

Windbreak Planting, Judith Basin County, MT

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Objective: Windbreak planting for protection of farmstead

County: Judith Basin, MT

Average Annual Precipitation: 15 - 19 inches

MLRA: 46, Northern Rocky Mountain Foothills

Dominant Soil Type: Denver-Judith complex

Elevation: 4335 ft

Site Preparation: Three years of fallow prior to planting, two years of chemical fallow and one year of tillage fallow

Planting Date: April 30, 2004

Planting Method: Conservation District's tree planter

Previous Site History: An existing windbreak

Herbicide: Glyphosate applied for chemical fallow

Irrigation: None

Grazing: Wildlife browse from deer and rabbit

Monitoring Dates: July 2005, Aug 2006, Aug 2013, Nov 2014, Aug 2018



Fig. 1. Rocky Mountain juniper 15 years after planting.

Table 1. Windrow species planted, April 2004.

Common Name	Scientific Name	Material	Row Spacing (feet)	Number Planted
Ponderosa pine	<i>Pinus ponderosa</i>	bareroot	17	25
Rocky Mountain juniper	<i>Juniperus scopulorum</i>	bareroot	17	25

Introduction:

The objective of this project was to replace two tree rows in a windbreak. The existing windbreak was approximately 60 years old and needed renovation. Ponderosa pine and Rocky Mountain juniper are excellent choices for windbreaks and shelterbelts. These evergreen species provide protection from wind and soil erosion and are also suited for field borders, living snow fences, wildlife habitat improvements, and more.

There was excellent site preparation for the planting that reduced weed and grass cover. The area was kept fallow using Roundup® (glyphosate) for two years and tillage for one year. Adjacent tree rows were trimmed to reduce overhanging vegetation to allow sunlight to the new plants. A tree planter was used for planting in the early spring when the bareroot stock was dormant (Table 1). Following planting, the site was kept cultivated during 2005 and 2006 to allow for species establishment. No cultivation was noted after 2006.

Results:

Survival was 100% for Ponderosa pine and 88% for Rocky Mountain juniper first two years after planting while the rows received cultivation (Table 2). Fifteen years after planting, juniper survival was 76%. The junipers averaged nine feet tall and six feet wide. By 2018, none of the ponderosa pine had survived. Survival of these species may have been impacted by several factors including competition from grass, shade from other tree rows, and wildlife herbivory. These two species have done well in this area if taken care of the first 1 to 5 years. Use the following best management practices to improve survival and growth characteristics on future plantings.

Table 2. Species survival during the fifteen years following planting.

Species	Survival (number of plants / percent)				
	2005	2006	2013	2014	2018
Ponderosa pine	25 / 100%	25 / 100%	1 / 4%	1 / 4%	0 / 0%
Rocky Mountain juniper	22 / 88%	22 / 88%	19 / 76%	19 / 76%	19 / 76%

Best Management Practices for Establishing Windbreaks:

- Select species appropriate for the site and soil characteristics, and the project objectives.
- Site preparation should control grasses and forbs for 1 to 2 years prior to planting.
- Follow planting and spacing guidelines as described in NRCS Conservation Practices for Windbreak/Shelterbelt Establishment (380) and Windbreak/Shelterbelt Renovation (650).
- Use six-foot-wide, high quality woven weed fabric, on-going cultivation, or chemical treatment to control weeds and competing vegetation.
- Use tree protectors if herbivory may be an issue.
- Create a maintenance plan that may include irrigation, fertilizer, weed and grass control, mowing, and pruning needs.
- Monitor the windbreak for survival and injury, and replant to reach survival goals.



Fig. 2. Ponderosa pine can reach heights of 17 to 30 feet after 20 years if best management practices are followed.



Fig. 3. Rocky Mountain juniper 20-year height can range from 12 to 15 feet under adequate conditions.

