

Deer Browse

The actual planting of young woody plants can sometimes be the simplest part of a planting project. The deeper challenge can begin afterwards, sometimes just a few hours later, when the ubiquitous Whitetail Deer arrive.

There are many physical devices used to prevent Deer browse; I have seen most of the options deployed during my previous career as a tree planting contractor. They can all work, and almost all of them can also fail.

Before considering the different types of browse preventing devices, I suggest considering some of the basics about how Deer browse on woody species actually works.

The first thing to understand is: every planting site is different, in this regard. Deer populations are different in different areas. Their numbers also fluctuate at a given point at different times of the year. For example, one now rare ground level woody species (*Taxus canadensis*) managed to survive on some Great Lakes shoreline sites, as Deer avoid exposed windy areas in the winter months. Elsewhere, Deer have basically extirpated the species from almost all sites in Michigan's Lower Peninsula.

The second key concept to know is that Deer have preferences on their choice of food items, and these change from site to site as well as from month to month. Species otherwise low on their browse preference list, such as White Pine, can be heavily damaged in March, when a Deer has very very few food choices, but will never be nibbled on at other times of year. Similarly, Blue Spruce is perhaps at the very bottom of a browse preference list - but a Blue Spruce standing amidst a winter "deer yard" holding dozens, scores, or hundreds of Deer temporarily will still get browsed in such an area. Thus a White Pine planted on most upland areas could well never be browsed at all as Deer may not be near it at the only time of year where it does get browsed.

To help understand probable Deer populations on a site, it can help to ask anyone who hunts Deer for some insight into when Deer use different kinds of land.

So how can one begin to understand this on a specific planting site? There is a simple solution: basic visual observation. While still planning a planting project, the site should be examined for browse impacts on the existing woody vegetation. Sometimes, as with a bit of conversion of Agricultural land not currently holding woody plants, this will have to be done on areas immediately adjacent.

Often times a question few ever consider regards the shoulder high woody plant growing within sight of a planting spot. How did it get there? Aren't Deer killing everything in their path?

This thought leads to another important fact about Deer browse: such browse only sometimes outright kills a small woody plant. Quite often, such browse does damage a woody plant, but does not completely kill the plant.

That is because of a simple true-ism: Deer do not eat wood. They generally seek 2 other things on a woody plant: in winter, the vegetative buds set for the next growing season, and in summer the tender growing shoots that have not yet become truly woody tissue. Some wood can be removed from a stem by a deer wanting that energy packed bud on the twig, but the Deer is not actually attempting to eat the woody stem in most cases.

A result of that is most woody plants manage to hold a bud lower on the stem that a Deer can not eat, and that bud then begins to grow in the subsequent growing season. Thus most deer browse generally manages to slow down woody plant growth, yet not kill the plant completely - though that is certainly one possible outcome. Many woody plants are browsed year after year, only able to grow short new segments of height each year. Until one year, a growing shoot finally goes over the height a

Deer can reach and the stem no longer loses potential height growth each year. Frost damage in the Spring can also work this way.

Ultimately one bottom line about investing additional monies in browse protection equipment is that such gear can be a matter of patience with the slowly growing woody stems, rather than an outright necessity to keep the woody stem alive. There are situations where that latter necessity is indeed true, but many other times the former situation is true: seedlings will eventually reach tall heights on their own. That can be particularly true with the fast growing early successional species such as Aspens or Sycamore, which rarely need protection to reach a good height.

How can one make a decision on hardware protection? This bears repeating: simply examine browse impacts on other woody plants in the vicinity of the planting site.

Another angle to this tube-or-not-to-tube decision revolves around overall planting strategy. One way natural regeneration comes up amidst Deer browse pressure is simple: a large amount of seeds start to grow, and some of them “make it” even if not all of them do. And this can be a valid approach to a planting project. Simply plant more seedlings - for the price of one seedling + tree tube, quite often 3 to 10 other seedlings could be planted without a tree tube.

I know what you are now thinking - you are reading this on a seedling nursery website so naturally we are going to suggest buying more seedlings than tree tubes. But this is a valid approach and one taken by many people who plant trees in areas with White-Tailed Deer, even when others in their area do use tree tubes, etc.

There is one key to the no-hardware approach, which is to use the larger sizes of seedlings so they each have the root reserves to flush multiple buds in case one new shoot is lost to browse. The most vulnerable seedlings are the smallest seedlings, which don't have enough “gas in the tank” - their roots - to overcome multiple leaf destroying problems.

Now let's say the planting site neighborhood has been examined and it is judged that browse protection hardware is absolutely essential to project success. Which hardware works best?

Before passing along my experiences with those, let me point out the most important thing about using browse protection hardware: there will be a need for post planting monitoring and maintenance of these items. They are not generally a just-plant-it-&-forget-it option, something commonly thought and desired about them. Ignoring this need for maintenance, which goes on for several growing seasons after planting, often leads to disappointing outcomes, up to and including the protection product actually killing tree seedlings, sometimes in large numbers. Many organizations that have done large-scale plantings with thousands of seedlings and the various options of protective gear later swear off ever using these products ever again. Which is not because the products don't work - they do, very well - but because that organization did not understand and plan for this need for maintenance in subsequent growing seasons.

I will explain the fine points of the needed maintenance for each style of protection hardware.

The most common one is probably "tree tubes." There are several manufacturers of these. There are different features about the tubes depending on the manufacturer. All of them offer a benefit everyone appreciates: accelerated growth of the tree seedlings protected within, for 3 reasons: the growing leader never gets browsed, the seedling's leaves are not exposed to excessive moisture loss from the wind, and a bit of a "greenhouse effect" from condensed aerial moisture rolling down the inside of the tube to help water the seedling.

Tree tubes are generally quite popular with people who use them. Yet there are things that can go wrong with them, which is where the need for routine monitoring and maintenance appears. Fail points include the stake, which can break and need replacing, and sometimes the zip-ties used to hold the tube to the support stake. Some manufacturers supply the best

zip-ties possible, but not all. Sometimes tubes end up at a planting site without appropriate zip-ties and they must be purchased locally. Three key features of the handy little product are needed, none of which are always a character of such ties sold in a retail store.

The needed properties of a zip-tie used with tree tubes are: being cold resistant, UV resistant, and reversible. These features do not add significant costs but are not needed in many applications and thus are not often a characteristic of zip ties sold in hardware stores. However these features are often identified in zip-tie products and the right ones can easily be ordered online.

The cheapest zip ties often fail at the beginning of the first bout of freezing weather in the autumn or winter after initial installation - a bit of moisture can be inside the locking tooth mechanism of the tie and when it freezes and expands, Pop! goes the zip-tie. Similarly, not all ties are made with plastics intended to be out in direct sunlight for years on end. Eventually, all that sunlight can weaken the zip-tie, leading it to shatter.

Finally, some zip-ties are designed to be reversible and this is quite essential if the tube needs to be temporarily removed for some reason, which is frequently the case in post-planting seasons.

Zip-tie or stake failures can result in the tube falling down to be horizontal or at an angle far from true vertical. Wildlife can also create this condition even when all the hardware is working correctly; curious Bears in particular can push over a tree tube here and there. The tree seedling inside can live on for a while, but usually can't recover from this if no one ever checks the planting for such problems.

Another problem can occur in individual tree tubes that have not had any failed pieces and are perfectly fine — which will be a solid majority of the tubes. This problem occurs inside the tube as dead leaves can accumulate in the bottom of the tube and reach a depth that the stem rots inside too much wet leaf material, ultimately killing the seedling. Other times, such a nicely insulated pile of dead leaves in a little round, wind-proof house can

be the perfect place for a mouse to spend the winter, complete with a tasty meal of tender live tree bark to snack on. There is a simple solution to avoid these problems - dead leaves should be cleaned out of each tube annually, until the seedling is taller than the tube at which point it often won't be growing leaves inside the tube any more.

Taller than the tube? The tube can be removed? Sometimes. Other times a seedling grown in a tube can be spindly and unable to support itself the first year it is actually taller than the tube. A further problem can appear after tube removal in that inside the tube, the tree has not grown lateral branches. When the tube is removed, such stems are the perfect thing male Deer seek out to rub the velvet off their new grown antlers in late summer. This can sometimes kill a tree seedling. Thus tube removal is not always an automatic decision.

This discussion of tree tubes has been referring to solid (&/or 'vented') tubes. Another option is "mesh" tubes and these are used extensively, as they are much cheaper. I believe these come in 9 combinations of width and height. From what I have seen and experienced, the wider, the better.

There are some additional fine points to using the mesh tubes. They are generally sold for use with bamboo stakes, which don't last a long time when pressed into soil but then neither do the mesh tubes themselves, which can be a positive. The bamboo stakes should hold the mesh long enough for the seedling to grow to a point where browse can no longer kill it. This shorter life of the protection material can be perfectly fine in that it keeps the seedling from being killed even if not keeping it from being browsed in the 3rd or 4th growing season - by then, the seedling should be vigorous enough to survive browse.

One thing to remember about the bamboo stakes is that they can't always be simply pushed into the ground with just bare hands, though that is true sometimes. They also can't usually be installed with a hammer, unlike other staking options. Often, a tree planting tool may be needed to create a hole deep enough for a bamboo stake to be anchored sufficiently.

The mesh tubes will need a maintenance check, just as solid tubes do, as stakes will break, wind will move the tubes around, and birds and other wildlife can impact the orientation of the tube. The same key features of the zip-ties are needed with mesh tubes as well. But an advantage of these is that they don't need leaves removed, and the seedlings inside will grow side branches normally, making the seedlings naturally resistant to buck rubs later on. With a lower overall cost, mesh tubes offer some solid advantages. Note however that the taller the tube and the smaller the diameter chosen, the higher the chance the main seedling leader will grow through the mesh outside of the tube.

One final hardware choice exists for preventing deer browse: wire fencing. The most common, but not only, choice is 2"x4" welded wire fencing. This can be the most expensive option but there are some fine points to that in comparison to the tube products. A big one is re-usability. Solid tree tubes can often be re-used on a 2nd or sometimes a 3rd seedling although mesh tubes can not. Welded wire cages can be re-used many, many times.

Such cages offer another advantage: normal seedling growth, again without need for removing dead leaves and an even better ability for the seedling to grow normal side branches that will protect it from buck rubs later on. Such cages have the least amount of needed post-planting maintenance, by far. Often just a quick visual check-up is all that is annually necessary.

One trick I can pass along simplifies wire cage installation and significantly lowers costs: not using a stake, at all, something quite non-intuitive. The technique is to create the round cage (heavy duty wire cutters are a required tool but is an overall simple task), and then remove one of the horizontal lines of wire at either end of the new cage. This leaves a 4" wire prong, every 2" around the circumference of the cage. These prongs are then inserted into the ground and the cage will have a good deal of stability. A running Deer or a curious Bear might occasionally knock one over, but overall you might be surprised how well such cages can stand on their own without a stake. If problems persist, the cages can always be staked down later.

Overall, my preferred go-to approach on a planting project where Deer are present is to simply plant healthy, medium-size-grade tree seedlings at a relatively high density of 8' x 8' (681 trees/acre). My second choice when planting small amounts of trees needing protection from browse is to place them in simple round welded-wire cages.

Before reviewing these basics of Deer Browse on a tree planting project, I must note one final detail: not all "browse" damage is created by Deer. Rabbits and various small rodents can also damage or kill tree seedlings. Rabbit damage is all at the same height; a rabbit may even sever a stem it does not intend to eat and a growing shoot can be found just laying on the ground at times. Small rodents such as Mice or Voles might not browse growing shoots but rather chew on seedling bark. Weed control can help prevent such damage as small creatures do not like crossing open ground; the thicker the dead and live vegetation near the seedling the easier it is for them to travel around without fear of their avian predators. Risk from such small creatures can be less where raptors have sufficient perches to hunt from standing dead trees, etc., standing on the site. Where a planting site lacks such perches, artificial ones can be cheaply installed, and they will be used. Potential damage from the smallest animals can also be alleviated some by simply using larger diameter seedlings.

Now let's review the basics of Deer browse & tree planting. First, examine the site for signs of impacts on nearby woody vegetation. Not all sites are the same in this regard, nor are all woody species. Should it be decided that browse protection is worth the expense, remember that post-planting maintenance of the hardware will be required to grow a high % of the seedlings through to a tall status, possibly for multiple years; this maintenance can be labor intensive and a budget may be needed for it. Said maintenance will be much reduced by using appropriate zip-ties that are UV & cold resistant, and are reversible.