

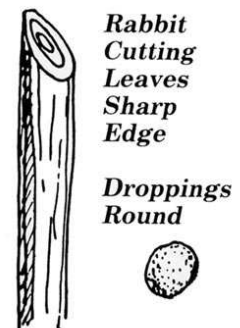
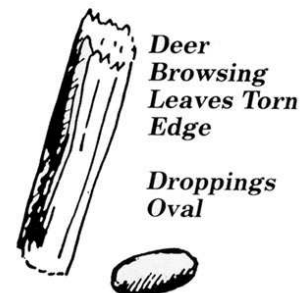


Protecting Tree Seedlings From Deer, Rabbits and Rodents

Tree seedlings are highly vulnerable to browse and damage from deer, rabbits and rodents. As a landowner planting trees I had originally blamed all the damage to tree seedlings on deer. As I have since learned rabbits and rodents can be far worse. Whether you are planting thousands of pine or hardwood seedlings or just a few fruit trees if you don't protect them from deer, rabbits and rodents you could lose all of the hard work that you put in to the tree planting. Options for protecting trees generally fall in to one of two broad categories – barriers or repellent. Your individual circumstance will determine which of the many options will work best. It is many times necessary to use a combination of approaches.

Who is the culprit?

Under many circumstances it helps to identify what animals are really damaging your trees if damage is already occurring. Look closely at the damaged tree seedlings. If the tree is cut off at a sharp angle and the cut off portion of the tree is left next to where you planted it the most likely culprit is a rabbit. Rabbits are instinctively driven to kill trees and maintain their habitat – they do not eat the whole tree. On larger trees rabbits girdle the tree and the diagonal slashes of the rabbit's teeth will be easy to see. If the tree seedling has died because it has been girdled very close to the ground rodents such as mice or voles are the likely cause. If the top of the tree or new growth on branches has been chewed off that is usually the result of deer browse.



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Barriers

It is very often suggested that trees be protected with eight-foot high wire or plastic fence or electric fences. That is impractical for many applications and may not protect trees if the damage is done by anything but a deer. I even read one publication that suggested an electric fence with two wires – one 2 inches and the other 4 inches off the ground to keep out rabbits! Imagine trying to keep the grass off that electric fence! A more versatile barrier is a tree tube. Tree tubes can be very effective when dealing with rabbits and while the tree is young deer, but will not protect against small rodent damage. In fact some tree tubes become tenement buildings for field mice during the winter. That said my experience using tubes of different types suggest tree survivability after two years, depending on species and planting technique can approach 90% when tubed. In areas where I have used a mix of tubed and not tubed trees I have seen 90% survival in the tubes and less than 10% without tubes.



There are three basic tree tube designs and I have tried them all. The first is a rigid plastic tube; usually beige to brown in color and two to four feet tall. They require solid staking and are the most expensive type of tube available. They occasionally have bird nests built in the top of the tube that usually kills the tree or at times may have mice or vole nests built in the base. If they are solidly staked they require very little maintenance once in place. Some users of these tubes place small mesh screens over the top to keep out the birds – these need to be removed as the tree grows

up out of the tube – generally within two to three years.

A less expensive tube the requires some assembly but is also less expensive and costs less to ship is a blue tube that is shipped as a flat piece of plastic that is rolled into a tube and put together with precut tabs. The biggest disadvantage of this type of tube is that they are easily blown apart by the wind and require routine maintenance to put back together. They also require solid staking and can have mice and mole nests in the bottom. Some studies using solid tubes also suggest that without exposure to moving air and wind that tree seedlings in these tubes do not grow as strong a main trunk – at least in the first few years.





The third type of tube is made from a yellow plastic mesh. These tubes are designed to allow the wind and air to move through the tube and therefore do not require as rigid a staking system. The photo shows these tubes on the back of my tractor as I get ready to go out and tube trees and perform timber stand improvement with the chain saws. The oak stakes are used to secure any of the different types of tubes with a plastic wire tie. A rabbit

occasionally chews through the yellow mesh tubes and as with other tubes it can be pulled out of the ground and away from the tree by an aggressive deer or coyote. The following table outlines the advantages and disadvantages that I have experienced using the different types of tubes.

| Tube Type | Rigid plastic | Blue roll-up | Yellow mesh |
|--------------------------|----------------------|---------------------|--------------------|
| Relative Cost | High | Medium | Low-medium |
| Wind prone damage | Medium | High | Low |
| Damage from: | | | |
| Deer | Low | Medium | Medium |
| Rabbits | Low | Low | Medium |
| Birds | Medium | Low | Low |
| Maintenance | Medium | High | Low-medium |

My favorite tubes now are the yellow mesh tubes. They are especially good with small pine seedlings.

Once tree seedlings grow up out of the tubes, it may be beneficial to protect the trees with cages. We make about 18 cages from a single 150' roll of welded wire used to reinforce concrete. These cages are very economical to make, easy to deploy and can be used over and over again, moving them from tree to tree as trees get bigger.

Repellants

Animal repellants come in a variety of forms and I have tried many of them. They include both homemade repellants and commercial products.

Homemade repellants include coffee filter packs, dryer sheets, bars of perfumed soap, blood meal, and paper stapled to terminal buds on pine trees. Many of these repellants are used to try to control deer browse on trees after they get to large to be protected by tree tubes. I have tried all of them on white pine plantings, which are a favorite deer

browse. Paper stapled to terminal buds is more of a barrier than a repellent and can be valuable while a tree is between 2 and 6 feet tall. I have not had a lot of success with perfumed soap or dryer sheets but have had some success with coffee filter packs. I am not a coffee drinker but I save the filter packs from hotel rooms when I am traveling on business. In the fall or winter I staple the filter packs to branches on larger white pine and that seems to bother the sense of smell of deer. Blood meal scattered around tree seedlings is also a good repellent but decomposes and does not last long.

Commercial chemical repellents cover a wide range of natural and synthetic chemicals that deer find unpleasant to smell or taste and are usually sprayed onto the trees in an emulsion of latex or wax that helps it stick to the trees. One common constituent is derived from eggs. I have used a number of egg-based products but with very limited success. The most successful spray based repellent that I have used is based on cyan pepper in a wax base. In addition to being an animal repellent it is also sold as an insecticide and is approved for use on fruit and vegetables. Hot Pepper Wax also has the advantage of effectively repelling rabbits, mice and voles. This is the product that I use together with the yellow mesh tree tubes to protect my white pine seedlings. I also spray it on my large white pine and fruit trees at some times of the year.



Another very effective repellent made by Repellex is based on a compound called Bitrex. It is combined into fertilizer tablets and can effectively provide up to two years of control by being systemically absorbed into the tree seedling. These fertilizer tablets were recently removed from the market to wait for an EPA certification but are expected to be available again by the end of 2006. These are very effective but require very careful handling because of the very bitter taste that can be created just by handling them with bare hands or inhaling a little of the dust from the open container.

Another form of repellent that I have tried is a holographic tape. This worked very well for a few months and then the deer apparently became used to it. While I have not tried other physical (vs. chemical) repellents such as air cannons it is my understanding that they also have the drawback that eventually the deer become used to the noise or site that might be used to scare them off.

A natural form of repellent is the type of tree itself. Some trees are far less palatable to deer and other animals. For wind breaks and other plantings you may want to try spruce. Both white spruce and blue spruce appear to be almost completely immune to browse damage. As one forester pointed out to me – would you want to bite into a sharp short-needled spruce or a soft needled white pine? The deer on my farm clearly prefer the white pine.

Conclusion

Animal control around tree seedlings is critical to any reforestation effort. In addition to the often-mentioned nuisance of deer browse; rabbits, mice and voles can kill large numbers of tree seedlings. Prior to using tree tubes I once had 100% loss of a field of chestnuts over one winter because the rabbits clipped them all off. A combination of tubing and repellents is often needed to overcome this combination of pests. Don't forget to also attempt to maintain an ecological balance in your forest or reforesting areas. Coyotes and owls can help to control rabbit, mice and vole populations. Mowing between rows of trees can provide open areas that expose these prey to the predators. Hunters can help to control deer populations. Without natural and human controls on these animal populations any other protection mechanism may fail – the browse pressure becomes too great. As time goes on I find that it continues to be more effective to plant fewer trees and protect the trees that I do plant.

Please contact TreeFarmProducts.com for tree planting tools and supplies. We carry a complete line of products including dibble bars, Water Keep water gel, Hot Pepper Wax deer and rabbit repellent, tree tube protectors and oak stakes, and AgriTab fertilizer tablets. If you have water or soil testing needs, please consider our sister company ChemRight Laboratories, Inc. – an independent environmentally conscientious soil and water-testing lab.

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