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## History

As long ago as 1939, living snow fences were being planted along highways in our neighboring state of Minnesota. The original intent was to compare plant materials with slatted snow fences as a means of keeping highways free of snow. A July 1957 report had Minnesota saving \$539.00 per mile annually where tree plantings replaced wooden snow fences. The Minnesota state engineer of roadside development said, "The living pine snow fencing has several attributes besides its efficiency in keeping snow off the highway and in highway beauty. The tree fencing is permanently eliminating the fall and spring handling required for the usual slat fences that cost the highway department \$323,658 annually."

The average cost-benefit ratio of implementing a living snow fence practice is 17:1, a \$17 return for every program dollar spent.

From 1985 to 1999, 65 living snow fences were established in 24 South Dakota counties covering a total of 180 acres, and protecting approximately 72,000 feet (about 13.5 miles) of highway from drifting snow.

In 1999, new Federal Transportation Enhancement Program guidelines made it possible to expand that program to include cost-share for local transportation routes. In cooperative effort between the Departments of Transportation and Agriculture a program is now available to help local route living snow fence needs.

Since 1999, 122 new living snow fences were established covering 378 acres, and protecting approximately 192,170 feet (about 36.5 miles) of South Dakota roads.

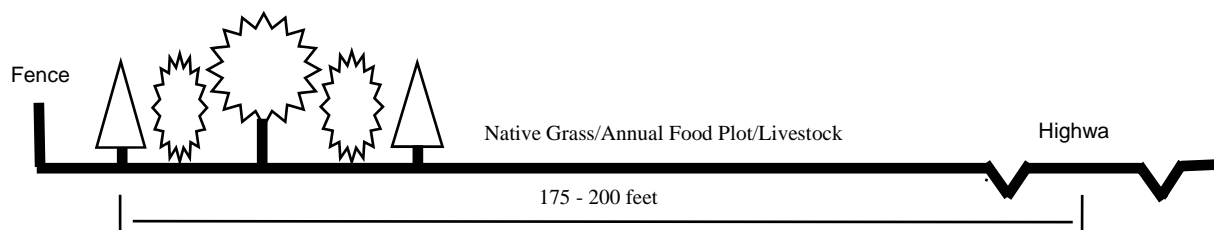
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## What Are Living Snow Fences?

Living snow fences are tree and shrub windbreaks strategically planted in critical locations to prevent road closure caused by drifting snow. Windbreaks have been proven effective in protecting farmsteads and livestock from harsh winter winds and blowing snow. A properly designed living snow fence will cause snow to accumulate within and adjacent to the snow fence and not on the road. There are several advantages to using living plants instead of traditional slatted snow fences:

1. Improved snow control due to greater snow storage capacity.
2. Longer life span than slatted snow fences.
3. Can be designed to provide winter livestock protection.
4. Provide and enhance wildlife habitat.
5. Aid in soil erosion control.
6. Sequester carbon to reduce atmospheric carbon dioxide.
7. More aesthetically pleasing than slatted snow fence.
8. Relatively maintenance free once established.
9. Approximately ten times cheaper to install and maintain than slatted snow fence, based on cost comparisons over the expected life of a living snow fence.
10. Reduced snow removal costs.

Living snow fences have a few disadvantages: they require more space than slatted fences and they can take three to five years after planting to be effective. Living snow fences must be protected from livestock.



## Design and Location

To be effective, a living snow fence must be properly designed and located with respect to the highway in need of protection. A living snow fence that is placed wrong may not do an adequate job of protecting the road and may even cause snow to accumulate on the road. The windward row should be located no closer than 175 feet from the centerline of the road. This will allow adequate room for snow storage during severe blizzards. The planting needs to be extended 100 feet beyond the area protected to prevent snow from sweeping around the ends of the planting. At least two rows of conifers (junipers) and a shrub row are needed to provide a dense and effective barrier. One of South Dakota's most effective living snow fences, located along I-90 just east of Rapid City is composed of five rows: Rocky Mt. Juniper, Russian-olive, Green Ash, Russian-olive and Rocky Mt. Juniper. It is doing a remarkable job of controlling snow.

# Site Selection and Private Landowner Participation

Critical areas along state, federal, or local transportation routes in need of protection will be identified by personnel from the South Dakota Departments of Transportation and Agriculture, Resource Conservation & Forestry Division, or from local Conservation Districts. If owners of the land adjacent to the critical areas agree to participate, all they are required to do is provide the property and agree to leave the living snow fence in place for a minimum of 10 years.

Landowners may be asked to prepare the site for tree planting, maintain the planting until the trees are established, and insure that the site is adequately protected from livestock. They can perform the work themselves or contract it out. Either way, they will be reimbursed for any costs incurred. The installation of fabric weed barrier may be a viable option for weed control. The installation of a drip irrigation system may also be considered on a site by site basis.

Participating landowners are also eligible to receive easement payments based upon cash rental value for up to ten years, and possibly another ten years if the planting continues to function well.

For more information contact the South Dakota Division of Resource Conservation & Forestry

## Division of Resource Conservation and Forestry Field Offices:

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Lead	605-910-4975
Mitchell	605-995-8189
Rapid City	605-394-2395
Sioux Falls	605-362-2830
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Pierre	605-773-3623

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Division of Resource Conservation and Forestry

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This brochure was funded in part by a grant from USDA Forest Service Forest Stewardship Program.

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Revised January 2010

# The Living Snow Fence Program *in South Dakota*



**South Dakota**  
**Department of Agriculture**  
**and Natural Resources**  
Division of Resource Conservation  
and Forestry