Saskatchewan Watershed Authority

Managing Western Snowberry and Trembling Aspen on Native Grasslands

Western Snowberry

INVASIVE species

Introduction

Western snowberry *(Symphoricarpos occidentalis)*, also referred to as buckbrush, badgerbrush or wolfberry, is a native shrub found throughout most of North America. It is a small deciduous shrub that grows in dense stands in pastures and rangeland in the prairies and aspen parkland. Western snowberry is adapted to a wide range of moisture and soil conditions and can be found in open grasslands, riparian areas and on the edges of the aspen parkland. Trembling aspen *(Populus tremuloides)* also referred to as quaking aspen, is native to North America as well. Due to the suppression of fire and bison grazing, and its adaptation to a wide range of soil and moisture conditions, it has started to become a threat to grasslands, mainly in the aspen parkland.

The Problem

Native prairie is a part of our natural history and is important as a grazing resource, for wildlife habitat, and for soil and water conservation. For thousands of years the open grasslands and woodlands of the prairies have been maintained in a healthy balance by roaming herds of bison and natural disturbances such as fires. Without natural controls to keep populations of woody species in check, our prairie can be degraded as species like western snowberry or trembling aspen exclude other species which reduces biodiversity, carrying capacity, wildlife habitat and the aesthetics of our prairie ecosystem.

Western snowberry and trembling aspen have many characteristics that allow them to compete with native grass species:

- *Extensive root system:* **The rhizomes of western snowberry are usually dense and can grow from 5-12.5 cm deep. Trembling aspen roots can extend a great distance and cover a large area even when the above ground vegetation is sparse.**
- *Prolific:* **Western snowberry reproduces by creeping rhizomes and seed. It re-sprouts rapidly after fire or mowing and often produces fruit in the first growing season.**
- *Suckering:* **Aspen reproduces primarily through suckering. Suckers are formed on the roots of aspen and are able to produce new stems (also referred to as clones) after some form of disturbance such as fire. These suckers are extremely long lived and can survive for hundreds to thousands of years.**

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- *Undesirable to cattle:*
  When given the option, cattle will graze desirable native grass and forb species before they will graze woody species such as aspen or western snowberry. These woody species reduce the availability of herbage thereby causing the desirable grass species to be hit harder by grazers. In fact, western snowberry is unpalatable to cattle throughout most of the season and will not be grazed unless there is little other forage available.

- *Shading of other desirable species:*
  Both western snowberry and aspen grow to a substantial height, which effectively shades other species resulting in their decreased growth and production.

- *Dense growth:*
  Stems of western snowberry can grow so dense that it creates a barrier to grazing animals.

- *Wide adaptation:*
  - Western snowberry is adapted to a wide range of soil types. It is tolerant of mildly acidic to moderately alkaline soils and is somewhat tolerant of saline soils. Snowberry establishes well on well-drained soils in disturbed areas and on coarse textured or rocky soils. Snowberry grows best in sunny conditions but can tolerate partial shade as well.
  - Aspen is also adapted to a wide variety of soils. It can grow on soils that range from shallow and rocky to deep, heavy clays. Generally it grows best on rich, moist, loams or on well-drained silt or clay-loams. Aspen is a shade intolerant species and does not like water logged sites, but it is very tolerant of cool temperatures. Because of their ability to adapt to such a wide range of conditions western snowberry and aspen can easily invade pastures, rangeland and open grasslands.

Know Your Problem

Before a management regime for controlling western snowberry and aspen can be selected some important details must be identified: species that are present, area of the encroachment, grazing history, location in relation to the entire pasture, relative biomass of snowberry and/or aspen to native grass species, water sources (above and underground), range condition, topography and soil and range types.

Conducting an inventory of the site using field surveys and aerial photos to gather the necessary information is the first step in controlling aspen and snowberry. Maps of the pasture including total number of acres affected can be created for planning management strategies to control western snowberry invasion.

Controlling Western Snowberry and Trembling Aspen

Western snowberry and aspen cannot be controlled with a single treatment. Continuous monitoring and reapplication of the treatment will be required. Producers should be prepared to be active in the control of snowberry and aspen for several years. Management plans should be specific: land use and grazing

Trembling Aspen

management of native range, soils, climate, location and topography should all be taken into consideration.

The best approach to control western snowberry and aspen invasion is to use an integrated approach using a combination of management techniques. The key to controlling western snowberry and/or aspen is to attack both the above ground growth and the underground root mass and to minimize regrowth as much as possible.

Management Techniques

Soft Methods

Decreasing overall grazing pressure will increase grass production in the target area while slowing the rate of western snowberry spread. Establish grazing regimes that are beneficial to the desired species. This will result in their increase, which will provide adequate competition with western snowberry. Placing salt blocks in the middle of western snowberry patches to encourage trampling can also help to reduce spread.

Burning

Burning can be an effective method of control, especially if coupled with another management regime such as chemical control or grazing. The safest time of the year to burn is early spring with leftover snow in the brush or trees to act as a firebreak. Fall burning may be more successful because of less ground moisture. However, with the increased dry conditions there is an increased chance of fire escape.

It is very important to note, that if burning as a method of control is to be effective, it must be done on a repeated basis. Following first burn, regrowth may appear to be the same if not greater than before the burning, but following subsequent years of burning, regrowth will decrease. For western snowberry, it is recommended that burning take place every spring on an annual basis. For aspen, burning should be conducted at an interval of approximately four years.

Grazing

Snowberry

With western snowberry, annual grazing in June or July will provide the most damage. This is when its carbohydrate reserves are lowest and the plant is most vulnerable. Grazing in the late summer or fall should be avoided, as it will only result in a greater snowberry density. In addition, grazing regimes should encourage growth of desirable species. Overgrazing should be avoided, as it will also increase snowberry spread. Although western snowberry is unpalatable to cattle, sheep and goats will graze it and can be used to control its spread.

Aspen

Cattle will graze aspen stands if grazed at the right time of the year. If grazed early in the season, cattle tend to avoid aspen until the herbaceous species have been consumed. Aspen is most acceptable and palatable to cattle when grazed late in the season. Late-season, heavy grazing should occur repeatedly for short durations in subsequent years. This should be a sufficient means to control aspen suckers and improve herbaceous forage production.

Chemical Control

Escort can be used to control western snowberry and will reduce the canopy significantly for at least 6 years. Escort should be applied between mid-June and mid-August after the brush has leafed out but before the leaves begin to turn their fall colors. Escort provides better control than other chemicals such as 2, 4-D because it can translocate into the crown, killing it and it and thus reducing the woody growth and barrier effect the stems have. 2, 4-D applied in the spring can also be used to control western snowberry but somewhat less effectively. It should be applied in spring or early summer when the leaves have fully expanded to increase herbicide take up. Re-treatment will be required the following year. Application of 2, 4-D in combination with Banvel can control both aspen and western snowberry in grass pastures, rangeland, and non-cropland. This should be applied in the spring or early summer when the leaves are fully expanded. For aspen, the chemical should be applied before the canopy reaches a height of two meters and the application will likely have to be repeated. Remedy is another chemical that has been used on aspen. It should be broadcast to fully expanded actively growing foliage also in the spring or early summer. Refer to the Guide to Crop Protection produced annually by Saskatchewan Agriculture, Food, and Rural Revitalization.

When using chemicals as control, usually target and non-target species end up receiving treatment. Often non-target plants are desirable forbs or grasses that should not be killed. An easy way of avoiding this is to apply chemical using a spot specific applicator such as the carpet wiper or red weeder. Both of these applicators concentrate the chemical solution at the end of a stick or pole, which can easily be wiped onto the brush.

Mowing/Brush Cutting

In order for mowing/brush cutting to be effective in control, it has to be repeated over several years and performed several times per growing season. For western snowberry, mowing should be conducted in the spring just after green-up, again in mid July, and then once again after mid August when it will not grow again for the remainder of the growing season. For aspen, mowing/brush cutting should be done in June to early July after leaf expansion and then once again later in the summer. Mowing early and then again later in the same season works best

because it keeps the carbohydrate reserves of the aspen trees low and therefore the suckers are more susceptible to winter kill.

Bark Scraping

For aspen stands, another method of control that has proven to be effective is bark scraping. Bark scrapers are mechanical devices that are pulled over the trees causing the tree to bend over and resulting in part of the bark being peeled off. The best time to scrape is in mid June to the end of July. When compared to other methods such as mowing, fire or grazing, bark scraping appears to be just as effective if not more so.

> Western snowberry and trembling aspen have many characteristics that allow them to compete with native grass species

Using Combinations of Management Techniques

When trying to control and prevent the spread of woody species such as western snowberry and trembling aspen, a combination of management techniques proves to be the most effective when applied at repeated intervals.

Mowing/Burning and Grazing

Both mowing and burning stimulates a much softer re-growth that will be more palatable to cattle. Cattle should not graze areas for the first three to six burns, as hoof rot can result. Usually after the fourth burn cattle can graze the area. The frequency of burning should be decreased when followed by grazing. For aspen control, burning should be followed with short duration, high intensity periods of grazing.

Mowing/Burning and Chemical Control

Both burning and mowing can be used to encourage even re-growth which can then be treated with herbicides. Herbicides should be applied between the nine to thirteen leaf stage and when the plants are first flowering. For aspen, burning followed by the application of herbicides is very effective in the control of aspen suckers.

Monitoring

It is important to monitor the effects of any treatment being used to control western snowberry or aspen. Depending on the response of these woody species, treatments may need to be adapted from time to time.

It is helpful to record your management actions (timing, location, intensity, plant stage) as well as weather conditions and changes in the plant community. Installing permanent markers at the edge of the snowberry invasion is one way to determine if expansion is being controlled or reduced. Landscape and ground cover photos as well as plant counts may also be useful for monitoring progress. The only way to establish whether or not progress is being made is through continuous monitoring and observation.

Summary

Western snowberry and trembling aspen are native shrub species of North America that have become an economic problem throughout the prairies and aspen parkland. Without natural controls such as fire or free-roaming bison, western snowberry and aspen have encroached into native grasslands, pastures, and rangelands reducing species diversity. The best way to control this encroachment is to use an integrated approach that combines several management techniques. Management strategies for western snowberry and trembling aspen must be persistent and constantly monitored in order to achieve long term results.

For Further Information

A bibliography of the resources used to prepare this factsheet is available from the Saskatchewan Watershed Authority. Factsheets on other species and topics are also available.

FACT sheet

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