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Living Snow Fences

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Living Snow Fence Site Preparation

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Site Preparation

After the site assessment and design phases, it is important to properly prepare the site before planting a living snow fence. Investing adequate time and resources in thorough site preparation will improve growth rates and long-term survival. Site preparation will minimize the time it takes for a living snow fence to become effective, and maximize the return on investment. The practices listed in this fact sheet are considered best management practices that can be applied to all types of living snow fences. This includes all species of evergreen trees and woody shrubs recommended for living snow fences. The site preparation tasks summarized here can be followed in the order they appear to achieve sufficient site preparation and improve the health and vigor of living snow fences. Roadside environmental conditions can be stressful to plants in a number of ways. Site preparation improves site conditions as much as possible to give living snow fences an advantage over competing species in stressful roadside conditions.

Step 1: Suppress existing vegetation

The first step in site preparation is to suppress and clear all vegetation that exists within and on either side of the planting strip. The planting strip should be at least 5 feet wide depending on the vegetation type and number of rows. Mow strips at least 8 feet wide should be established on either side of the 5 foot planting strip for a total width of cleared vegetation of at least 21 feet (see figures 1 and 2 next page). Vegetation should be suppressed with a combination of chemical and mechanical controls. A broad spectrum post-emergent herbicide such as glyphosate is an effective chemical control in most cases. Note that glyphosate will kill most living snow fence species and should only be used during the site preparation phase before vegetation is installed. Consult your local certified herbicide specialist and follow the instructions provided by the herbicide manufacturer. Most mechanical control can be accomplished by brush hogging. Trees and large shrubs can be removed with brush saws and chainsaws and then chipped. The flow diagram on the last page of this fact sheet provides a guide with several steps necessary to thoroughly suppress vegetation on and around the snow fence planting area.

Step 2: Rip sub-soil

Once the existing vegetation has been suppressed, the next step is to mechanically loosen the soil on the planting strip. Before ripping the subsoil, contact Dig Safely New York, or a similar organization in other states, to ensure no buried utilities are in the planned planting strip. Ripping will break up hardpans and compacted soils, allowing better root development for living snow fences. Use a chisel plough or ripping attachment to rip the sub-soil. Ripping to a depth of at least 12 inches is often required in right of way soils. More traditional agricultural tillage equipment may be sufficient if planting in soils that have been recently tilled for crops. Rip at least one or two complete passes up and down the length of the planting strip for each row of plants. For closely spaced plants, a single pass may be effective, but for more widely spaced plants and multiple rows, two or passes per row should be completed.

Step 3: Amend soil based on soil analysis

Based on the lab analysis of soil chemical properties conducted in the site assessment phase, add the necessary soil amendments to the planting strip at the appropriate application rates. This may include lime to raise the pH, compost to increase organic matter or nutrients to improve fertility. Consult your local environmental specialist if you are unsure what soil amendments are appropriate for the chosen species and site conditions.

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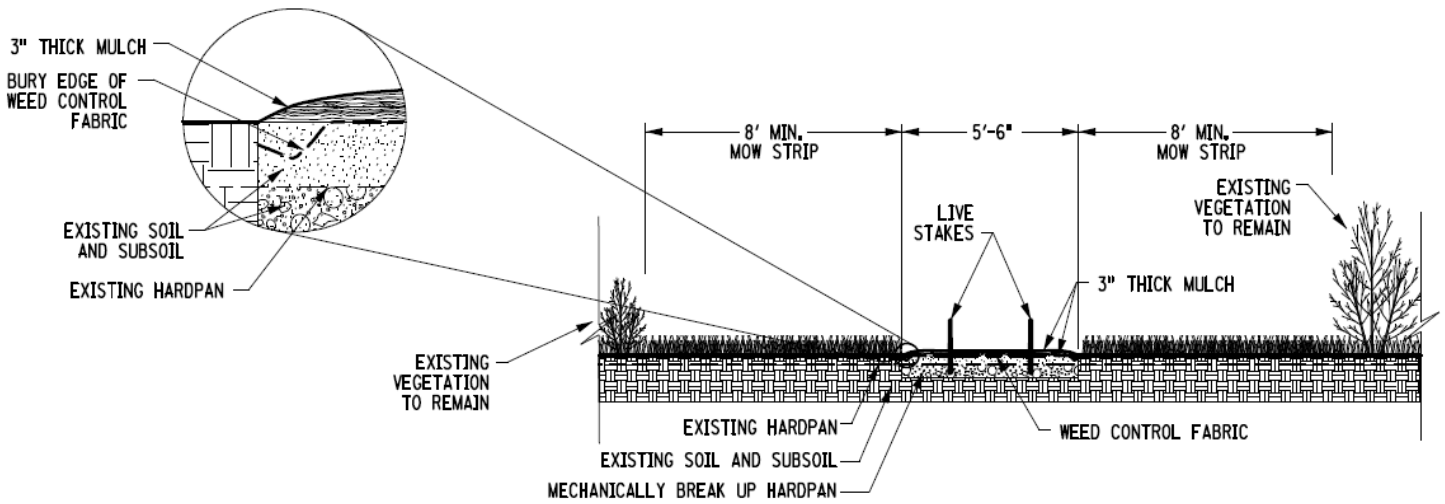


Figure 1 - Cross-sectional view of prepared willow snow fence site (not to scale). Adapted from NYSDOT, 2013.

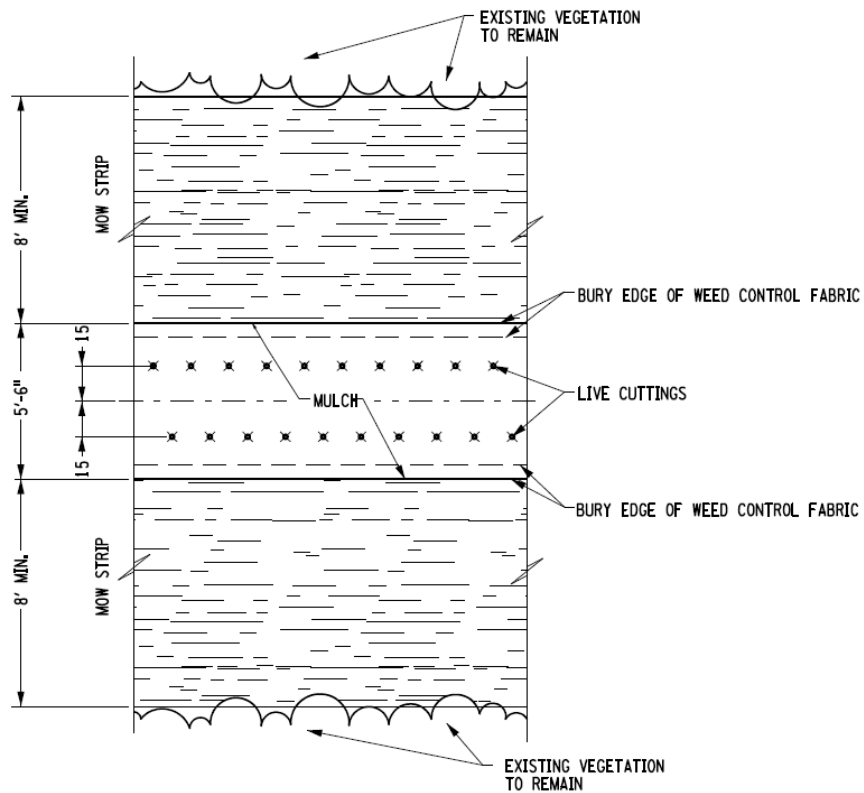


Figure 2 - Overhead view of prepared willow snow fence site (not to scale). Adapted from NYSDOT, 2013.

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Step 4: Cultivate topsoil

Use a rototiller or disking attachment to cultivate the topsoil on the planting strip. Cultivate the topsoil to a depth of 6 inches. Make at least three complete passes up and down the length of the planting strip to thoroughly break up the soil and incorporate amendments. Level and smooth the planting strip in the final pass to prepare the site for planting.



A planting strip is cultivated for a living snow fence on Route 12 in Paris, NY

Step 5: Evaluate the effectiveness of weed-control efforts

Some sites may have persistent perennial weed species that reproduce from roots, rhizomes, and other plant parts. These sites may require further chemical control after the planting strip is prepared. If the site is known to have persistent weed issues, or if a high percentage of weeds (>25 percent) are observed to grow back shortly after previous controls efforts, reapply a broad spectrum post-emergent herbicide to the planting strip, or cultivate the soil again and apply a pre-emergent herbicide, before proceeding to the next stage of site preparation. Be sure to allow sufficient time between herbicide application and planting. Allowing such time will ensure unwanted vegetation is thoroughly killed and the herbicides do not damage or kill any of the living snow fence plants. Consult your local herbicide specialist and follow the label instructions provided by the manufacturers.

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Step 6: Apply landscape fabric

Apply a biodegradable landscape fabric such as paper or plant fiber to the planting strip. Landscape fabric acts as a temporary weed barrier while young plants become established. Fabric should be wide enough cover the planting strip with at least 1 foot of fabric on either side of trees after planting. Multiple strips of fabric should be used for wider planting strips. Fabric can be installed with a roller attachment to bury fabric edge as shown below. Use biodegradable fabric pins to secure the fabric to the ground at the beginning and end of each roll, and anywhere that the edge of the fabric is exposed to prevent the fabric from being lifted by the wind. Fabric can be applied without burying the edges, but a large number of biodegradable fabric pins will be required to temporarily secure all the edges until mulch is applied. In this case pins should be inserted on both sides of the fabric at 12 to 18 inch spacing to temporarily secure the fabric to the ground. Biodegradable fabrics buried under mulch may break down in a matter of months, but fabric should be rated to last for one or two seasons under mulch if possible. Synthetic landscape fabrics are not recommended for living snow fences because they have been observed to cause detrimental effects on trees in living snow fences, such as girdling, scorching, and poor root development. Likewise metal landscape fabric pins are not recommended for living snow fences because they are not readily biodegradable and can cause damage to maintenance or farming equipment such as mowers and tillers.



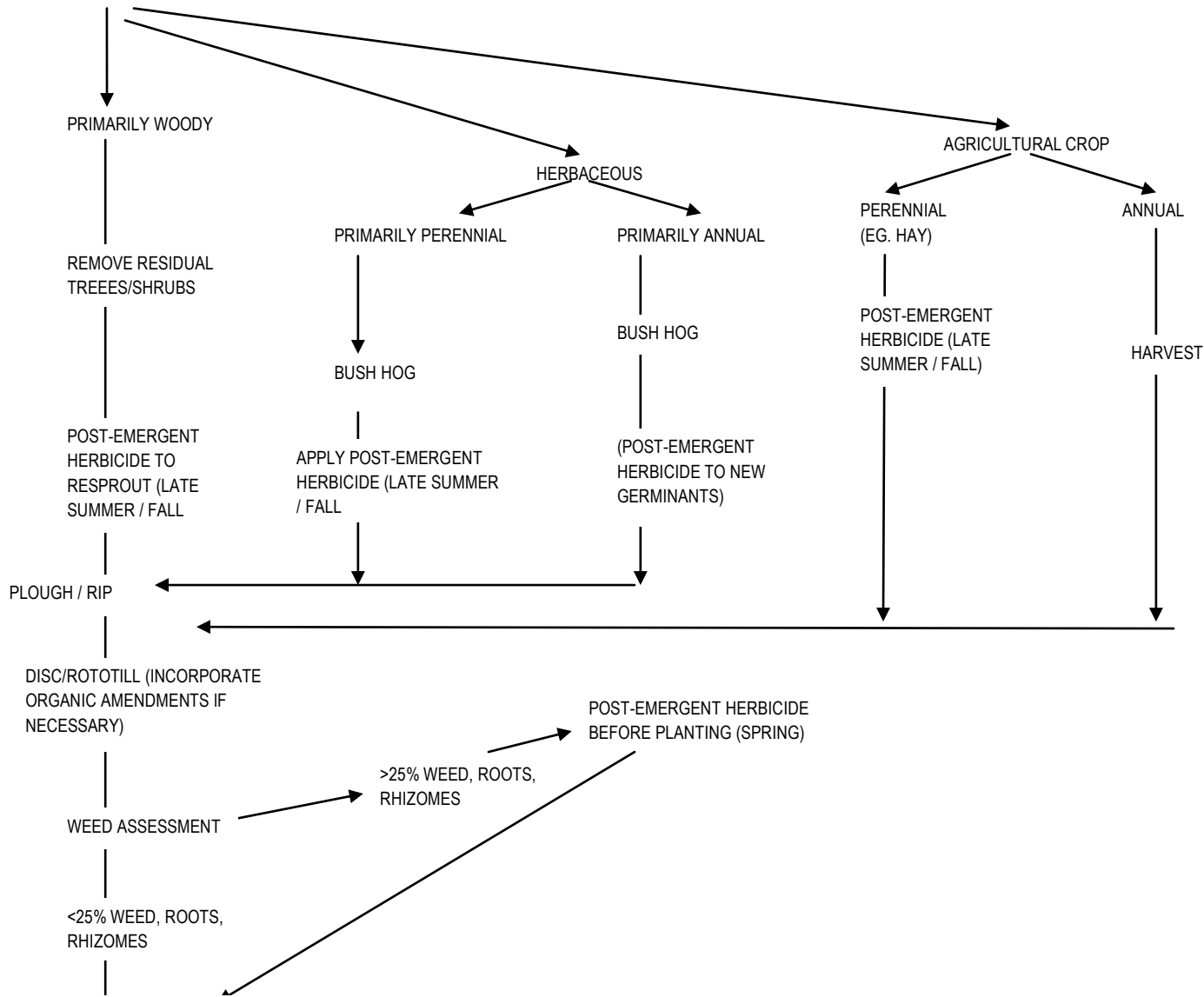
A paper landscape fabric is applied to a prepared planting strip using a roller attachment

Recommended Site Preparation Steps for Establishing Living Snow Fences

STEP 1: ASSESS OPERATIONAL LIMITATIONS OF THE SITE

STEP 2: ASSESS EXISTING VEGETATION AND SOIL CONDITIONS AT THE SITE

STEP 3: CHOOSE AND IMPLEMENT A SITE PREPARATION PLAN



STEP 4: EVALUATE THE EFFECTIVENESS OF SITE PREPARATION. DID SITE PREPERATION...

- ADDRESS SITE LIMITATIONS IF POSSIBLE
- ACHIEVE EFFECTIVE WEED CONTROL
- CREATE SUITABLE SOIL CONDITIONS FOR PLANT GROWTH

INSTALL LANDSCAPE FABRIC
 PLANT LIVING SNOW FENCE
 IMPLEMENT FOLLOW-UP WEED-CONTROL STRATEGY (MOWING, HERBICIDES, MULCHES)

Diagram adapted from Boysen, B., and Stobel, S. *A Growers guide to hybrid poplar*. OMNR, Toronto Canada.
 Developed for living snow fences by T.A Volk, L.P. Abrahamson, and J.P. Heavey, SUNY ESF, Syracuse, NY, 2013.

Additional Resources

Gullickson, D., Josiah, S.J., Flynn, P., 1999. *Catching snow with living snow fences*. University of Minnesota.

Tabler, R.D. 2003. *Controlling blowing and drifting snow with snow fences and road design*. Tabler and Associates. Niwot, CO.

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 SUNY ESF, 2013
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