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How to Prepare Seeds with Bio-Plant

1. How to Germinate Vegetable Seeds

1.1 Method 1 – The Common Approach for Seeds

- If you are soaking a lot of seeds, put the seeds in a container with water. Soak them for up to 24 hours in warm water mixed with Bio-Plant. For small seeds, such as flower seeds, 12 hours or overnight is enough. The container of water only needs to cover the seeds by 2 inches. Place a cloth over the top to increase the warmth during the soaking. Keep the seeds in a warm place out of direct sunlight. Soaking them will speed up germination in the soil.
- Soak the seeds in water that contains 20 cc of Bio-Plant per 20 litres. (The ratio is 10 cc per 10 litres of water.) If the amount of seeds is small, reduce the water to just a few litres. It does not have to be exactly 20 cc of Bio-Plant and more than this is fine, so do not worry.
- After soaking, plant the seeds as soon as possible in a seed potting soil tray where there is potting soil in each small section of the tray. Usually you would place one seed per small hole or two seeds if the hole is large, but you can easily space 20 seeds in the same 1.5 – 2-inch hole. Cover them over with more soil and water them.



Seed Planting Tray
with Sections.

- If you do not have a tray with holes for the individual seeds, place them in a flat tray. Put some newspaper on the bottom and cover the newspaper with potting soil. Use a stick and create a small ditch about 0.5 cms. deep from one side of the tray to the other. Place the seeds in the ditch and then cover them over with a little soil.



Flat Tray with Ditches

- It is beneficial to spray the potting soil before use with water mixed with Bio-Plant (at a ratio of 20 cc of Bio-Plant in 20 litres of water).
- Cover the soil with wet paper or a wet cloth. Leave them for about 5 days until the seedling has penetrated the surface, grown 2-3 inches, and formed some good roots, and will soon be too large for its growing space. Then plant each sprouted seedling in an individual pot or black plastic planting bag.
- Once your seedlings have several leaves you will need to move them to a larger pot to give them more room to grow, especially if you placed many in the same potting hole section. Let the plant grow for about 22-25 days and become sturdy and leafy before transplanting it into composted furrows in a field.

1.2 The Baggy Method

- Another effective way to germinate small seeds is to use the “Baggy Method”. It is more suitable for planting seeds in gardens rather than fields because you will need many bags for field crops.
 - a) Wet a paper towel so it is just damp, not wet.
 - b) Place your seeds on 1/4 of the paper towel, then fold the paper in half, then in half again. Your seeds should have one layer of filter on one side, three layers on the other.
 - c) Place the folded paper into the zip lock plastic bag and then seal it, leaving it just slightly puffed, not completely flat.
 - d) Place it in warm place to germinate and wait.
 - e) Check the bag every few days, and remoisten as needed. Do not leave the bag for over a week without opening it for some fresh air.



1.3 How to Prepare Rice Seeds

- **Sort the Seeds:** Separate good and bad seeds using the egg floatation technique, as follows:
 - **Step 1:** Fill a container with water, large enough for all your rice seeds.
 - **Step 2:** Place a fresh egg in the water. It will sink to the bottom.
 - **Step 3:** Mix salt with the water until the egg floats.



- **Step 4:** Take out the egg and put in the rice seeds. Swirl the seeds around in the water for a few minutes. The good seeds will sink to the bottom and stay there. The poor seeds will rise to the surface. Scoop them out. Feed them to the chickens.



- **Step 5:** Wash the salt off the good seeds by rinsing them in water 3 times, and then soak these seeds in another container of water for 24 hours.

- **Soak the washed seeds for 24 Hours:** Put the seeds in a plastic bag (with small holes punctured in it), or in a sock, a cloth, or sack and tie up the ends so that the seeds cannot escape. Water should be able to enter through holes. Soak them for 24 hours in water that contains 20 cc of Bio-Plant per 20 litres. (The ratio is 10 cc per 10 litres of water.) If the amount of seeds is small, reduce the water to just a few litres. *The amount of Bio-Plant can be increased to between 20 cc and 100 cc for a better effect.* Do not soak them for longer than 24 hours or they might rot. The container of water only needs to cover the seeds 2-3 inches. Place a cloth over the top to increase the warmth during the soaking.
- Put the sack (or whatever you soaked the seeds in) on the ground for 1-2 days. Keep it out of the sun and in a warm shaded place. Keep the seeds warm. They will germinate. When they have germinated, plant them either in a nursery for about 3 weeks before planting them in a field, or if you prefer, plant the germinated seeds directly in a field.

1.4 How to Prepare Maize Seeds

- Soak the maize seeds in water that contains 20 cc of Bio-Plant per 20 litres for 12 hours before planting. The ratio is 10 cc of each bio-fertilizer per 10 litres of water. If the amount of seeds is small, then reduce the water to just a few litres.
- As you plant the seeds, dip them in Bio-Plant (100 cc of Bio-Plant per 1 kgs. of the seeds), and then plant them. You should certainly do this, if you do not soak the seeds.
- Plant the seeds very soon after soaking them as they will start to germinate.

1.5 How to Prepare Citrus Fruit Seeds

- Select seeds from healthy mother trees.
- Soak the citrus fruit seeds in water that contains 20 cc of Bio-Plant per 20 litres for 24 hours. The ratio is 10 cc of each bio-fertilizer per 10 litres of water. If the amount of seeds is small, then reduce the water to just a few litres.
- Sow the seeds in seedbeds or polybags (18 x 23 cm). Water the seeds twice a day. The seeds will germinate in 2 to 3 weeks

1.6 How to Prepare Cocoa Beans

- Collect beans only from ripe and healthy pods. Select beans that are uniform in size. Discard beans that are swollen and of a different shape.
- Select bigger beans since the possibility is high that they will produce vigorous and fast growing seedlings. Lastly, choose the beans from the central area of the pod.
- Soak the cocoa beans in water that contains 20 cc of Bio-Plant per 20 litres for up to 24 hours before planting. The ratio is 10 cc of each bio-fertilizer per 10 litres of water. If the amount of

seeds is small, then reduce the water to just a few litres. This softens the seed coat for easy germination and fills the seeds with necessary microbial protection and nutrients. It also increases the seeds' survival rate.

- They should then be kept in wet sacks in a warm place in the shade to germinate over about 6 days. Or spread the seeds on wet sacks and cover with wet newspaper. Keep the sacks moist but well-ventilated to avoid the formation of fungi. Leave them until they germinate.

1.6 How to Prepare Small Seeds

Step 1

- Sprinkle small seeds across a paper towel (or cloth) and thoroughly soak the seeds and surrounding material with water mixed with Bio-Plant (at the ratio of 20 cc in 20 litres of water).

Step 2

- Wet a second piece of paper and place it over the first, covering the seeds.

Step 3

- Leave the seeds soaking for up to 24 hours, checking regularly to see when they begin to swell. Add more water mixed with Bio-Plant (and Pro-Plant, if you wish) to the seeds, if the towel or cloth dries out.
- Once the seeds appear to be approximately double in size and germinating, remove them from the towels or cloth and plant them in potting soil.

1.7 How to Prepare Hard-Shelled Seeds

Step 1

- Large seeds or seeds with particularly hard coats can benefit from scarification before soaking. Scarification means to damage the seed coat in some way so that the water is better able to penetrate the seed. Scarification can be done through several methods. These include rubbing the seed on fine grain sand paper; shaking them in a tin lined with sandpaper; using a nail file; nicking the seed coat with a knife or nail clippers; or gently tapping the seed with a hammer to help crack the seed coat.
- If a seed is big and you cannot dent it with a fingernail, use a knife. A small, sharp, pocketknife blade or a rat-tail file is ideal. Do not go at it too zealously. You need to remove only a very small slice or section of the seed coat. You can also line a jar with a sheet of sandpaper cut to fit, screw on the lid, and shake the jar like a maraca until the seed coats are abraded. Scarify seeds just before planting. Seeds nicked too long before planting may dry out and be worthless when they finally reach the soil.
- Scratching the surface of seeds that have hard casings cuts through the layers of the tough outer coating and allows water to penetrate the seed and end the seeds' dormant phase. This only needs to be done at one location on the seed.

A. Mango Seeds

- Dry the seed for 2 days or more in a cool location away from direct sunlight. Cut the husk at the stalk end of the mango to create a small slit. Open the seed with a sharp knife, as you would shuck an oyster, being careful not to cut too deeply and damage the enclosed seed. Pry the shell of the seed open and remove the seed, which resembles a large lima bean.



Step 2

- Place the seeds into a bowl of water mixed with Bio-Plant (and Pro-Plant, if you wish) for about 24 hours prior to planting in potting soil.
- If you are planting several mango seeds, plant them next to each other, about a centimetre apart. The seeds are kidney-shaped. Plant the seed on its edge with the concave edge facing downwards.



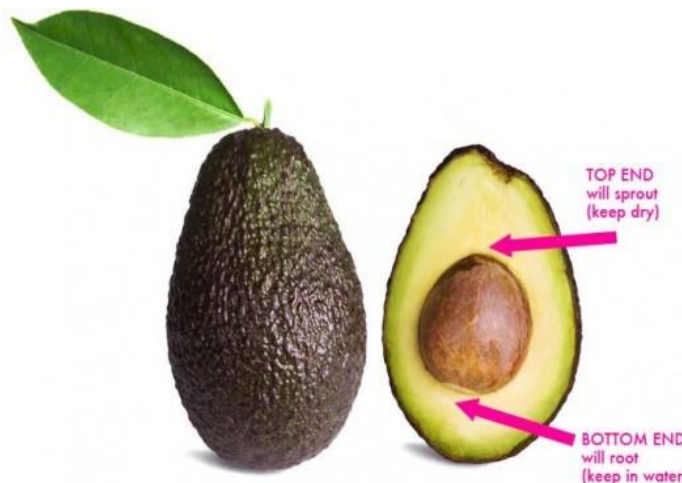
B. Avocado Seeds ("Pit")

1. Remove the Pit

- Carefully remove the pit (aka the seed) and rinse off all of the avocado bits that are stuck to it. You can soak it in water for a few minutes for easier cleaning. Make sure not to damage or remove the brown skin that surrounds the pit.

2. Identify the Ends

- Avocado seeds can range in shape and size slightly, but generally they resemble an oval-shaped sphere. They have a flat "bottom", which is the area that the roots grow from, and rounder, slightly pointier, top, which is where the plant grows from. It is important to keep this in mind when you "plant" the avocado.



3. Soak the Seed

- Pierce the seed with three to four toothpicks along the side of the avocado near the bottom. Then place it on top of a glass or some other type of container so that it is suspended above the water with only the bottom of the seed being soaked.

4. Give It Time to Sprout

- You should see the top of the seed begin to sprout and split around three to six weeks after soaking it in water. You will also notice roots will have grown to the base of the container. Once the stem is around six inches long, trip the set of leaves that are at the top of the plant.

5. Trim the Sprout

- About two to three weeks after trimming the first set of leaves you should notice a new set of leaves and a lot more roots. Once the sprout reaches around seven inches in height, cut it in half. This will encourage more growth.
- Leave part of the top of the seed uncovered. If in a few days the seed is green, it means it is healthy and should grow well. If the seed is brown or black, it is probably rotting and can be removed and replaced with another seed. Once the seed has germinated and the growth is good, it is ready to be transplanted into a pot.

2. Benefits of Treating Seeds with Bio-Plant

- Microbial bio-fertilizer significantly increases seed germination success.
- Seed treatment significantly improves plant growth and seed yield. Bio-Plant increases the amount of total biomass, which improves the soil's fertility.

- Increased nutrient availability: Bio-Plant contains beneficial microorganisms that help fix nitrogen in the soil, making it available to plants. This can improve the overall nutrient availability of the soil, leading to healthier plant growth.
- Improved plant growth and health: Bio-Plant improves the overall health of plants by promoting root growth and enhancing the plant's ability to take up nutrients from the soil. This results in improved plant growth, increased yield, and better-quality produce.
- Bio-Plant also strengthens the plant's immune system.