

Leader's Guide to Tree Planting Projects

Why Plant Trees?

Tree planting is something positive a young person can do for the environment. It also makes good economic sense since trees provide jobs, add value to property, and protect and enhance the environment. In most cases planting trees is also an unselfish act since the benefits will mostly be enjoyed by future generations.

Arbor Day Committees

Tree planting requires careful preparation. If you are organizing a countywide effort for the first time, consider forming an Arbor Day Committee to help you distribute seedlings on a specific date of your choice. Although Arbor Day in Virginia is celebrated on the 2nd Friday in April, any date between mid-March and April 30 will work. Arbor Day Committees need to meet only once or twice to plan and evaluate- but all hands need to be present on the day that trees are to be distributed to schools and/or community groups.

Seeds vs. Seedlings vs. Trees

There are several ways to plant trees. One is to grow them from seeds, but most tree seeds have long dormant periods (up to six months) before germinating. Unless you know what you are doing, this is usually impractical. Likewise, large “balled in burlap” trees are expensive and are impractical for large-scale youth planting projects. **Our recommendation is to plant bare-root seedlings.** These trees are usually 1–2 years old and will be anywhere from 1– 3 ft. tall at planting time. They normally come packed in bundles of 25– 50. The Virginia Department of Forestry provides up to 100 free pine seedlings to 4-H members, and hardwood seedlings at low cost.

Ordering Pine Seedlings

Pine seedlings are grown at the Garland Gray Forestry Center in Southampton County. To receive free loblolly and white pine seedlings, distribute the 4-H Seedling Order Form to interested 4-H members and teachers and consolidate all the orders for your county. By Jan. 15, make one request to your county forester. Provide the date that you need seedlings. He/she will deliver seedlings to you on that date. Information about nurseries and a county directory of foresters can be found at:

<http://www.dof.virginia.gov/index.html>

Ordering Hardwood Seedlings

Hardwood seedlings are grown at the Augusta Forestry Center in Augusta County. These seedlings must be purchased on-line using the Department of Forestry web site, <http://www.dof.virginia.gov/index.html>, or you can request a seedling catalog from your county forester. Seedlings will be mailed to you via UPS within three days of your

requested date. Seedlings are sold by species (e.g. white oak, red oak) and large orders are sold at a reduced rate. Check with your Extension Agent before ordering hardwood trees- there may be a specially funded project in your area, such as riparian restoration, that qualifies for free seedlings.

American Chestnut Seedlings

The American chestnut was once dominant in western Virginia but was killed by a disease in the 1930's. Though still susceptible, there is an effort underway to restore the tree. A limited number of American chestnut seedlings are available to groups who will report survival on a yearly basis to scientists at Virginia Tech. Contact Jeff Kirwan, jkirwan@vt.edu, for more information.

What to do when your seedlings arrive

Seedlings will arrive in large boxes that contain multiple bundles of 25-50 seedlings. Ideally they will arrive at a location where you can immediately put them in cold storage (walk-in refrigerator) until the planting day. If not, store seedlings in an unheated basement or crawlspace. Do not let the roots freeze. Keep seedlings in the box and periodically inspect to make sure the roots are moist. Sprinkle with water if necessary. Do not expose seedlings to sunlight or wind.

Planting Day

Remove seedlings from the box and re-bundle as necessary. Do this in a cold or cool room. Wrap roots in a moist paper towel and place in a plastic bag. Take seedlings to the desired location or have them picked up, as arrangements dictate. Do not expose to sun or wind. If you are distributing individual seedlings to school groups, make sure you have a plastic bag for each student, and have informed the teacher that he/she will need to have students wrap individual seedlings in a moist paper towel and place in a plastic bag prior to going home. This is best done at the end of the school day. Attach planting instructions.

Other Good Ideas for School Groups

Provide brightly colored flagging tape so that students can attach a piece to their seedling. This will reduce the chance that it will be mowed. Ask your local newspaper to donate plastic bags. Write the name of the species on an address label and attach to the seedling. One month after planting, ask teachers to conduct a seedling survival survey, which can be done by taking a simple show of hands. Compare survival between groups and between years. Use this information to make and test hypotheses.

Suggested dates

October- contact Arbor Day committee, establish planting date

November/December- distribute seedling order forms

January- Order seedlings by Jan. 15

March 15 – April 30 Plant seedlings

May/June- conduct seedling survival survey

Tree Planting Projects and the Virginia Standards of Learning

Science

Scientific Reasoning (Science 4.1, 6.1, LS.1, ES.1, BIO.1)

Tree planting success is dependent on many factors (independent variables) such as the date planted and the amount of rainfall since planting. Conduct a survey one month after planting to see how many seedlings are still surviving. This data can be entered on the www.watershed.org database, and compared with other planting efforts around the state. Tables and graphs are presented for student interpretation, hypothesis testing and conclusions.

Life Processes (Science 4.4, LS.4, LS.11)

Seedlings need to be planted while they are still dormant. We do not want trees to grow before they are in the soil. That is why we keep them in cold storage until planting. Students can watch for the first signs that dormancy has broken in their newly planted seedlings. To properly plant a seedling, a student must recognize the where the stem, roots and leaves are positioned.

Resources (Science 4.8, 6.9, LS.12, ES.7, ES.9, BIO.9)

Trees are renewable, which means they can be replaced with proper management. Planting trees is one form of management. It speeds up the process of succession, and allows people to influence the type of species that dominate a future forest ecosystem. Trees and water also protect our water supply by filtering out pollutants and preventing flooding. Satellite photographs will illustrate how many municipal water supplies are often located in or near forested areas.

Math

Number and Number Sense (4.2, 5.1, 6.1, 6.4)

Have students report how many trees are surviving after one month and express the number as a fraction of the total planted. This is a measure of seedling survival, which is also expressed as a percentage. This information can be entered on the www.watershed.org database and compared with other planting efforts around the state.

Measurement (4.11, 5.11, 6.9, 7.1)

Seedling height is one way to determine how well a seedling is growing. Have students measure height at the end of a growing season to see which ones are the most vigorous.

Geometry (4.15, 4.16)

Seedlings are often planted in parallel rows with 10 ft. spacing. Have students draw a map of their planting area to determine the number of seedlings they need.

Probability and Statistics (4.19, 4.20, 5.17, 5.18, 5.19, 6.18, 6.19, 7.17)

Students can look at the results of past planting efforts by observing the data tables and graphs on www.watershedded.org. Use this information to predict the outcomes of this year's planting project.

Patterns, Functions and Algebra (5.21, 6.23, 7.22)

Have students set a goal for how many trees they want to grow, then use past survival data to determine how many they need to plant (allowing for some seedling mortality). The algebraic equation will be $x = yz$ where x = the number of seedlings they want to grow, y = expected survival rate, and z = the number needed to plant.

Virginia Studies- History

Virginia and Its First Inhabitants (VS 2)

American Indians used trees for many purposes. Hickory, oak and chestnut trees were valued for food. The word, "hickory" is actually an Algonquin word that we still use today. The bark of other trees, such as elm and yellow-poplar, were used for fiber and to cover lodges and longhouses. Pine and yellow-poplar were used for canoes.

Colonization and Conflict (VS.3)

Colonists had other uses for trees. In fact, Virginia was established in part to secure a supply of wood and resin needed for boat building. Live oak was prized for its wood and longleaf pine was prized for its resin (used to seal boats to prevent leakage). Both trees are found south of the James River in Tidewater Virginia. Sassafras was an important early export, before tobacco.

Civil War and Post-War Eras (VS.7)

The height of deforestation in Virginia probably occurred around the time of the Civil War. This coincided with land clearing for agriculture. In the post-war era much of this agricultural land was abandoned and came back as forest (forest succession). Today 63% of Virginia is forested, more than at the time of the Civil War.

Virginia 1900 to the Present

Virginia's forests and forest products represent the state's number one manufacturing employer, contributing over \$11.5 billion to the economy. Most of Virginia's paper industry is located on the coastal plain and piedmont, where the supply of yellow pine is the greatest. Yellow pine fibers provide strength to paper. Some of our finest hardwoods are grown in the Blue Ridge and Valley and Ridge Provinces, especially where soil

conditions are favorable for rapid growth. This is where our furniture and cabinet industries are located. Because we are close to port cities like Hampton Roads and Baltimore, we are a leading exporter of fine hardwoods.

Virginia's Natural Resources (Science 4.8)

Definition: A natural resource is something that comes from nature that is useful to man.

What are some types of natural resources?

1. Water
2. Animals and plants, both domestic and wild
3. Minerals, rocks and ores
4. Energy sources (wind, water and fossil fuels)
5. Forests, soils and land

Forests are a *Renewable* Natural Resource

Fossil fuels are non-renewable- once they are used up they are gone

Trees, water and sun are renewable- with proper management they can be used forever

Quick Facts about Virginia's Forests

1. Virginia is 63% forested.
2. Private landowners own 74% of this forestland.
3. Virginia forests contribute \$11.5 billion to the economy each year!
4. Virginia forests provide more manufacturing jobs than any other enterprise in Virginia.
5. The annual growth of Virginia trees exceeds harvest.
6. Trees produce oxygen when they are alive and growing, but they produce carbon dioxide when they die and decompose. Harvesting mature trees and substituting forest products for other materials is one way to keep our atmosphere healthy.

Forests, Soils and Land

Trees, like most plants, prefer soil that is deep, moist and has a mixture of sand, silt and clay. However, many of the very best soils in Virginia have been converted to agriculture or uses other than forestry. On the *coastal plain* you are most likely to see forests growing on land that is too wet (at least seasonally) for farming. On the *piedmont*, forests tend to grow on land that was formerly farmed but has badly eroded. In the *Blue Ridge, ridge and valley* and *Appalachian plateau* regions, forests occur on land that is too steep or too rocky to farm.

Forest Communities

Forest communities are places where certain types of plants and animals are found living together. They are usually named for the dominant trees.

Oak-Hickory forest- this is the most common forest community in Virginia, regardless of where you live- coastal plain, piedmont, ridge and valley or Appalachian plateau.

Pine and Oak-Pine Forests- are the second and third most common communities, and occur mostly on the coastal plain and piedmont.

Oak-Gum Forest- is the fourth most common community, and occurs mostly on the coastal plain.

Top 10 Virginia Trees

White oaks
Red oaks
Yellow pines (include loblolly)
Tulip tree (yellow-poplar)
Maples
Hickories
Sweetgum
White pine
Beech
Tupelo (black gum)

Important Virginia Forest Products

Softwood Lumber (for home construction)
Hardwood Lumber (for flooring and manufacturing)
Furniture and furniture parts
Cabinets and millwork
Oriented strand board (OSB)
Pallets
Posts and poles
Copy paper
Paperboard (baseball cards, food containers)
Newspaper
Cardboard boxes
Fragrances
Christmas trees
Clean air and water
Beautiful communities
Habitat for wildlife

For more information

4-H Natural Resources and Environmental Education

<http://www.ext.vt.edu/resources/4h/eenr.html>

Virginia Project Learning Tree (PLT)

<http://www.cnr.vt.edu/plt/>

Virginia's Soil and Water Conservation Districts and Programs

<http://www.dcr.virginia.gov/sw/>

Virginia Department of Forestry

<http://www.dof.virginia.gov/index.html>