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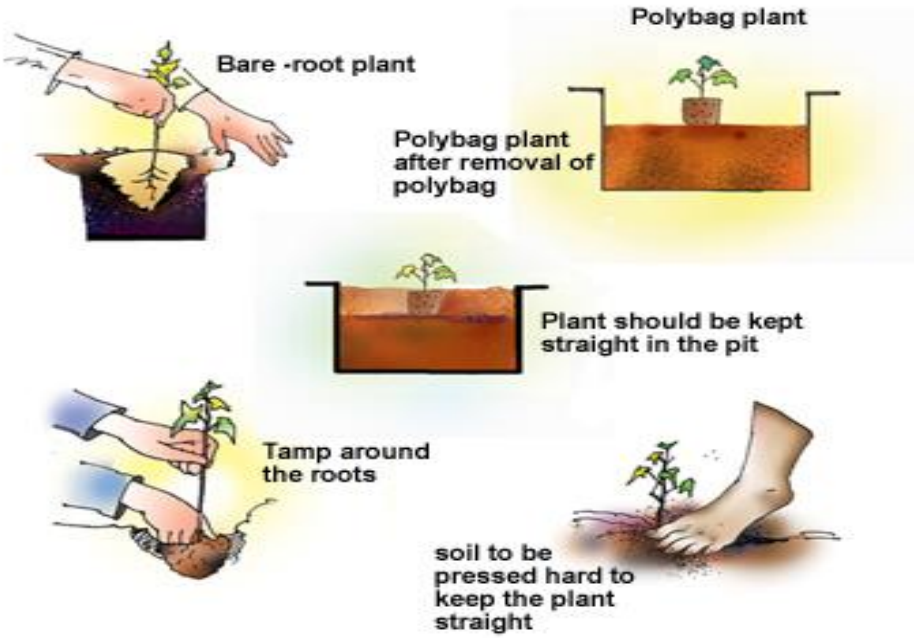
How to Grow Bananas with Bio-Plant and Pro-Plant

1. Compost and Soil Preparation

- See the file at ***Section 3.2*** called ***How to Make Rich Compost with Bio-Plant – Handouts***. **Click here** for how to make rich compost with Bio-Plant. Scroll down to ***Section 3.2.*** 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 do not make compost, refer to the file at ***Section 3.7*** called: ***How to Prepare the Soil with and Without Compost***. Scroll down to ***Section 3.7.*** **Click here**.
- Make sure that the compost is made with lots of green and dry banana leaves so that the banana trees receive a lot of Potassium as they grow. Add some wood ash for extra Nitrogen, if you can.

2. Planting Banana Suckers

- Cut away a sucker from the base of a mother banana tree.
- Soak the sucker overnight in water, which contains 20 cc of Bio-Plant and 20 cc of Pro-Plant in 20 litres of water. This can be scaled down to 10 cc in 10 litres.
- Once a month place 5-10 kgs. around trees which are already growing - a minimum of 5 kgs. per tree, if the trees are under 1 metre high, and about 10 kgs. around trees over 1 metre in height. But 10 kgs. can be applied to trees under 1 meter in height as well. Place 15 kgs., if the soil is very poor or there is a problem with disease.
- If you have not made any bio-compost, place organic matter around the base of the tree instead and spray the organic matter with water that contains 20 cc of Bio-Plant per 20 litres of water. Repeat this every month as desired to keep topping up the micro-organisms. If there is disease around, repeat this once a month. Spray about 2 litres on the organic matter and 1 metre around each tree in order to increase the amount of micro-organisms. You will need one litre per hectare. The Bio-Plant provides extra nutrients by dissolving the leaves.
- When planting banana suckers in holes, put bio-compost made with Bio-Plant into the holes where the young banana suckers are planted. When planting a tree, make the hole about 60 cms.. x 60 cms.. x 60 cms.., and put into the hole about 10 kgs. of compost.



3. Mulch the Trees

- Mulch the soil around and between the banana trees to control weeds. You can chop up banana tree trunks and leaves and use them as mulch. Dry coconut fronds, chopped up maize stalks or rice straw, leaves, and other similar materials may also be used as mulch.
- Mulch should be made thick (about 10 cms.) so that it will not rot completely within four or five months. Further to protecting the soil from excessive loose of moisture, mulching tends to add some nutrients to the soil from the decaying materials used.

4. Applying Additional Bio-Plant During the Growth

- It is a good idea to add more organic matter mixed with Bio-Plant every month during the crop. Once a month place 5 - 10 kgs. of bio-compost around the trees (a minimum of 5 kgs. if the trees are under 1 metre and about 10 kgs. around trees over 1 metre, but 10 kgs. can be applied to trees under 1 meter as well).
- If you have not made any bio-compost, place organic matter around the base of the tree instead and spray the organic matter with water that contains 20 cc of Bio-Plant per 20 litres of water. Repeat this every month as desired to keep topping up the micro-organisms. If there is disease around, repeat this once a month. Spray about 2 litres on the organic matter around each tree in order to increase the amount of micro-organisms. You will need one litre per hectare.
- When the purple flower just starts to appear after about 6 months, add more bio-compost each month or spray the organic matter you are placing around the base of the tree (or soil if there is no organic matter around the tree) with 20 cc of Bio-Plant mixed with 20 litres of water. For a hectare, mix 500 cc of Bio-Plant with 500 litres of water and spray all of the trees at their base once every 2 weeks once the flowers have appeared.

5. Applying Pro-Plant

- Spray the leaves of the trees. 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.
- Spray the leaves every 14 days until the flowering stage once the leaves have appeared. When the purple flower appears, spray the leaves and purple section every 7-10 days. When the bananas appear, spray them every 7-10 days. Continue spraying until 7 days before the fruit are harvested.
- 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.
- 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.

6. Mulching

- It is important to mulch the soil around the banana trees or to grow a legume crop there so as to suppress the growth of weeds.

6.1 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.

6.2 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.

6.3 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 trees. Keep mulch 2 to 3 inches away from the stems of the trees. This will prevent decay caused by wet mulch.

6.4 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.