Recommended Protocol for Establishing Rice in PSC Growing Medium

Supplies & Equipment

Germination Paper, 10" x 15" (25.5 cm x 38.2 cm), 38 lb, Anchor Paper, St. Paul, MN
¼" x 16" cylindrical wooden dowel, Home Depot
Oxidate, Broad spectrum fungicide and bactericide, BioSafe Systems, Glastonbury, CT
Distilled Water
Nutrient Solution (customized to experiment)
5 ml to 10 ml eye dropper
Light Intensity Meter (optional), Apogee Model QMSW
pH Tester, OakTon Instruments
Temperature Sensor, Maverick DT12

It has been our experience that the best way to grow rice in the Phenotype Screening Corporation ESP beads is to germinate the seeds prior to planting. We have had the best outcomes using the "Ragdoll" method. Our procedure is as follows.

Germination

1. We begin the germination process by rinsing the rice seeds with a 5% bleach solution for about one minute. Then, thoroughly rinse the seeds with clean water at least two times.

2. Fold a piece of germination paper in half and moisten the right side with 10 ml water.

3. Scatter a generous amount of rice seeds (approximately 40 - 50 seeds) on the wet side of the paper.

4. Fold the left side of the paper over the right side and moisten with 10 more ml water.

5. Carefully roll the paper – lengthwise – into a long tube shape (roll it into a loose roll).

6. Place the tube in a large size freezer bag, seal the bag and hang it in a warm, dark place.

6. Check for progress after about 4 days. We found that we had better results with the plants if the seeds were left in the germination paper for at least 7 days. This enabled us to obtain healthier and stronger seedling specimens.

Transplanting to Our Substrate

1. When you are ready to plant the seedlings, soak the beads in the containers with 250 ml water – focus on wetting the center area of the container. The beads will behave better when they are wet.

2. After wetting the beads, use a long cylindrical tool (we use a length of ¼" wood dowel) to GENTLY form a hole in the center of the beads. The depth of the hole should be able to accommodate the length of the root without forcing it into the beads. The objective is to cause as little harm as possible to the roots.

3. Choose the healthiest looking seedlings from the germination paper and place one plant in each hole formed above.

4. When we plant, we hold the top of the seedling and lower it into the hole. While continuing to hold the top of the seedling, we use the dowel to push surrounding beads into gentle contact with the roots. Then, we let go of the seedling.

Growing

For best growth results with our substrate material, we highly recommend that the plants be watered with a dripper system that is on a timer. If this isn't possible, the plants should be watered frequently with a **very gentle** stream of water. Too much water pressure will cause the beads to spill out of the containers in addition to causing damage to the plants.

1. Change water and nutrient solution every three days.

2. Add 2.4 ml of Oxidate at each changing

3. Assure that light levels and photoperiod match experiment requirements.

4. Check water level, water temperature and pH daily. Top-off water level and keep pH between 5.5 and 6.0. Water temperature should be consistent with experiment requirements.

5. Check plants daily for signs of pests and disease.

6. Plant lodging can be a concern if the plants are jostled or moved. Use PSC foam "supporters" and "container-extenders" as needed.

We are available to help you. Call Nancy West at 865-694-9459 with any questions or concerns you might have.