

Saltcedar (Tamarisk)

by Robert T. Grubb, Roger L. Sheley, and Ronald D. Carlstrom: Extension Research Associate, Land Resources and Environmental Sciences, Montana State University-Bozeman; MSU-Extension Noxious Weed Specialist and Gallatin County Agricultural Extension Agent, MSU Extension Office, Bozeman, MT, 59717. Illustrations by Susan Kezie-Webb

Describes biology and management techniques for this large shrub or small tree that's a threat to Montana's waterways.



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SALT CEDAR OR TAMARISK

(*Tamarix ramosissima*, *T. chinensis*, or *T. gallica*) is a large shrub or small tree that was introduced to North America from the Middle East in the early 1800s. This weed has been used for ornamentals, windbreaks and erosion control. By 1850, saltcedar had escaped from these areas and infested many river systems and drainages in the Southwest—often displacing native vegetation. By 1938, infestations of saltcedar could be found from Florida to California and as far north as Idaho. Saltcedar continues to spread rapidly and currently infests water drainages and wet areas throughout the United States. Saltcedar was first found in Montana around 1960 in the Yellowstone and Big Horn River drainages. In a current survey of the major river drainages in Southeastern Montana, saltcedar was located on over 250 miles of rivers through several counties (see Figure 1).

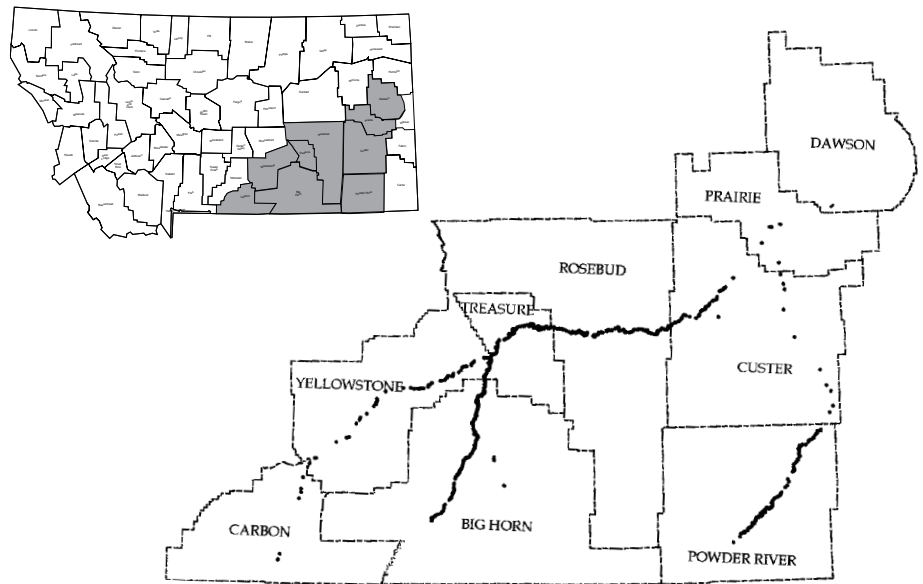


Figure 1. Saltcedar has been found along waterways in nine southeastern Montana counties. (Funding for the saltcedar survey was provided by the USDA-APHIS-PPQ Cooperative Agricultural Pest Survey (CAPS) program.)

Impacts

Saltcedar is a water-loving plant that has been designated as one of the 10 worst noxious weeds in the U.S. Research suggests that saltcedar uses more groundwater than displaced native vegetation. Each year, more tall, dense stands of saltcedar have the potential to use over 9 acre-feet of water for every acre of infestation. This translates to 14,520 cubic yards of water per acre of infested land. With this kind of water uptake, the total water flow along drainages with heavy infestations of saltcedar can be reduced or even eliminated. High densities of saltcedar can congest river channels and create potential flood hazards. Saltcedar reduces channel widths by decreasing the water velocity and thereby increasing the deposition of sediment.

Research indicates that the density and diversity of native

vegetation decreases in saltcedar-infested areas. Saltcedar displaces cottonwoods, willows, and many species of grasses, forbs and shrubs. Once saltcedar has invaded an area, it prevents native species from reestablishing by exuding salts from the leaves, increasing the salinity of the surrounding soil. Wildfires are more frequent in saltcedar thickets, but the plant usually survives and regrows faster than many native plants. The population and diversity of birds, rodents, and insects also decrease in saltcedar-infested areas. Saltcedar infestations reduce forage and alter livestock and wildlife habitat.

Saltcedar can supply pollen and nectar for honey bees, and also provide nesting sites for doves. However, it produces less food for doves than displaced riparian species; consequently, doves nesting in saltcedar rely heavily on nearby agricultural fields as food sources.

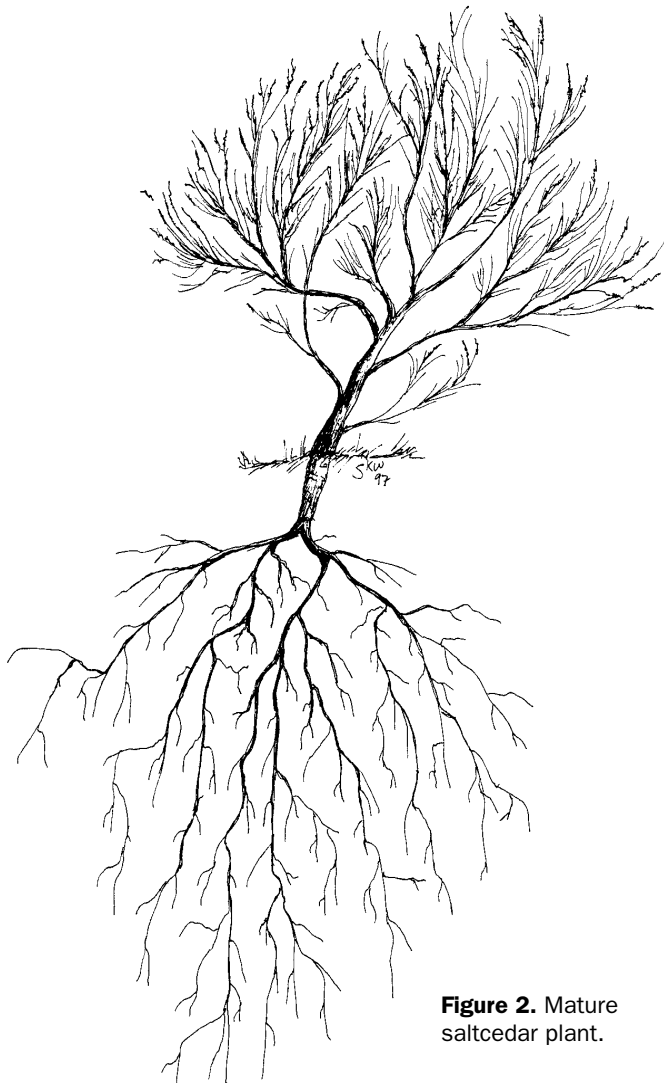


Figure 2. Mature saltcedar plant.

Biology

Saltcedar, a member of the Tamaricaceae family, is classified as either a large shrub or a small tree. It has numerous slender branches covered with small scalelike leaves. Saltcedar can grow 30 feet tall and has smooth, reddish-brown bark which becomes furrowed and ridged with age (Figure 3). Saltcedar produces thousands of small white to pink flowers throughout the spring and summer (Figure 4). A mature saltcedar plant can produce half a million seeds each year. Seeds are small with a tuft of hair attached to one end enabling them to float long distances on the wind and water. Seeds are short-lived and can germinate within 24 hours after dispersal, sometimes while still floating on the water. Saltcedar also reproduces by an extensive root system which can descend over 10 feet.

Management

Two steps are necessary to effectively control saltcedar: 1) the plant must be killed and removed, and 2) re-invasion of the weed must be prevented.

Several methods have been investigated to control saltcedar. These include burning, mowing, chopping, disking, root plowing, herbicides, and combinations of these methods. In

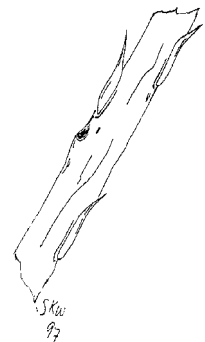
most cases, only temporary suppression of plant growth was obtained, even with repeated treatments. The most successful method for managing saltcedar involves integrating root plowing and burning of the debris with repeated herbicide treatments on the regrowth.

Mechanical methods for controlling saltcedar include mowing, chaining or ripping, and bulldozing. While all of these methods have been used to manage saltcedar, they have not eradicated saltcedar stands because they do not destroy all of the subsurface root crowns. Remaining root crowns regrow vigorously and can reach a height of 9 feet or more in one season.

Root plowing is a mechanical tool that has been successful in managing saltcedar infestations. If properly performed, root plowing can achieve 90 percent control of saltcedar stands in the field. The root plow must be set 12 to 18 inches below the soil surface to ensure cutting below the root crown of saltcedar (Figure 5). If the root crown is removed, the plant will not be



Figure 3. Stem, leaves and bark of saltcedar.



able to sprout again and form new plants. For root plowing to be effective, the above-ground vegetation should be piled and burned to prevent resprouting of shoots. Root plowing during hot and dry weather can also increase the effectiveness of this control method.

There are few herbicides available for use on saltcedar. Used alone, herbicides have not provided long term control of saltcedar. Dicamba (Banvel[®]), 2,4-D, and Tebuthiuron (Spike[®]) are labeled for saltcedar and can provide some measure of control on this plant.

Imazapyr (Arsenal[®]) provides good control of saltcedar when applied at a rate of 4–6 pints per acre. The efficacy of herbicides has been greatly enhanced when combined with other control methods and/or revegetation. Modified root plows which inject herbicides below the soil surface can increase saltcedar control by as much as 45 percent without injuring many of the cover grasses and other shallow rooting plants. Herbicides are most effective on saltcedar when applied to young, tender, new growth. Integrating mechanical methods such as mowing, burning, cutting, or root plowing to remove old growth with repeated herbicide treatments on the new regrowth can provide good control of saltcedar. Since saltcedar generally grows in wet areas, caution should be used when applying herbicides to keep them out of ground and/or surface water. Please read and follow the entire chemical label when applying herbicides to manage saltcedar.

Changing the level of ground water may control saltcedar

as well as other riparian vegetation. Dropping the water table has reduced saltcedar stands along the Gila River in Arizona. Submergence for 28 months has provided 99 percent control of saltcedar where plants were inundated for one entire growing season, and over half of the next two growing seasons.

There is little information on biological control of saltcedar using insects or microbes. Although there are several species of insects from the eastern Mediterranean and Pakistan areas which attack saltcedar, insufficient work has been done on their use as biological control agents. In a cursory study performed in New Mexico, a leafhopper reduced the growth of saltcedar by 76 percent. Grazing by livestock on seedlings and new sprouts may repress regrowth and seedlings of saltcedar in some areas.

Once an area has been cleared of saltcedar, re-invasion must be prevented to achieve long-term control. This can be accomplished either through continuous flooding or revegetation with beneficial plants. Once established native and/or beneficial plants can help exclude saltcedar seedlings from reestablishing while enhancing forage and habitat. Contact your local Natural Resource Conservation Service for recommendations on native or beneficial plants that grow well in your area. If the saltcedar infestation has increased the salinity of the soil using salt tolerant species may improve your revegetation efforts. For more information on saltcedar and/or other weeds, contact your local Extension or weed management office.



Figure 4. Saltcedar flower

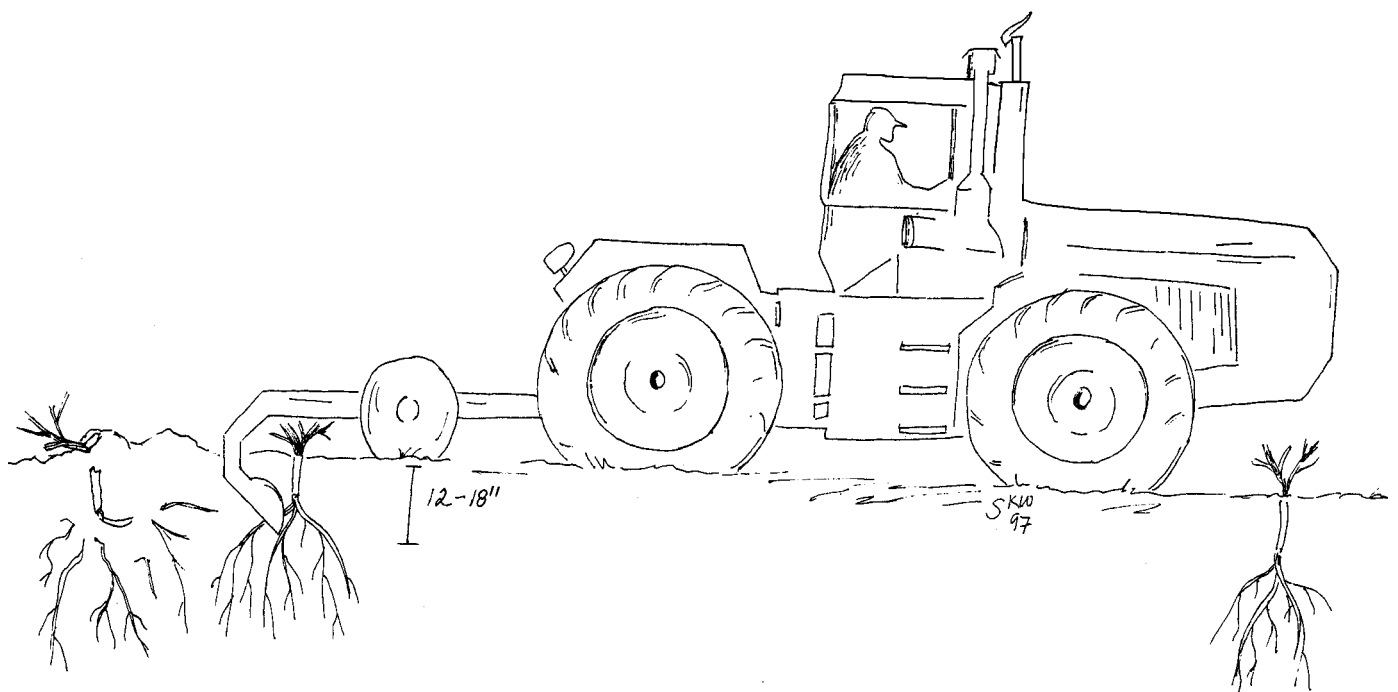


Figure 5. Root-plowing to manage saltcedar infestations.

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G-4 (Miscellaneous)

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