in your garden and the burden that comes with mixing them.

"Weeds are time consuming and irritating but only present if you planted in soil. With the soilless media, you will not have to bother with weeds. Like weeds, getting rid of soils makes your plants less vulnerable to pests and diseases. The pests are very easy to control because most of these are usually soil-borne. This will reduce the amount of

time and labour you would use to spray the plants with pesticides," she remarks.

Small space needed

The soilless media is advantageous in a way that a farmer is able to achieve high yields in a limited area by applying a quality growing media. The same media can be used for about three consecutive seasons without break which may not be the case with soil-based plants.

"Because all that plants need are provided and maintained in a system, you can grow vegetables in your space. The roots of plants in the soilless media will not expand or spread out too much because the nutrients they would look for are readily available. This will enable you to grow your plants much close consequently making huge savings on space," she remarks.

Faster growth rate

Since plants are placed in ideal conditions and provided with sufficient conditions of growth, the plants in soilless media grow faster because they do no waste energy searching for diluted nutrients in the soil. Instead, they shift all of their focus on growing and producing fruits.

"You can harvest about 10 tonnes of tomatoes from the backyard soilless garden," explains Opio.

Climate control

Opio says, "With the soilless media, you will be able to beat the problem of climate change including - temperature, humidity, light intensification, the composition of the air because you can control the amount of water your plants require and can equally provide for them sufficiently. This will enable you grow crops throughout the year even during dry spells and will maximise your profits."

Need for expertise

The procedure for making the media may not be simple and one may need prior knowledge and expertise especially in the composting process as under or over composting may affect the plants. Therefore, if a farmer wants to have the best results, they need to consult an expert for advice.

Frequent replacements

Soilless media has a productive lifespan of about one to two years, before the nutrients are exhausted and it needs to be replaced. Replacing may be hard especially if you do not have a permanent source of material to mix for the media. "Also, the farmer should be mindful about where they get their seeds from. This is because with the soilless media, if the seeds are diseased, it is very easy for the whole garden to get infected," she remarks.

Choosing the best soilless media for your garden

For a good growing media, it is necessary that the plant gets a healthy balance of water and air. Soilless media are getting more and more popular particularly among container gardeners these days. Some of the most commonly used alternative media are:

Peat Moss:

Peat moss or sphagnum peat mosses are the ancient, partially decomposed remains of plants. They can hold quite a large volume of moisture. They promote good aeration and contains no weed seeds or disease organisms.

Peat Mosses are light weight and sterile and ideal for germination of seeds. Peat moss is most commonly used with other media like coarse sand to make a light, friable potting mixture. One of the most common places you will see this in use is in growing orchids.

Perlite

Perlite is basically expanded volcanic rocks. It is a manufactured ingredient. First, these rocks are crushed and then heated till they explode. After they become like popcorn. Now they can be used in growing plants.

Vermiculite

Vermiculite can be used as a substitute of perlite. Like perlite, it also does not hold water. It can keep nutrients and help a mix resist changes in pH (a measure of the alkalinity or acidity of a medium). Vermiculite is also less aerating than perlite, but there is a risk of it being infested with asbestos.

Coarse sand

The coarse sand that is used in gardening is also called builders sand. The grains are coarse in nature and provides good drainage. Do not use play sand. It has very fine grains and will cause troubles.

There are also sand-loving trees and grasses to consider. If you are thinking of growing plants in sand, succulents like cacti can be a very good choice.

Coconut coir

Nowadays, this medium is getting more and more popular. Coco coir is the extracts from the coconut husk. It has the same properties as peat moss but with much less mess. Coco peat was earlier disposed as a waste product. But recently, it has gained high demand. It is now considered as a user-friendly growing medium.

— Gardening ARG