

Tree and Shrub Planting after Russian Olive Removal, Valley County, MT

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Objective: Demonstrate restoration of native woody species along the shoreline following Russian olive removal

County: Valley County, MT

Average Annual Precipitation: 10 - 12 inches

MLRA: 58A, Northern Rolling High Plains, North Part

Dominant Soil Type: Hanly loamy fine sand

Elevation: 2040 ft

Site Preparation: Russian olive was cut at the base in November 2011 and stump-treated with herbicide

Planting Date: May 9, 2013

Planting Method: bobcat auger for planting, fabric for weed control, and T-posts with wire fence for protectors

Previous Site History: Natural area where woody invasive trees have established along the shore of Missouri River at Fort Peck Reservoir.

Herbicide: Herbicide was used to stump-treat Russian olive

Irrigation: none, site is along the shore of Missouri River

Grazing: wildlife only, plant cages were used to protect plants

Monitoring Dates: Sept 2013, Nov 2015, and Aug 2017



Fig. 1. Cottonwood trees five years after planting.

Table 1. Planted species and their percent survival, August 2017.

Scientific Name	Common Name	Material	Spacing (feet)	Number Planted	Number Alive 2017	Percent Survival
<i>Salix bebbiana</i>	Bebb's willow	container	3	50	0	0
<i>Prunus virginiana</i>	Chokecherry	bareroot	6	13	13	100%
<i>Populus deltoides</i>	Cottonwood	bareroot	15	12	9	75%
<i>Fraxinus pennsylvanica</i>	Green ash	bareroot	10	15	14	93%
<i>Shepherdia argentea</i>	Silver buffaloberry	bareroot	6	12	10	83%

Introduction:

Russian olive (*Elaeagnus angustifolia*) has established and formed a dense canopy cover along the shores of Fort Peck Reservoir and the Missouri River. This project is a demonstration of Russian olive removal followed by planting native trees and shrub species that might thrive in the shoreline environment. NRCS worked cooperatively with the US Army Corps of Engineers (USACE) on the project design and installation. The USACE removed Russian olive in November 2011 by using chainsaws to cut trees at the base within a 150 x 45 foot area along the shoreline. Russian olive was stump-treated with an herbicide to kill the roots. In May 2013, three native shrubs and two native trees were planted using an auger, weed barrier fabric, and wire cages.

Results:

Chokecherry had 100% survival after five years and were starting to expand outside their protector cages. They experienced some insect (tent caterpillar) damage on 20% of the foliage and had signs of browsed outside of the cages. *Green ash* had the second best survival but were relatively short and had insect damage over 50% of their foliage during this drought year. *Silver buffaloberry* had good survival,



was the most robust plant on site, had no signs of insect or drought injury, and was producing berries. Buffaloberry was browsed where it overgrew the protectors. *Cottonwood*, planted approximately 45 feet from the shoreline, was in excellent condition with no insect, drought or grazing damage. *Willow* was the only species planted without protective cages and weed fabric. No willow plants were found and were probably either grazed by wildlife or overtopped by the dense wetland grasses along the shoreline.

Table 2. Species average height and width, Aug 2017.

Species	Height (ft)	Width (ft)
Chokecherry	4.5	3
Cottonwood	9	3.5
Green ash	4	2
Silver buffaloberry	9	3.5

Considering that no maintenance was provided (watering, weeding, mowing), the trees and shrubs did excellent and the proper species were selected for the site condition. Russian olive was re-invading the site after five years and additional removal should be considered.



Fig. 2. Silver buffaloberry was 8 – 12 feet tall, has filled the wire cage and is producing fruit. To the left of the cage, Russian olive is re-invading the site.



Fig. 3. Shrub and tree species benefited from weed barrier and cages to protect the developing plants. Chokecherry is now taller than surrounding grasses.

Summary:

- Weed barrier and protective cages were important for the survival of the species.
- Silver buffaloberry and cottonwood had good survival, were robust plants, and had no signs of drought or insect damage.
- Chokecherry had the highest survival but had minor insect damage.
- Green ash had high survival but the plants were insect and drought stressed. Their survival will need to be monitored.
- Follow-up Russian olive removal should be considered.

