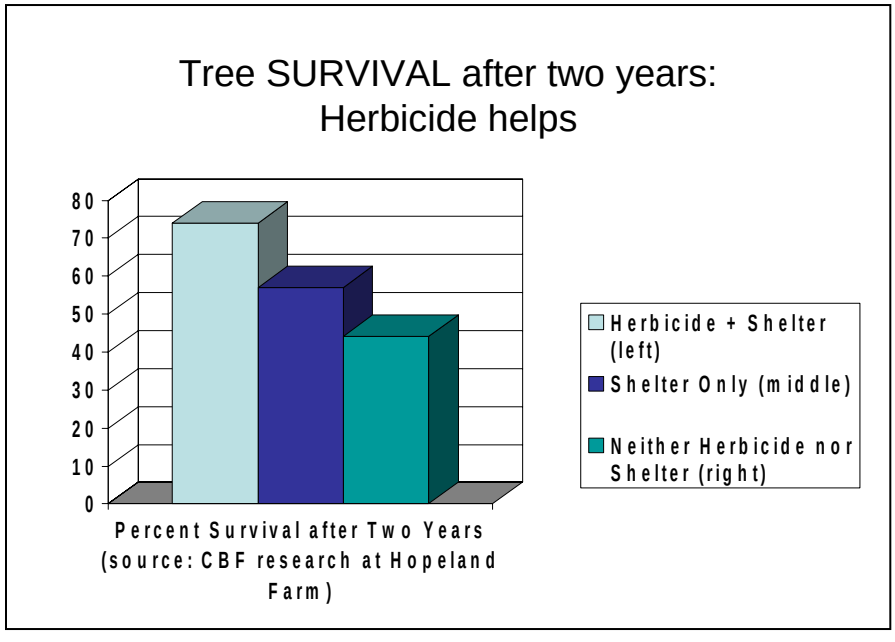
CREP Fact Sheet: Tips for a Successful Buffer Planting

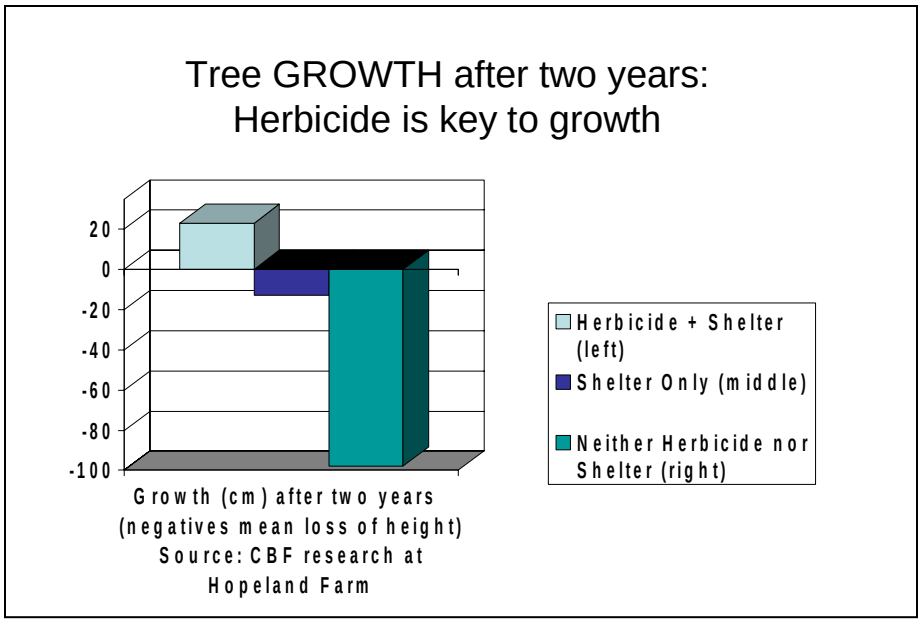
Written by Chesapeake Bay Foundation April 19, 2006

A successful buffer planting will provide many benefits to landowners. This sheet provides some important tips learned through years of experience and research. Following a few key steps in the early stages can put a project on the road to success.

Routine Herbicide Application is Key:

Routine use of herbicide is probably the single most valuable step to survival and growth of plantings. Herbicide use is critical for protecting trees from damage by voles and other small rodents, even if tree shelters are used. Voles are typically the biggest cause of tree death, and can severely stunt plants that do survive. The following graphs show the key role herbicide can play even with tubes used. The graphs also show that mere survival does not imply growth. A successful buffer planting will require a healthy growth rate as well as survival.





Don't overlook grasses as a major type of competing vegetation. Grass itself is a serious competitor with young trees, earning the nickname "The Green Death" from foresters who routinely see the ill effects of grass on tree plantings. Additionally, grass is ideal habitat for voles that rely on grass for food and cover. They eat the energy-rich bases of stems, and find cover from hawks and other predators by tunneling just above the ground but beneath the grass thatch. Voles strongly avoid areas where herbicides have been used because of high light levels and absence of cover. Eliminating the vegetation around plantings is a highly effective way to control vole damage. This approach is commonly used by orchards and nurseries. Spraying 3 foot wide strips along the rows of trees is recommended.

An example of a buffer project with 3 foot herbicide strips. Mowing the lanes between trees is easy and further reduces weed/grass competition with trees while suppressing vole populations.

Photo: Phil Pannill

Herbicide use also boosts tree growth rates by reducing competition for light, nutrients and water. Trees are most vulnerable to competition, damage by voles, browse by deer, etc. when small. Strong growth rates will improve survival by getting trees quickly past this vulnerable stage. Routine herbicide application is probably the single most important step toward a successful tree planting. Combining pre-emergent herbicides (such as Pendulum™) which prevent germination of the next batch of weeds with post-emergent herbicides (such as Roundup™), which kill existing vegetation, is a good way to extend control and reduce application frequency. Continuous control of vegetation is crucial, including fall/winter because voles turn to woody vegetation for food as grasses become scarce.

Use a Quality Tree Shelter with a Good Anchoring System:

Tree shelters are translucent plastic cylinders placed over trees to increase success of plantings. Shelters help trees in several key ways:

- Provide protection from deer browse/buck rub and (to a lesser degree) vole damage
- Provide protection from herbicide applications (tubes greatly simplify herbicide use and are a primary tool for weed control as a result)
- Clearly show tree locations (help avoid mowing losses common with unsheltered trees)
- Boost vertical growth in early years

Numerous styles and heights of shelters are available.
The effectiveness of shelters depends primarily on the amount of light transmitted, details of construction of the shelter, and the effectiveness of the anchoring system (stake and ties). Research shows that brighter shelters (those that transmit more light to the plants inside) produce faster growth of trees (see table below).

Some observations on tree shelters based on research and field experience**

Shelter type	Light transmission*	3 Year Growth +/- 2.8 cm*	Construction details	Stakes/fasteners
Miracle Tube™ by Tree Pro	34% - excellent. This high light level appears to be a significant deterrent to voles and boosts growth rate. Ivory color.	74.1 cm *data from Dr. Sharew and Dr. Strang, MD DCNR	Single-walled tube is tricky to insert into soil, but most shelters (any brand) frost heave out in a year anyways. No feature to allow burst out – will need to be removed. Top edge is rolled to prevent stem abrasion	Tree Pro offers a treated stake that is stout (more than 1x1") It should outlast non-treated options especially in wetter soils, and assure tube is upright until tree is ready. Ties are hefty and durable with easy release feature.
Tubex™ green color by Treessentials	16% - adequate. This level of light appears to be enough for good growth and to deter vole damage. Brighter would probably be better, as Dr. Sharew's data shows.	no growth data on this new green color (discontinued brown color showed 53.7 cm growth with 12% light transmission)	Tubex design is outstanding. Strong 2-wall construction holds up well and inserts into soil well. "Laser line" perforation is intended to allow burst out. Excellent flair at top to avoid abrasion.	White oak stake sold separately is good quality but only 1x1". Ties are hefty and durable and have a nice release feature that is finger-friendly.
AM Leonard	No data on 4' tube, but it appears to be among the brighter shelters on market. This is a leading trait of this shelter.	no growth data available	Double-wall design is strong. Comes flat, must be "popped" back to semi-round. Top edge can cause some abrasion. Some (past?) issues with premature tube disintegration requiring tube replacement.	1x1" stakes appear adequate. Some (past?) issues with less beefy ties becoming brittle and breaking, causing tubes to fall over and pin trees down. Ties require knife or small screwdriver to release.

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Give voles and weeds the one-two punch for a successful planting:

Voles and competing vegetation are the main threats to planting success. Fortunately, there are practical and proven ways to success. In fact, the same simple steps do double duty on both concerns. Routine herbicide use, combined with quality shelters reduces both voles and competing vegetation. Shelters and spray are key steps on the way to a successful buffer project. Additional details on management and maintenance should be provided by conservation professionals guiding any CREP buffer project. Web sites such as www.creppa.org also provide additional helpful information and links to other sites of interest.

CREP is partnership of federal, state and private groups including:

USDA Farm Service Agency, USDA Natural Resources Conservation Service, PA Dept. of Environmental Protection, and PA Game Commission, along with Center for Rural PA, Chesapeake Bay Foundation, Ducks Unlimited, PA Association of Conservation Districts, PA Dept. of Agriculture, PA Dept. of Conservation of Natural Resources, PA Fish and Boat Commission, Partners for Wildlife, Pheasants Forever, State Conservation Commission, and Western PA Conservancy.

Funding for this fact sheet was provided in part by a Growing Greener grant from the PA Dept. of Environmental Protection.
The views expressed herein are those of the authors and do not necessarily reflect the views of DEP.

This fact sheet was prepared by Chesapeake Bay Foundation, a non-profit group with PA headquarters in Harrisburg. CBF provides field staff to assist landowners with CREP project work and other forested buffer restoration programs. Since 1997, CBF has invested more than $7 million in voluntary conservation measures in PA, and helped over 700 landowners install more than 1600 miles of forested buffers. CBF's mission is to protect and restore the Chesapeake Bay and its watershed to maintain a high quality of life for the region's residents.