

Living Snow Fences

Fact Sheet Series - Fact Sheet #8

Coppicing Living Snow Fences



State University of New York
College of Environmental Science and Forestry

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Coppicing is a form of management for certain woody plants that has been used for centuries. The process involves cutting stems near the ground and allowing new stems to grow from the part of the plant that is left behind, which is referred to as the stool. Coppicing living snow fences is a maintenance practice that increases the number of stems on each plant. A larger number of stems on each plant increases “density” of the living snow fence, lowering the optical porosity and allowing fences to become functional more quickly. Coppicing improves the vigor of many species, and has been shown to accelerate the overall aboveground growth of shrub-willow. The information and techniques described in this fact sheet are primarily intended for coppicing shrub-willow plants, but may be applicable to other species with coppice potential as well. The coppice potential of species recommended for living snow fences in New York State can be found in the species matrix available at the web address: www.esf.edu/willow/lsf

How Coppicing Works

Coppicing takes advantage of plants’ natural ability to re-sprout from the main stem (stool) after the majority of the plant is cut down. The plants use carbohydrate reserves stored in the root system to produce new stems from epicormic (dormant) buds under the bark of the remaining stool and stems. The stool and each stem remaining on the plant after coppicing has the capacity to produce multiple (2-5) new stems in the spring following coppicing (Figures 1 and 2). Since each stem left on the plant can produce additional stems, it is important to cut across as many stems as possible, but still follow the general guidelines provided below.

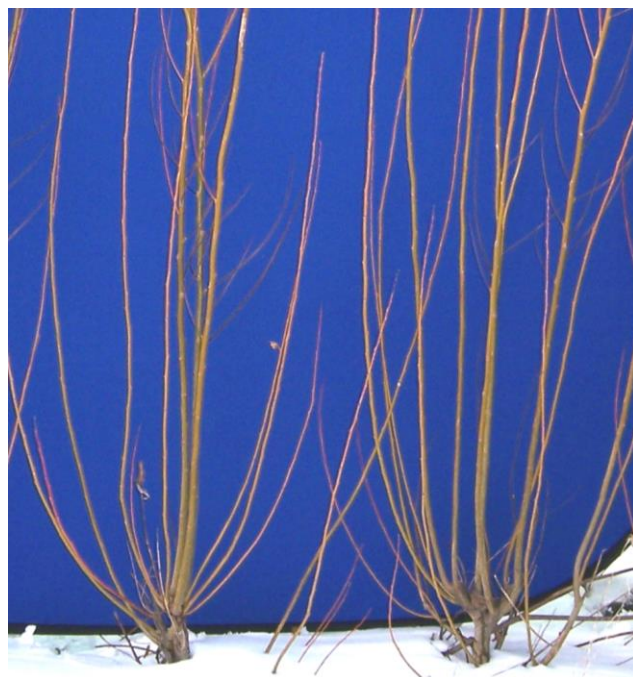


Figure 1 (left): A shrub-willow living snow fence with a limited number of stems after one growing season, before coppicing

Figure 2 (right): The same fence after coppicing and a second growing season, now with numerous additional stems

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Timing

Coppicing should be performed after the first growing season has passed and plants are fully dormant. Coppicing should not be done until two weeks after leaf-fall - and can be done anytime thereafter - but should be completed before the plants' buds begin to swell in early spring. If possible, coppice the plants in late fall before the first snowfall, as heavy snow loads from blowing snow can damage young plants causing small side-branches to partially rip away from the main stool. Coppicing early also safeguards against the possibility of an early spring which can cause budding before plants are scheduled to be coppiced. Coppicing after bud-break wastes the plants nutrient and energy reserves, stunts resprouting, and slows plant growth after coppicing.

Tools

Coppicing can be accomplished with a hand-operated brush saw for the most precise and clean cut on each individual plant. Alternatively, coppicing can be accomplished with a sickle bar mower equipped with sharp blades and long guides to produce a clean cut. The mechanics and operation of any tool used for coppicing should ensure that all stems of each plant are cut cleanly, without tearing the stool or root system out of the soil which will damage or kill the plants. The cutting implement should also cut the top of the plant completely off of the stool, while minimizing any ripping or damage to the bark on the main stem and side-branches. The cut tops of the plant can be left in place to decompose after coppicing, or collected and chipped. Making "cuttings" for propagation from the tops of plants is not advised, as first year stems of shrub-willow plants are usually too small in diameter to make viable cuttings, they require precise storage conditions to maintain viability, and many hybrid shrub-willow cultivars are proprietary.

Coppicing to the Correct Height

Coppicing should occur at a height of approximately 4 to 8 inches above ground level. This will vary slightly with the ground conditions and type of equipment being used. The height of the cut should leave some side-branching on the main stem if possible (Figure 3). If side-branching begins higher up on the plant than 8 inches, the cut can be made up to about 12 inches above ground level to maintain some side-branching on the plant, but no higher. Coppicing higher than 12 inches may cause the stems that form the following year to be less wind firm and prone to breakage under constant wind and snow loads, as living snow fences are typically installed in areas with constant wind and blowing snow problems. The cut should be made at one consistent height parallel the ground, so the main stem and all side branches are all cut to the same height.

The number of side branches on each plant will vary depending on the cultivars of willow used and growth over the first year which can be impacted by soil, climate, weeds and deer pressure (Figure 4). Generally, the more vigorous the plants the more side branches that will be produced. It is not necessary to coppice above every single side-branch, but leaving at least three to four side-branches on each plant is ideal. If fences have few or no side branches below 12 inches, coppicing can still be performed and new side branches will form from the main stool the following spring. If survival of the fence is less than 90 percent, any dead stems should also be replanted with new stem cuttings in the early spring following coppicing.

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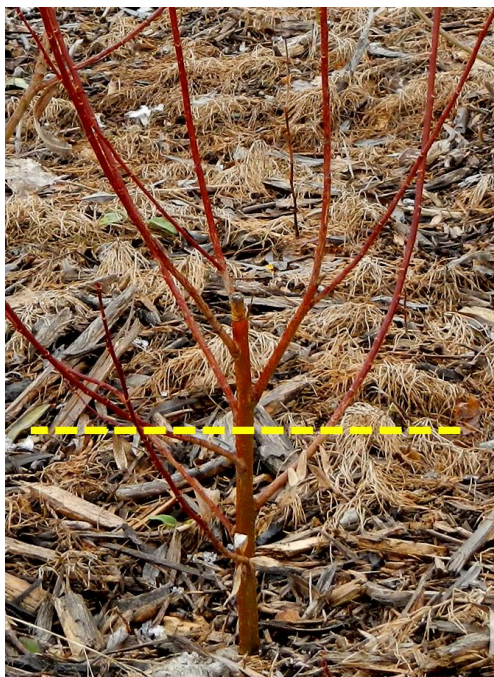


Figure 3 (left): This photo shows a dormant shrub-willow plant after one growing season. The plant was grown from a correctly planted 20 inch stem cutting, leaving about 10 inches of the main stem above the ground. Coppicing this plant at the dotted yellow line will be within the desired height range at approximately 8 inches, and also leave at least four side-branches on the main stem and cut to the same height

Figure 4 (right): After coppicing, new side-branches will resprout from the main stool and all preexisting side-branches. The number of new side-branches depends on the variety of shrub-willow, the site conditions, management practices and vigor of the plant. This variety of shrub-willow (*Salix purpurea*) produces numerous new stems from each side-branch left on the plant after coppicing.

Coppicing Older Living Snow Fences

Coppicing can also be a means for managing and rejuvenating older fences, which will grow new stems from the existing stool in the same way as a one year old fence will. If the aboveground portion of a shrub-willow fence becomes damaged by pests, diseases, weather, or other disturbances - coppicing can remove the damaged plant parts allowing new healthy stems to re-grow from the remaining stool, improving health and extending the lifecycle of the fence. Because older fences have a well-established root system, as much as six to eight feet of new height growth can be achieved with a properly timed coppicing. However, temporary measures such as plastic snow fences *may* be required after coppicing to prevent a lapse in snow control. Coppicing can also return fences to a more juvenile state with less height and stem diameter in cases where fences must be managed to highway safety standards or other local regulations.

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Deciding to Coppice or Not

Coppicing may not be necessary in every case and fences should be evaluated on an individual basis when deciding whether or not to coppice after the first growing season. Fences that are cared for with a comprehensive suite of best management practices may produce enough stems and height growth in the first year to not require coppicing. For coppicing to not be undertaken, fences should have a planting density of one plant per linear foot, at least 90% survival, at least four feet of height growth, and at least 6 side-branches off the main stool per plant (Figures 5 and 6).



Figure 5 (left): Some willow fences under best management practices can create many stems after the first growing season without coppicing

Figure 6 (right): When ideal conditions are achieved (90% survival, 4 foot height, six side-branches per plant) coppicing can be forgone. The fence in this photo reached a height of over six feet early in the second growing season, putting it well out of reach of deer browse and weed competition and eliminating the need for any further maintenance.

Another scenario in which forgoing coppicing may be beneficial is in areas where heavy deer browse or weed competition will limit fence growth without additional management. In these situations, coppicing may increase the amount of maintenance necessary in the second year. For example, if a fence requires numerous applications of deer repellent and herbicide in the first growing season to effectively control browse and weeds, coppicing will reduce the fence height back to a few inches, and may require a similar maintenance program the next year. The alternative would be to *not* coppice the fence, allowing the plants to more quickly grow to heights at which they are not affected by weeds and deer (about four feet).

Fact Sheet prepared for NYSDOT by Justin P. Heavey and Timothy A. Volk, SUNY-ESF.

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www.esf.edu/willow