



Establishing a Grow-out Station

Introduction:

To maximize the educational experience of *Growing Native*, establish a Grow-out Station—a nursery of native trees and/or shrubs—at your school. You can involve your students in creating such a nursery using seeds collected during their *Growing Native* seed collection. In this way, your students will experience the full cycle of *Growing Native*: seeds to trees to clean water.

Engaging students in the planning, establishment, and maintenance of a Grow-out Station can exponentially expand the educational opportunities of the *Growing Native* program. Once the plants in your nursery are large enough, organize a tree planting on your school grounds or in your community.

This Activity in the Education Guide describes the basics for establishing and maintaining a Grow-out Station.

The Basics

Why Establish a Grow-out Station?

A Grow-out Station can enrich your curriculum, while also addressing conservation needs in your local community. A Grow-out Station is a living laboratory for experimentation and learning that offers students a diversity of hands-on educational opportunities. Students can directly observe and understand the anatomy, biological functions, and life cycle of plants, and discover plant propagation techniques. Trees and shrubs propagated in Grow-out Stations are planted in the community to increase canopy cover, provide animal habitat, reduce soil erosion, and prevent runoff from entering nearby streams.

Establishing a Grow-out Station is a year-round commitment that requires time, maintenance, and (minimal) funds. To make your nursery as successful as possible, consider partnering with the Potomac Conservancy, another local conservation group, your State forest service, or your local park and planning office.

Technical Assistance

Each year, the Potomac Conservancy offers assistance to a select number of groups committed to establishing *Growing Native* Grow-out Stations. To be considered for technical assistance, you must complete a Grow-out Station Application (included in this Education Guide). Even if you do not receive assistance from the Potomac Conservancy, the guidelines below will assist you in establishing a Grow-out Station. It will be important to consult with your local nursery, garden supply store, or a local nonprofit to ensure the success of your project.

How Do I Do It?

Establishing and maintaining your Grow-out Station will involve seven steps:

1. Create an action plan
2. Choose a site
3. Secure supplies
4. Prepare soil medium
5. Plant seeds/seedlings
6. Maintain your nursery
7. Replant your seedlings

Details for each step:

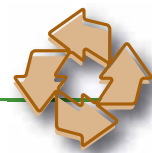
1. Create an Action Plan

Developing a comprehensive action plan before you establish a Grow-out Station will ensure the success of your project and that you maximize educational opportunities for your students. Refer to the formal Grow-out Station Action Plan (included in this Education Guide). By planning ahead, you can engage students in all aspects of the project—including how to construct the nursery, how many trees/shrubs to manage, and for how long to grow the trees/shrubs.

A Grow-out Station requires the cooperation of an entire school. For a successful project, it is important to have the support of your principal, school administration, maintenance staff, fellow teachers, students, and possibly the Parent Teacher Association or others.

2. Choose a Site

An important first step in implementing a Grow-out Station is to determine the right location. The most critical consideration for placement is that the site be near a water source that is accessible year-round. You must also consider size. The average Grow-out Station, which contains 100 three-gallon pots, requires approximately 140 square feet of space.



To ensure that plants receive adequate sunlight, locate the Grow-out Station so that it is facing south or in an area that is frequently sunny. Ensure that it is on level ground to avoid flooding. Consider what is above and around the site. Do not locate it directly under a drainage spout, in a very windy area, or in a place that could be hazardous to students or the young plants. To decrease chances of vandalism, locate the nursery away from heavily-trafficked areas. Consider mowed, open, and weed-free areas, which can discourage squirrels and rodents from digging up and eating seeds.

To better protect your Grow-out Station and offer aesthetic appeal, construct a border around it. Borders can be built using a variety of materials, including wood, large rocks, or bricks. Be sure to use construction materials that are sturdy and are not toxic to students or plants. You should build the border before you establish your nursery.

3. Secure Supplies

The list below offers a sampling of many of the supplies that you will need to establish and maintain your Grow-out Station. A good source for garden supplies is Growers Supply (www.GrowersSupply.com).

- Materials for border (e.g., wood, large rocks, and bricks)
- Soil medium
- Mulch
- Fertilizer (organic fertilizers that are safe for children)
- Garden tools (e.g., shovels, rakes, hand pruners, hoes, wagon or wheel barrel, and garden gloves)
- Pots of varying sizes
- Weed mats
- Materials for seed beds
- Watering system (e.g., sprinkler system, automatic watering timer, hoses, or watering cans)
- Shade fabric (particularly if planting shade-tolerant plants)
- Plant stakes and ties
- Plant tags (to identify each plant)

4. Prepare Soil Medium

The soil needs of your Grow-out Station will be determined by the location of your site, the species that you plant, and how you plant them (i.e. whether as seeds or bareroot seedlings). There are many options for soil medium. To ensure that your nursery is successful, talk with your local garden supply store to determine the best soils and fertilizers for your project.

Although it is much more time consuming and just as expensive as purchasing pre-mixed soil, you may choose to mix your own soil to offer additional educational opportunities for your students. For complete details about proper contents and ratios of soil mixes, consult your local nursery.

5. Plant Seeds/Seedlings

To begin your Grow-out Station, you will need either seeds or bareroot seedlings.

• Using Tree Seeds

If your students collect seeds during the *Growing Native* seed collection in the fall (refer to “*Growing Native Seed Collection*”), keep at least three times the seeds that you may need for the Grow-out Station in case some are not viable. (Deliver the remainder of seeds to a *Growing Native* drop-off location.) Before planting the seeds, check their viability. You can sample your seeds by cracking a few open to confirm that their embryos are not dried, black, or damaged in any way. If you have acorns, you can do a float test by placing a small sample of nuts in a container of water—if the majority of seeds sink, they are healthy; if they float, they may be unhealthy.

Plant up to three seeds per pot to help ensure that there is at least one successful plant in each. To prepare the seeds for planting, if they are nuts (e.g. acorns, walnuts, etc.), soak them in water the night before.

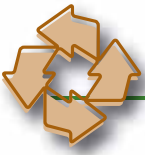
Thoroughly mix your soil medium. Place the seeds in the soil a few inches from the top of the pots, allowing space for mulch. The seeds should be planted in the soil at twice the depth of the seed diameter—for example, if planting acorns that are one-inch around, plant them two inches deep in the soil. When planting seeds with students, demonstrate how to plant the seeds and ask students to use a ruler to properly gauge the correct depth.

Gently water the seeds. If possible, cover them with screens to deter rodents. In the fall, cover the pots with mulch to protect the seeds from frost. Cover the tops of the pots with mulch, and also mound mulch around the pots. Water the plants occasionally throughout the winter months.

In the spring—after any threat of freezing has passed—remove the mulch from the pots to allow access to sunlight. Keep the screens on until the seeds begin to sprout. Water the plants frequently so that the seeds do not dry out. Soon, the seed embryos will begin to sprout into small plants. The seedlings are very fragile and will need extensive care. Refer to the “Maintain Your Nursery” section below to ensure that your seeds grow into healthy young plants.

• Using Bareroot Seedlings

If you do not have access to seeds, you can plant bareroot seedlings. It is important that the roots be kept moist and in a cool place before planting them; within a few minutes, the roots can dry out and the plant can die. Begin by filling a pot one-third full with the soil medium. Next, hold the seedling at the base of the stem and place it inside



the pot so that the base of the stem is a few inches from the top of the pot. Make sure that the roots are not bent and balled up, but are able to spread down and out. If they do bend, trim the fibrous roots to fit the pot, or use a larger pot. While holding the seedling in place, fill the pot with dirt. (It is easiest if two people help with this process.) Next, gently pat down the soil. Add additional soil until it is just above the base of the stem and a few inches from the top of the pot. Water generously.

6. Maintain Your Nursery

Long-term care is essential to maximizing the survival rate of your plants. This is especially important when plants are in pots because they are more exposed to the elements and can easily dry out. Long-term care must address many factors, including watering; mulching; fertilizing; weeding; controlling pests and disease; monitoring growth; and transplanting.

• Watering

Over- and under-watering are the most common mistakes that result in poor plant growth or plant death. Check pots at least once per week (at least twice per week during dry summer months) by touching the soil with your finger to determine if it is moist. A sprinkler hooked up to an automatic watering timer can be useful for weekend watering during hot and dry weather; in rainy, wet weather, watering is unnecessary.

If the soil is dry, water the pot; if the container has totally dried out, rewetting the soil many times may be necessary to ensure absorption of the water. Water only when necessary; the soil should not be so wet that if you were to squeeze it, a lot of excess water drips out.

• Weeding

Check the Grow-out Station every couple of weeks for weeds, removing them when necessary. Weeding is most important during rainy months.

• Fertilizing

Fertilize plants once to twice per year, making sure to follow the directions on the fertilizer package. Do not over-fertilize the plants; more fertilizer is not necessarily better and can endanger the water quality of nearby waterways. If possible, use organic fertilizers. For guidance on fertilizing, contact your local garden supply store.

• Mulching

Mulch helps hold moisture in the soil and keeps plants warm

throughout the winter. Apply new mulch at the beginning of the winter months, placing it on top of the pots and mounding it around pots. Make sure the mulch is free of weed seeds.

• Controlling Pests and Disease

On a regular basis, check all plants for evidence of pests or disease. If you see strange growths, discoloration, defoliation, or disfigurement, it may be due to disease or pests. To help identify the cause and solutions, contact an arborist, State cooperative extension service, or your local garden store.

• Monitoring Growth

To ensure that your plants are healthy, chart their growth. Assign each plant a number and on a quarterly basis, record its height and circumference. Plant monitoring offers many scientific, educational activities that can be conducted by students.

• Transplanting

Many plants grow quickly and will rapidly outgrow their pots and need to be transplanted. You should transplant when the roots grow through the drainage holes, and it may be necessary to transplant plants once or twice per year. It is important to transplant into appropriately-sized containers, and to frequently (at least four times per year) lift and rotate pots to help prevent plants from rooting into the ground.



7. Replant Your Seedlings

Within two to four years, your seedlings will be large enough to serve their role in contributing to new riparian forest buffers in the Potomac River watershed. It is essential that you plan your planting well in advance. You will need to identify a planting site, best done in partnership

with the Potomac Conservancy, another local conservation group, your State forest service, or your local park and planning office. Such a partner can be extremely helpful in identifying local stream restoration needs, and can also help ensure that the planting is a success well beyond planting day by providing guidance for maintaining your planting site.

More Information

With questions, or to learn more about establishing a Grow-out Station and the Potomac Conservancy's technical assistance program, contact the *Growing Native* project director at coordinator@growingnative.org.

Special thanks to Shawn Belt of the U.S. Department of Agriculture Natural Resources Conservation Service Nursery in Beltsville, Maryland, for contributing to this document.