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### How to Grow Sweet Potatoes with the Bio-fertilizers

#### 1. Compost and Soil Preparation

- If you prefer you could make a lot of compost mixed with Bio-Plant and spread it over the planting rows. You will need about 2 months to make the compost and a minimum of 5 MT per hectare (2.5 MT per acre).
- See the file called [How to Make Rich Compost with Bio-Plant – Handouts](#) for how to make rich compost with Bio-Plant. [Click here](#) for the file.
- Soil preparation with a lot of compost made with Bio-Plant will be invaluable in increasing growth. Add compost to the planting holes and spread it generously around each tree after planting. Add more compost around each tree monthly.
- If you cannot make any compost, read the file *How to Prepare the Soil with and Without Compost*. [Click here](#).
- The field is ploughed and harrowed. Plant the sweet potato slips on ridges. The growing of sweet potato on the flat seed bed is not recommended because the resulting yields are usually low.
- Crop residues and other organic matter can be placed in between the ridges or mounds to facilitate moisture conservation and reduce soil erosion, and it can become additional source of nutrients when decomposed. It also suppresses weeds.
- If the soil is not prepared with compost, add it along the ridges where the slips are planted.



#### 2. Producing “Slips” from Tubers

- Sweet potatoes are usually grown from slips.
- Start by planting healthy sweet potatoes in the ground (medium-sized – large) in potting mix soil prepared with Bio-Plant. You can cut the sweet potatoes in half, but you will get fewer slips growing off the sweet potatoes. Make sure that the soil is mixed with compost.
- Keep them watered and they will start producing suckers which can be used as “slips” within a week. Twist them off gently when they are 6-8 inches long and have roots. Cut off the bottom half an inch, even if there are roots there, so that any disease in the original sweet potato does not get transferred to the slip.



- Put the slips in large clumps in buckets of water mixed with Bio-Plant (20 cc in 20 litres of water) so that roots can grow. White roots will start to form within a week. When the roots are about 3 inches long they can be transplanted into soil. Remove all of the leaves except two at the top, and plant them directly into the soil composted with Bio-Plant with the top leaves just above the soil surface. Water them every day until they become established. Spray Pro-Plant every 14 days (20 cc mixed with 20 litres of water).
- If you are planting the slips in a field, dig a long trench down the field. Lay compost along the trench, place the slips on the edge of the trench with their roots touching the compost, and cover them with soil.

### 3. Choosing Slips

- Select clean, healthy (free from virus and pests) vines 25-30 cms. long from the growing sweet potato plant. Longer slips result in wastage of planting material while shorter ones establish more slowly and give poorer yields.
- Pieces from the stem apex are preferred to those from the middle and basal portions of the stem although, where planting material is in short supply, middle and basal slip cuttings may be used with little reduction in expected yields.
- Lay each slip on the ridge of soil and use a stick with a V-shaped gap at the end and push down the middle of the slip so that it folds down in two into the soil.

### 4. Spacing

- Space plants about 12-18 inches apart with 3-4 feet between rows. The vines will spread and fill in the space, so give them plenty of room.

### 5. Applying Pro-Plant

- Spray the leaves of the sweet potatoes. Spray before 9 a.m. when the pores are open most for better results. Please spray Pro-Plant using spraying equipment that gives a fine, misty spray, and that the spray is directed diagonally upwards as well as downwards so that it hits the pores of the leaves underneath as well as lands on the leaves. Be generous when you spray a tree. You do not have to spray every leaf. Spray 20 cc of Pro-Plant in 20 litres of water.
- For a hectare, mix 500 cc of Pro-Plant with 500 litres of water.
- Sweet Potatoes (100-125 days): Spray on Days 20, 30, 40, 50, 60, 70, 80, 90 until 10 days before you harvest. Alternatively spray every 10 to 15 days, but spray every 10 days once the flowers appear.
- If there is disease, mix 5 cc - 10 cc of Bio-Plant with 20 cc of Pro-Plant per 20 litres of water. 10 cc is in the case of serious disease. Cut off the affected leaves before spraying.
- If the farmer wishes to spray pesticides, spray them at least 3 days before or after spraying either bio-fertilizer. We encourage farmers not to use chemical sprays, though.

### 6. For Extra Yield Apply Additional Bio-Plant

- Because sweet potatoes beans grow for up to 4 months, additional micro-organisms should be added to the soil around the plants every 30 days, especially on Day 30 and Day 60. Compost made with Bio-Plant would be very effective way to do this. Provide several kgs. per plant.
- If the farmer does not have any compost, he could apply Bio-Plant by spraying it mixed with water at the base of the plants. Do not spray Bio-Plant on the leaves as this will cause them to turn yellow.
  - Acre: Spray 250 cc of Bio-Plant mixed with 250 litres of water. You could spray 500 cc in 500 litres of water in order to provide more micro-organisms.

- Hectare: Spray 500 cc of Bio-Plant mixed with 500 litres of water, or 1 litre of Bio-Plant mixed with 1,000 litres of water.

## 7. Maintenance

- Sweet potatoes can be slow starters and they do not like to compete with weeds. So, mulch thickly between the plants (ideally use bio-compost made with Bio-Plant) and even between the rows to initially keep the weeds down. Once the sweet potatoes grow they will choke all weeds down themselves. Keep the area clear until the top growth fills in and acts as a natural mulch. Weeds are a problem in sweet potato only during the first two months of growth.



*Straw mulch around a young sweet potato.*

- After this period, vigorous growth of the vines causes rapid and effective cover-age of the ground surface and smothers the weeds present. 2 hand-weedings after planting are recommended. First weeding is done within 2 weeks after planting and the second weeding two weeks after the first one when earthing-up is being done.
- Sweet potatoes can tolerate periods of drought, but regular watering is the best way to prevent splitting. Tip: Do not water your sweet potatoes during the final 3-4 weeks prior to harvest, to keep the mature tubers from splitting.

## 8. Mulching

- It is important to mulch the soil between the sweet potatoes so as to suppress the growth of weeds.



*Mulched sweet potatoes.*

### 7.1 **What is Mulching?**

- Mulching is one of the most important ways to maintain healthy landscape plants and trees. A mulch is any material applied to the soil surface for protection or improvement of the area covered. Mulching is really Nature's idea. Nature produces large quantities of mulch all the time with fallen leaves, needles, twigs, pieces of bark, spent flower blossoms, fallen fruit and other organic material.

### 7.2 **Benefits of Mulching**

- When applied correctly, mulching has the following beneficial effects on plants and soil:
  - Mulches prevent loss of water from the soil by evaporation.
  - Mulches reduce the growth of weeds, when the mulch material itself is weed-free and applied deeply enough to prevent weed germination or to smother existing weeds.



- Mulches keep the soil cooler in the summer and warmer in the winter, thus maintaining a more even soil temperature.
- Mulches prevent soil splashing, which not only stops erosion but keeps soil-borne diseases from splashing up onto the plants.
- Organic mulches can improve the soil structure. As the mulch decays, the material becomes topsoil. Decaying mulch also adds nutrients to the soil.
- Mulches prevent crusting of the soil surface, thus improving the absorption and movement of water into the soil.
- Mulches prevent the trunks of trees and shrubs from damage by lawn equipment.
- Mulches help prevent soil compaction.
- Mulches can add to the beauty of the landscape by providing a cover of uniform colour and interesting texture to the surface.
- Mulched plants have more roots than plants that are not mulched, because mulched plants will produce additional roots in the mulch that surrounds them.

### **7.3 How to Apply Mulch**

- Before applying any type of mulch to an area, it is best to weed the area. Spread a layer of mulching materials generously around the plants. Keep mulch 2 to 3 inches away from the stems of the plants. This will prevent decay caused by wet mulch.

### **7.4 How Deep to Mulch**

- The amount of mulch to apply depends on the texture and density of the mulch material. Many wood and bark mulches are composed of fine particles and should not be more than 2 to 3 inches deep. Excessive amounts of these fine-textured mulches can suffocate plant roots, resulting in yellowing of the leaves and poor growth.
- Coarse-textured mulches, such as straw, allow good air movement through them and can be as deep as 4 inches. A depth of 4 inches will stop weeds growing.
- Mulches composed of shredded leaves should never be deeper than 2 inches because they tend to mat together when wet, thereby restricting the water and air supply to the plant roots.