

STEVE'S Weed of the Month

Sulfur Cinquefoil

Also Known As: rough-fruited cinquefoil, five-finger cinquefoil, upright cinquefoil and yellow cinquefoil.

Sulfur cinquefoil is a **Class B Weed**. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.

Sulfur cinquefoil (*Potentilla recta* L.), native to Eurasia, is a perennial plant that is a member of the rose family and is loosely related to strawberries. Sulfur cinquefoil has a long lifespan, and twenty-year-old plants are not uncommon. The plant has a single taproot, with several shallow, spreading branch roots. Old roots die back to the taproot after a freeze, and new shoots emerge in spring from the edge of the woody root mass. Over time, the core of this mass slowly disintegrates. The stems growing from the crown are upright, covered with long, perpendicular hairs, and are generally unbranched, although they may branch above point of flowering. Mature plants grow 1 to 3 feet tall. Leaves are alternate, hairy, green on both sides, and palmately compound with 5 to 7 coarsely-toothed leaflets that are 2 to 4 inches long (resembling marijuana leaves in appearance). The leaves become smaller but increase in number toward the top of the stem. Sulfur cinquefoil bears flowers from May to July, with peak flowering occurring in late June. The flowers grow in clusters at the top of the plant stems. Each flower is about 1 inch wide and consists of five heart-shaped, light yellow petals that surround a darker yellow center. Thus the plant's name: "sulfur" describes the flower's pale yellow color, while "cinquefoil" is French for "five-leaved."



Sulfur cinquefoil reproduces by seed. A plant can produce up to 5000 seeds, which it usually disperses in late July and into August. The seeds are tiny, dark brown, slightly flat and have a prominent net-patterned seed coat. They can remain viable in the soil for three or more years.



Sulfur cinquefoil is one of the first plants to emerge in the spring, and it takes advantage of its early emergence to become established, enhancing its competitiveness. Sulfur cinquefoil is drought tolerant and spreads rapidly, due to its adaptability and because humans often unknowingly spread the seed. The plant is very competitive in semiarid sites, grasslands, and forest areas. It is also partial to disturbed areas, such as roadsides, trails, ditches, abandoned fields and vacant lots. This weed is often associated with other invasive weeds, particularly spotted knapweed, which it has been known to dominate or to accompany in co-dominating other vegetative species. Because of its high tannin content, most livestock and wildlife won't feed on sulfur cinquefoil. Therefore, its presence reduces desirable forage.

Sulfur cinquefoil is often confused with other cinquefoil species. Three features may be useful in distinguishing it: (1) the perpendicular hairs on its leaf stalks and stems, (2) while it has few basal leaves, its stems have many leaves, and (3) the net-like pattern of its seed coat. Also, its leaves appear green on the underside, not silvery as is the case with certain native cinquefoils.

Control Methods

Prevention Control: As is true with all weed management programs, prevention is the most cost effective strategy in controlling sulfur cinquefoil. To prevent weed infestations, learn to identify plants, monitor land for problem weeds, and be aware of contamination sources, such as fill dirt, hay and seed. Also, although sulfur cinquefoil reproduces by seed, it can be spread when its roots are transferred by equipment, so equipment should be kept free of weeds.

Cultural Control: While it is always prudent to sow and maintain desirable vegetative species to inhibit the spread of noxious species, competition alone will probably not be enough to suppress sulfur cinquefoil since it has been known to invade healthy plant communities.

Mechanical Control: Mechanical control can be effective if the sulfur cinquefoil infestation is small. Shovels, cultivators, and tillers can reach below the root crown and destroy the plant, especially after it has died back in the winter. Tilling sulfur cinquefoil is effective when done before the plant goes to seed and when repeated until no plants return. However, tillage is not practical in rangeland, pasture, or waterways and is relatively expensive compared to other treatments.

Mowing is not recommended because after the stalk is mowed, the plant develops a larger rootstalk and produces new, shorter flower stalks.

Biological Control: No approved biological control is currently available, and since sulfur cinquefoil is related to strawberries, there is concern that bioagents might attack non-target plants. Nevertheless, several organisms that may not be pests to strawberries or native cinquefoils are being tested for release.

Since livestock avoid sulfur cinquefoil, grazing is not an effective control option, although goats will feed on it.

Chemical Control: Chemical control is one of the most effective strategies (next to prevention) to control and eradicate sulfur cinquefoil. Among the most effective chemicals are picloram and metsulfuron. Picloram is more suited to pasture and rangeland, and should be applied in the rosette stage. Metsulfuron should be applied after the plant has fully emerged and is actively growing. Aminopyralid (Milestone®) can also be used for control when applied to actively growing plants at the prebud stage.

Other chemicals such as 2,4-D ester can be used in the rosette through the bud stage; however, 2,4-D lacks the residual activity provided by picloram. 2, 4-D is recommended over picloram if water contamination is a possibility.

**More information can be found in the
PNW Weed Management Handbook**

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

Revegetation Control: Regardless of the control methods used, revegetation of disturbed areas and open space in pastures, rangelands, and crops is recommended following treatments. Revegetation may slow or prevent sulfur cinquefoil from reinvading the treated area.

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