



JEFFERSON COUNTY NOXIOUS WEED CONTROL BOARD

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BEST MANAGEMENT PRACTICES

Sulfur Cinquefoil (*Potentilla recta*)

(Family—*Rosaceae*—Rose Family)

Legal Status in Jefferson County: Class B Noxious Weed (non-native species designated for control by State Law RCW 17.). Washington State and the Jefferson County Noxious Weed Control Board require property owners to control and prevent the spread of sulfur cinquefoil on private and public lands throughout the county. State Weed Law defines control as *to prevent all seed production and to prevent the dispersal of all propagative parts capable of forming new plants.* (See WAC 16-750-003).



BACKGROUND INFORMATION

Impacts and History

- Has invaded habitats ranging from low to high elevation, from seasonal wet meadows to shrubland and forest ecosystems and does not appear to be limited by soil type.
- Able to invade rangeland areas that are in good condition and not being over-grazed.
- Can significantly reduce the forage value of a pasture or rangeland and is one of the last plants to be grazed by animals.
- Even without over-grazing, it can out-compete grasses and other plants.
- Although most often found in disturbed areas, it has also begun to invade native plant communities that are relatively undisturbed by human activities including open canopy forests, forest openings and logged forests in the western United States.
- Originally from central Europe, Asia and the Middle East.
- Appeared in North America sometime before 1900.
- By 1950, sulfur cinquefoil was well established in the eastern U.S. and Canada and starting to spread west. The weed was first reported in Washington in 1937 and was reported from 12 counties in the state by 1996.
- Its rapid spread is similar to that of spotted knapweed and leafy spurge even though it was introduced several decades later.

Description

- Perennial with a woody rootstock producing one to several erect stems, 1 to 3 feet in height. Stout, hairy, leafy stems are un-branched up to the flowers.
- Flowers have five butter-colored or light yellow, heart-shaped petals surrounding a darker yellow center.
- Leaves have stiff hairs and are palmately lobed with five to seven long leaflets that are uniformly toothed along the edges.
- Seeds are tiny, dark brown with prominent branched ridges and narrow winged margins.
- Plants typically have a deep taproot surrounded by shallow, spreading branch roots.



Habitat

- Adapted to a wide range of conditions but typically found in grasslands, shrubby areas, logged areas, roadsides, abandoned fields and open forests.
- Can take advantage of poor soils and disturbed sites but is also successful in moist fields and can out-compete healthy pasture grasses.

Reproduction and Spread

- Regenerates annually from new shoots emerging from the edges of the root mass. Typically **flowers from early June through July with seeds beginning to form in mid to late July.** Reproduces by seed but can spread by roots if moved by mechanical equipment.
- Able to produce many flowers and seeds in early stages of succession. Small infestations with only a few scattered plants can rapidly increase in size and density.
- Stems that are knocked to the ground can produce roots at the nodes. Plants that are cut down will produce new shoots from the rootstock.
- Seeds can live 4 or more years in the soil.

Local Distribution

There are very few infestations of sulfur cinquefoil in Jefferson County. Two large ones have been found, one in Port Hadlock and one on Eaglemount Road. Isolated plants are occasionally found on roadsides and removed immediately.

CONTROL INFORMATION

Integrated Pest Management

- The preferred approach for weed control is Integrated Pest Management (IPM). IPM involves selecting from a range of possible control methods to match the management requirements of each specific site. The goal is to maximize effective control and to minimize negative environmental, economic and social impacts.
- Use a multifaceted and adaptive approach. Select control methods which reflect the available time, funding, and labor of the participants, the land use goals, and the values of the community and landowners. Management will require dedication over a number of years, and should allow for flexibility in method as appropriate.

Planning Considerations

- Survey area for weeds, set priorities and select best control method(s) for the site conditions
- Small infestations can be effectively dug. Isolated plants should be carefully removed in order to stop them from infesting a larger area. Be sure to remove as much root as possible.
- For larger infestations, the strategy will depend on the land use of the site. In pastures, good grazing practices and management of grass and forage species will greatly improve control of sulfur cinquefoil. Specific suggestions are given in the Best Management section.
- Generally work first in least infested areas moving towards more heavily infested areas.
- Minimize disturbance to avoid creating more opportunities for seed germination.
- Control practices in critical areas should be selected to minimize soil disturbance and reduce the potential for erosion. Minimizing disturbance also avoids creating more opportunities for germination of weed seeds.
- If the control site requires extensive clearing or grading, or is located near a shoreline, steep slope, stream, or wetland, contact the Jefferson County Department of Community Development to find out whether or not a permit may be necessary.
- Because sulfur cinquefoil is a state-listed noxious weed, control (both manual and chemical) in critical areas is allowed as long as the landowner consults with the Jefferson County Noxious Weed Control Board and follows their guidelines.

Early Detection and Prevention

- Sulfur cinquefoil is difficult to spot in tall grass unless it is in flower. Survey pasture areas, unmanaged grasslands, roadsides and railroad rights-of-way for flowering and pre-flowering plants from **late May to late June**.
- Dig up isolated or small populations. The site should be monitored over several years for plants growing from root fragments and from the seed bank.
- Prevent plants from spreading away from existing populations by washing vehicles, boots and animals that have been in infested areas. Seeds are small and are easily carried in mud and in animal fur.
- If animals are being moved from an infested pasture to an uninfested pasture, first hold them for at least five days so that the seeds pass out of the animals' digestive systems.

Manual

- **Dig up plants in the spring or early summer when the soil is still moist and before the seeds mature.** Typically this is from early June through July. The roots are deep and extensive. Plants will re-sprout from root fragments. Remove as much root as possible.
- If plants are in seed, carefully bag and cut off the seed heads before digging up the rest of the plant. It is very difficult to pull the plants without dispersing the small, lightweight seeds. Brush off boots and clothes before leaving the infested area.
- In areas where mature plants are pulled, there are usually many seedlings and seeds left in the soil. Carefully search the area for seedlings and dig them up. Roots break off easily and re-sprout with new plants, so use a digging tool.
- Return to the same location in the following spring and summer to remove plants coming up from seeds already in the soil and continue to monitor the area for several years.

Mechanical

- Mowing, will **not** control sulfur cinquefoil effectively. Plants have massive, woody root system that store considerable food reserves and mowed plants will send up new shoots after mowing.
- Mowed plants respond by becoming lower growing, more branched, and with more bulky, spreading roots. Plants can still re-sprout, flower and set seed in the same season they are mowed. If you do mow, be sure to clean mowers to prevent spreading seeds to uninfested areas.
- A single plowing may increase sulfur cinquefoil cover, however, on productive agricultural sites, an intensive management program that combines cultivation and annual crops may effectively control sulfur cinquefoil.

Biological

Biological control is the deliberate introduction of insects, mammals or other organisms that adversely affect the target weed species. Biological control is generally most effective when used in conjunction with other control techniques.

- There are no biological controls currently available for sulfur cinquefoil.

Chemical

- Effective chemical control of biennial and perennial weeds can be achieved only with *translocated* herbicides (ones that move through the plant and kill the roots).
- If desirable grasses or other monocots (sedges, rushes or cattails) are present, use a selective herbicide (one that affects only broadleaved plants), or carefully spot-spray only the sulfur cinquefoil.
- Herbicides are most effective on actively growing plants in warm, dry weather.
- Herbicides should only be applied at the rates and for the site conditions and/or land usage specified on the label. **Follow all label directions.**
- Treated areas should not be mowed or cut until after the herbicide has had a chance to work. This can be as long as 2-3 weeks.
- It is important to establish new vegetation after treating an area. Follow the label for the timing because some herbicides stay active longer than others.

For questions about herbicide use, and specific herbicide recommendations, contact the Jefferson County Noxious Weed Control Program at 360-379-0470 ext 205, or noxiousweeds@co.jefferson.wa.us.

Summary of Best Management Practices

Small Infestations in Desirable Vegetation

- Carefully dig up the plants being sure to get all of the root.
- OR apply appropriate herbicide: Spot spray to minimize off target injury.
- Monitor site throughout growing season and remove any new plants.

Large Infestations \ Monocultures

- Mowing is not effective for controlling sulfur cinquefoil. Mowing can be used if the infestation is found later in the year to keep the plants from flowering until an approved control method can be used. Do not mow sulfur cinquefoil that has gone to seed.
- Large infestations can be controlled with selective herbicides. (See the Chemical section of this BMP).
- Suppression of large infestations of sulfur cinquefoil with a selective herbicide will greatly increase grass production, which in turn increases the suppression of sulfur cinquefoil.
- Promote healthy grassy areas by seeding and fertilizing.
- If used for grazing, the area should be managed to promote grass and clover vigor. Graze uniformly and move animals from area to area in a planned sequence. Avoid grazing when soil is very wet because holes can be opened up to new weed infestations. Do not overgraze because this can allow for rapid spread of sulfur cinquefoil. For more information on pasture management, contact the Jefferson County Conservation District (<http://www.jeffersoncd.org/links.html>).
- Continually monitor area - especially disturbed places - for sulfur cinquefoil. Remove isolated plants before they flower.

Riparian and Aquatic Area Control

- Focus on manual removal for small infestations if possible.
- Mowing will not control sulfur cinquefoil but it can serve in the interim until more effective control measures can be utilized.
- If manual control is not feasible, use an appropriate herbicide—see guidelines above.
- When large areas of weeds are removed, the cleared area needs to be replanted with native or non-invasive vegetation and stabilized against erosion.
- **Any herbicide application over or near water can be done only by a specially-licensed applicator using an approved aquatic formulation, and may require a permit from the Washington State Department of Ecology.**

Road Right-of-Way Control

- Dig up small infestations if possible.
- If plants are about to flower, they can be mowed until a more effective control strategy can be used.
- If manual control is not feasible, use an appropriate herbicide—see guidelines above.
- If bare spots are left, re-plant with low-growing native plants.

References

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- Pacific Northwest Weed Management Handbook. 2006. Oregon State University.
- PNW Extension Bulletin 376. 1991. Sulfur cinquefoil
- Montana State University Extension Bulletin 109. Sulfur cinquefoil biology, ecology and management in pasture and rangeland.
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