

Successful Reforestation Projects Using Seedlings

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Thousands of acres of trees have been planted in Frederick County over the last 10 years. Most of these plantings utilized seedling sized trees due to affordability, portability, ease of planting etc. These plantings were conducted with the best of intentions to improve water quality, create habitat, or increase our forest land base. Despite these noble intentions, some of the plantings fell short of their desired goals due to heavy losses of the young seedlings. Sometimes mortality can not be avoided because it is due to factors beyond our control like prolonged drought. Many times however, we can help increase the odds of our planting being successful by following some guidelines like the ones presented below.

Planning: Before you plant you should do a little planning to think through the effort that you are getting ready to embark upon. This planning process should be done well in advance of the planting, preferably before you initiate any kind of activity. You should consider such things as: What is the purpose of this planting? Is it to buffer a stream, create wildlife habitat, beautify a hillside, enlarge a forest, develop a windbreak or aesthetic barrier, maybe you want to grow valuable trees for your future or your children. (This might give you the motivation to live a long life.) Knowing the purpose of the planting will help you to determine the best way to proceed. Assessing the site conditions is very important and it is covered in more depth in the seedling selection section. Another important question to ponder is, can I do this myself or do I need help. If you have never planted trees before you should search for help. There are a number of good books, publications, and web sites you can visit to help guide you through the process. You can also obtain the advice of professionals and other knowledgeable individuals many of which will be willing to work directly with you on your project. Many of these individuals are members of the Catoctin & Monocacy Watershed Alliance. Talking to a neighbor that has a successful planting is another excellent resource to consider. If you are just starting out, you can get your feet wet by planting a small section of the field the first year and proceed from there. Also, you can get helpful planting experience by volunteering to plant trees at public tree plantings many of which are conducted in conjunction with Arbor Day or Earth Day events. In Frederick County we are always looking for planting assistance and you can gain valuable instruction and experience by volunteering at these events. If your project is more than a couple acres in size you should consider having a planting plan prepared by a qualified individual and having professional tree planters handle the project. These professionals can guide you through the process and let you know about any cost incentive programs that might be available to help you fund the project.

Wise Seedling Selection: Before planting you should evaluate the site and choose planting stock that would thrive under the prevailing site conditions. These site evaluations should consider the lay of the land, activity of water (hydrology), and predominant soils. Is the site wet, can it be droughty, might it be wet in the spring and dry in the summer are questions you should be asking. Once you make this determination you should choose plants that thrive under the prevailing conditions. You determine this by knowing a little about the “silvics” of a plant. Most good tree and shrub identification manuals have a short description of what kind of site a plant is best suited; if for instance, the manual mentions that white pine prefers well drained soils then it will not be a good choice for planting in a swampy bottom. An easy way to determine which trees are suitable, is to visit a forested area near your site having the same site conditions. The native trees growing in these areas are probably going to be a good choice for your planting. Sometimes, following this site review process, you determine that your favorite tree would not be appropriate for the planting. Despite your disappointment, you are generally much better off planting a more appropriate tree and who knows you might develop a new favorite.

Other factors that you should consider when choosing seedlings might include aesthetic features, size of tree vs. the available growing space, presence of deer, your geographic location, the history of success or failure with a specific variety, and maintenance considerations. There are numerous varieties of trees and shrubs that have a multitude of characteristics, choosing the right variety for your planting helps ensure that it will thrive.

Once you determine the variety of tree you want to plant, determining which nursery you obtain your seedling from is very important. A good seedling should have a full, well developed root system a healthy succulent top with a variety of colors, as apposed to being brittle and straw brown in color. And, depending on the species, it should have a terminal bud and it should be dormant meaning that it has not leafed out. These seedlings should be ordered from an area in close proximity to you which will help ensure that they are delivered in good shape and that they are adapted to the local environment. Some nurseries sell seedlings grown for different lengths of time usually expressed as 1/0, 2/0, 3/0 seedlings. The longer they are grown in the nursery the larger and more expensive they are. Before ordering a larger or more expensive alternative (3/0 vs. 1/0) you should ask yourself if the cost justifies the larger tree. In my experience, it is worth the additional cost to purchase an older tree for slower growing varieties like a hickory, beech, spruce, maple etc. because the 1/0 variety may be too small for effective planting. With fast growing varieties like white pine, ash, locust, sycamore, elderberry etc. the extra size may not be worth the increased cost. And, sometimes you may receive a large tree with very small roots which might result in growth stagnation or die back of the top before the root /shoot ratio is back in balance.

One you determine which trees you wish to plant and how many you will need you need to submit your order. Most seedling nurseries only ship trees for spring planting; and, they begin taking orders in the fall. These nurseries have a finite amount of trees so when all have been ordered they will no longer be available. With this in mind I suggest that you place your orders in the fall for the upcoming spring planting. This will ensure that

you get the variety you want in the numbers you desire. Most nurseries will allow you to hold your order with a credit card; and, they will not charge the card until they ship your trees, usually sometime in mid to late March here in Frederick County, Maryland.

Good site preparation: Site preparation is the process of removing obstacles from the site to permit you to plant your seedlings and developing a “cover crop” which will allow your tree to grow and thrive. If your field is overrun with thorny bushes or invasive plants you need to get these under control before you plant otherwise you will have to control them after the trees are present which is much harder, or the weeds will overrun the plantation. Your cover crop should be something that will give the seedlings a good opportunity to grow and develop. Planting trees in dense grasses increases competition for water when it is dry and could harbor destructive populations of mice and voles, rodents which have devastating impacts on young plantations. Planting a low growing cover crop like clover helps control weed growth, enriches the soil, and is exposed enough not to attract mice and voles.

Seedling Transport and planting: The care you provide for your young seedlings makes a big difference in growth and survival. Nurseries usually pack trees in such a way that they will stay fresh for about two weeks. Once your seedlings arrive, you should store them in a cool dry place and attempt to plant them within a two-week time period. The sooner you plant these trees the better. Most nurseries send postcards indicating when they will ship your trees to you. If you know you’ll be getting the trees ahead of time you should make plans to have them planted by the end of the first weekend. If you are planning for a large planting i.e. >1,000 trees you should look for a seedling cooler to store your trees until they are planted. Seedling coolers can keep a seedling fresh for a couple of months or more as long as they are receiving periodic moisture. If you have contracted your planting out to a professional you should relay that you would like to have the seedlings planted as soon as possible. In my experience with spring tree plantings, I have noticed that seedlings planted during March and April fare much better than those planted during May or June. This is especially true if we experience a summer drought. There are some specialized tree planting tools like dibble or planting bars, available which makes the planting process much easier and less time consuming. These tools can be purchased for Forestry supply houses or you may be able to rent or borrow some from your local forestry office. You should consider using these tools if you have a large quantity of trees you wish to plant yourself.

Protective Devices: There are a number of products on the market which protect seedlings from deer, rabbits, beaver, and our own aggressive mowing habits. These products may consist of tree shelters, weed barriers, repellents, and deer fencing to name a few. (I am not aware of any good barrier for mice and voles on the market today. The best way to prevent mice and vole damage is to reduce their habitat by your mowing schedule.) If you are planting deciduous trees then it is probably a good idea to acquire some of these. If you are planting on a budget I suggest calling your local forestry or parks office because we can probably put you in touch with a landowner who would be willing to provide you with these barriers for free or at a small cost. (The cost may be the labor you provide removing them from the landowners site.)

Maintenance: Planting trees is not a plant and forget proposition. If you plant trees and neglect them only to find an excellent plantation then you got lucky. The young seedlings need plenty of tender loving care especially until they become well established. (Usually after three growing seasons.) After you plant your trees you have to mow the site 2 to 3 times per season especially if you have a dense grass cover like fescue or bluegrass. The most important mowing should be conducted in the fall around late September or early October. This mowing will reduce grass cover during the winter when mice and vole damage is at its worse. Mowing at this time will not allow grasses to grow back much, and cause the thatch to decompose before the onset of winter. (Mice and voles love thatch so if you leave it around trees during the winter it is the same as not mowing at all.) Besides the fall mowing I like to mow in mid-June and August. If you are using tree shelters, deer fencing, or some other protective device for the trees then you have to spend time with maintenance. Maintenance items include removing bird nets when the seedling is growing near the top of the shelter, straightening the shelter if it is bent over, replacing broken stakes, and removing the shelter when trees have outgrown the enclosure. I normally like to remove shelters when the tree has grown 8 feet in height and 2 inches in diameter. (About the diameter of a half dollar.) You should also make sure that you aren't cultivating noxious weeds along with your trees. Regular mowing, along with monitoring and possible control methods might be necessary if you have weeds like Canada thistle, Johnson grass, multiflora rose, or ailanthus coming up in your field. In my opinion mice and voles are the most destructive pest to young tree plantations. The best way to keep these animals in check is to reduce their habitat either by your choice of cover crops, regular mowings, or choosing trees that these critters don't like to eat. Moderately wet sites that have well established fescue and bluegrass cover are real magnets for mice and voles.

Monitoring: Monitoring a planting is a good way to ensure success. Sometimes we can spot a problem before it occurs or correct a bad situation before it gets worse. As an example, let's say that you notice that a few trees are being girdled near the ground. After you make this observation you learn that voles have inflicted this damage and you take measures to ensure that it does not escalate. Being proactive may have just saved your planting because voles have a tremendous capacity to reproduce and their damage can spread throughout the entire planting. Another benefit of monitoring is that you may notice that a certain species did not do well after the first year and had poor survival. If this is the case, you may decide to fill-in some of the vacant areas with another variety that has greater potential to thrive. At the end of the growing season it is a good idea to assess your survival and consider partial replants to raise your survival to more desirable levels. Monitoring lets you see what is or is not working so you can determine which is the best way to ensure success.

Replanting: Sometimes filling in some vacant areas is a good idea. As an example, let's say that during your fall seedling monitoring you discover that most of the white pine that you planted are missing, and conclude that those deer that congregated there in the evenings were feasting on them. This mortality resulted in a big gap in the planting. You then decide to replace these trees with a variety that is distasteful to deer or decide to

place enclosures around the seedlings. Taking these measures will help ensure that your planting develops in a desirable way.

Epilogue: Hopefully some of these suggestions will guide you to a successful planting project. Every planting is a bit different so some of these guidelines may not be appropriate for your planting. For example, most of my recommendations were targeted to ensuring tree survival. Let's say that you are not as concerned about developing a forest as you are providing a partially treed meadow for wildlife. If this describes your objective you may not care to mow and won't get too upset if tree survival lags behind because you welcome mice, voles, and other field dependent species to your area. No matter what are your objectives, the best way to ensure planting success is to plan ahead, develop a strategy, select proper seedlings, prepare a welcoming site for them, keep them fresh, plant early, maintain the site, monitor, replant if necessary, and hope for rain.