

NOAA Restoration Day

Setup Instructions for Growing Switchgrass (*Panicum*) Seeds

NOTE: keep the 3 baggies of seeds you get in a cold, safe place if you are not planting right away.

This project is fairly easy to set up and maintain, but it will require some planning on your part. Please ensure that you have all of the supplies outlined in Step 1 below. Also, read through all of the instructions before getting started, noting the time requirements outlined in Step 2 below.



1. LIST OF SUPPLIES FOR EACH *PANICUM* TANK SETUP

Each black tub should include:

- (1) Power strip with GFCI (Note: some power strips have a GFCI on the end of the cord, some have separate yellow GFCI)
- (2) Desk lamps with clamps
- (4) Light bulbs
- (2) Plastic flats to invert under the 3 plant trays (see below)
- (1) Large zip lock bag of starter soil mix with cup
- (1) Zip lock bag of play sand (3 cups in quart zip lock, with 8 oz cup for measuring)
- (1) Empty quart zip lock for mixing the wet seeds with sand
- (3) Zip lock bags *Panicum* seeds (**keep cold until planted**)
- (1) Switchgrass Tank foam educational sign
- (1) Switchgrass set-up instructions [this sheet]
- (1) NOAA Restoration Day event flyer
- (1) Switchgrass USDA Fact Sheet

****Contact:** Kate.Haber@noaa.gov if you are missing any supplies or if anything is broken.

At the end of the workshop, the tank leads will each take with them:

- Three (3) plant trays filled with starter mix to within 1/8" of top

Participants will need to supply:

- Sturdy table or lateral file cabinet (see below for more details)

2. TIME NEEDED FOR SYSTEM SETUP AND MAINTENANCE

- **50 minutes:** initial assembly of switchgrass growth chamber and planting of seeds
- **2-3 minutes daily:** check water level and growth
- **1 day:** attend June NOAA Restoration Day planting event at Piscataway Park

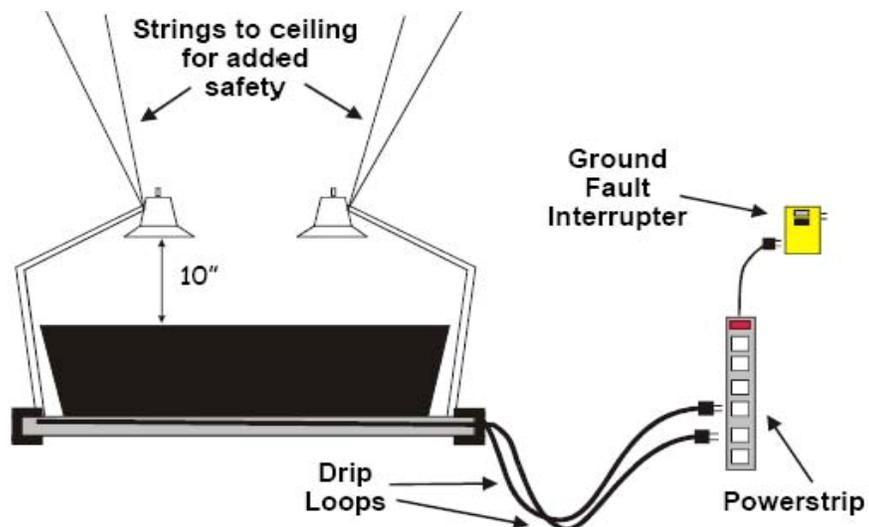
3. TIPS

- **You will not be able to move this tank once it has water in it, so choose your location carefully.**
- A good location would be on a sturdy table or lateral file cabinet **near an electrical outlet**. It is best to identify a location with high visibility to help increase education about the project and the importance of wetlands in the Bay.
- The system **SHOULD** be located near a window if possible, but not mandatory. It does need to be in a spot with a stable temperature (not too hot).
- Assemble the growth chamber and lights and add water before adding the seeds to the trays.

4. GROWTH CHAMBER SETUP

A. Place tub on a sturdy table or lateral file cabinet. A table with thin edges to which you can clamp the lights works best. If the edges are too thick, slide a piece of plywood under the tank to create a lip you can clamp the lights on to. If you need to buy a table, Office Depot sells one with folding legs (2' x 4') for about \$30. After the project is over, the table can be put to use as a printer or work table.

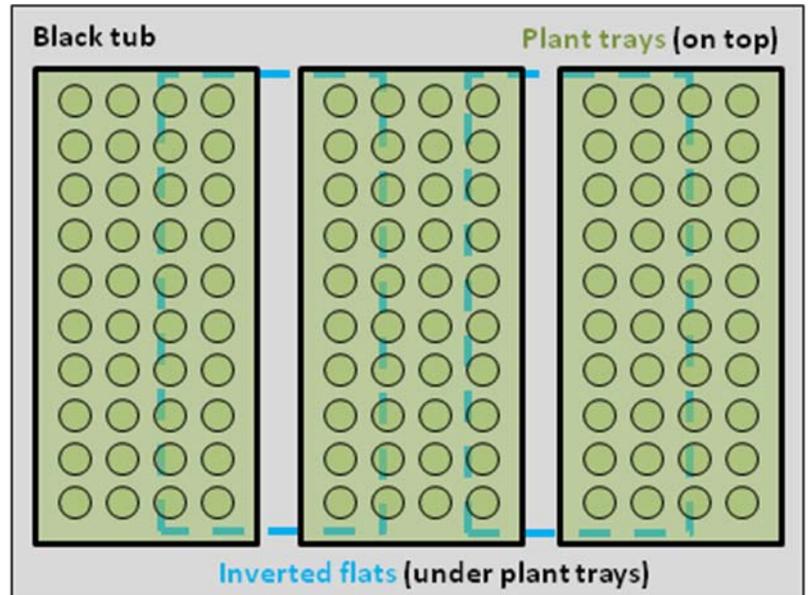
B. Assemble the lights and attach to the table so that the light source is about 10" above the top of the plant tray (see diagram below). They should be equidistant from each other, the tank edges, and the middle of the tank. For extra stability, an optional wood block may be used when attaching the lights to the side of the tub. Note: safety precautions must be followed when dealing with the lights. The lights must be plugged into the power strip with a Ground Fault Interrupter (GFCI)



attached. Do NOT use a different power strip since it will not include the GFCI. You may also attach string from the lights to the ceiling for added safety. The lights should be **kept on 24 hours a day** to promote plant growth. If you choose to use compact fluorescent light bulbs in place of incandescent bulbs to save energy, use only the “daylight” bulbs which have the colors of light that the plants need.

C. Add 2 inverted flats to the tub to hold up the 3 plant trays, as shown on right in blue.

D. Fill black tub with water to just cover the inverted flats. Regular tap water is fine. If the faucet in your sink is too low to get a bucket or pitcher under it, a 2.5 gallon collapsible water jug sold in camping stores works very well.



E. Test the lights. Please note:

anything plugged into the power strip should have a “drip loop” to prevent water from accidentally dripping into the power strip (see set-up diagram above).

F. Planting procedure:

- Mix each baggie of wet seeds with 1 cup of white sand in a quart size ziplock bag.
- The sand should be as dry as possible before you add the seeds. Shake this mixture in the Ziploc bag for 2 minutes.
- Sprinkle this sand/seed mixture over the soil evenly among the 50 cells per tray, trying to get at least 4 seeds per cell.
- Cover seeds with 1/8” more soil, NOT sand (to the top of each cell) from the extra soil you received in your kit.

G. Place the 3 plant trays on top of the 2 inverted flats. It will be a snug fit with little space around the plant trays; you will have to lift the corner of a tray to check water levels and add water. Bring the water level up to cover about 1” of the bottom of the plant trays. You will “bottom water” so you will NOT add water from the top.

H. Position the lights as close to the plant trays as possible without making them get hot; move them up as the plants



grow. Leave the lights on all the time.

NOTE: You should see some growth of the Panicum within 1-2 weeks; if you do not, contact Michele Miller or Kate Haber for some extra seeds. The photo at left below shows growth of the 2010 seeds after 2 weeks. Right: The switchgrass seeds used in 2011, before soaking.



5. MAINTENANCE

A few minutes each day is all you need to keep your grasses growing and healthy!

- A. Check water level and add water as needed - it is OK to ignore the plants for 1-2 days at a time without worries. This is a “facultative wetland” plant, which means it can also live in uplands and should NOT be kept wet all the time. The water level may drop about 1-2 inches per week, or about a gallon a day, but this could vary significantly by location. Be sure that tanks are filled to 1” above the bottom of the plant trays before leaving for long weekends. You may want to mark the side of the plant trays at that water level so that you know when to refill.
- B. *A note about fertilizer:* To prevent over-fertilization, please do **NOT** add any fertilizer on your own unless explicitly directed to. We will be assigning one person to monitor and apply fertilizer to all 22 set-ups. You will be informed when this happens.
- C. NOAA Restoration Day team members will monitor and photograph your grass growth throughout the 3 month growing period. Please feel free to direct questions to: Kate.Haber@noaa.gov or Michele.Miller@noaa.gov
- D. Check the Bay Grass Info section of <http://restorationday.noaa.gov/> for growing tips and more information.

6. PREPARING THE GRASSES FOR TRANSPORT TO PLANTING SITE

****IMPORTANT NOTE:** You and/or your tank team members are expected to transport all supplies and your grasses for planting to the NOAA Restoration Day event. **Please schedule accordingly.** (Notify Kate.Haber@noaa.gov ASAP if you have a conflict). If you are coming to the event from home, rather than from your office, it's OK to take the plants and equipment home the night before (the tub will fit in the back seat of most cars), as long as you have a yard where you can safely leave the plants overnight (not in your car).

You will need about **an hour** on the morning of the planting day to prepare your plants for transport.

- Disassemble and remember to pack all supplies. Bring the lights, inverted flats, and power strips.
- Lower the water level (you might want to use a siphon to a bucket) so that the tub with the 3 trays is light enough for 2 people to lift easily; **DO NOT** try to move a full tub! Always lift with your legs, not your back.
- The plants can be dry but should **NOT** be left in a hot car in the sun! If the shoots are too tall to fit in your car, simply bend them over carefully.
- Once you reach the planting site, follow the signs for the grass equipment. Remove the plants from your car right away and place them in the designated area. Return your supplies (tubs, inverted flats, power strips/GFCI's, lights, etc.).

QUESTIONS?

If you have any problems or questions about the system, please contact:

Peter.Bergstrom@noaa.gov or 410-267-5665 (office).

