

Managing Common St. Johnswort

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St. Johnswort, Klamath weed or goatweed (*Hypericum perforatum*) was introduced to the United States from Europe for ornamental and medicinal purposes. It spread rapidly, invading rangelands and displacing desirable wildlife and livestock forage plants. It has become widely known for its medicinal value as an antidepressant, but St. Johnswort causes significant ecological and economic losses.

Identification and Habitat

St. Johnswort is a taprooted perennial plant that spreads by seed and by underground and aboveground creeping stems. The plants can grow from one to five feet tall with main stems that are reddish and woody at their base.

Leaves are normally less than an inch long. They are stalkless and occur in pairs on opposite sides of nodes along the stems. Each leaf has a smooth margin and when held up to light appears to have tiny, transparent perforations, thus the name *perforatum* (Fig. 1).

Flowers have five yellow petals with tiny, black glands along their margins and five sepals, normally half the size of the petals. The stamens are arranged in three groups and protrude above the petals (Fig. 1).

Fruits burst at maturity into three segments. A single plant is capable of producing 15,000 to 33,000 seeds per year. The seeds may remain viable in the soil for up to ten years. The gelatinous coating of the seeds allows them to stick to fur, clothing, and other objects. Wind, wildlife and humans may spread them. The seeds fall to the



Figure 1. St. Johnswort leaf with small perforations (dots) and flowers with showy stamens.

ground when the dew evaporates, thus aiding the distribution of St. Johnswort.

St. Johnswort is an herbaceous perennial, meaning it regrows from the roots annually. It grows widely, in various soils, but prefers sandy, moist fields and is capable of pushing out native plants of moist sites. Though it prefers sun and appears to grow best in sandy or gravelly soils, it is frequently found in heavy (silt clay or clay) soils.

Impact

St. Johnswort was first reported on western grazing grounds in 1893, and can now be found in the eastern half of the United States as well as the Pacific Northwest, south to northern California, central Nevada (Lander county), western Nevada (Washoe county) and east to Idaho and Montana.

St. Johnswort produces oil from a gland on its leaf that can be poisonous to livestock that eat it. After consumption of this weed, animals can become supersensitive to sunlight. They develop blisters and scabs, as well as experience weight and hair loss. Light-colored animals are most vulnerable.

Since animals avoid St. Johnswort when it invades pasture and range lands, soil disturbance may occur because uninfested areas become overgrazed. St. Johnswort's continued existence and spread is enhanced by the reduction, or even elimination, of competitive plant species.

Management

Prevention: Early discovery of St. Johnswort is imperative. Though it has an extensive distribution, there are still areas that have not yet been invaded where preventive actions should be taken, including most of Nevada. Preventing the spread of St. Johnswort is much easier, more environmentally sound, and more cost-effective than managing large infestations, which will be the result if plans for prevention are not implemented.

Monitor both private and public lands throughout a watershed for St. Johnswort's incursion annually. Eliminate St. Johnswort where it is found, and then revisit the site each year to make sure there are no escapes. Clean and inspect equipment and vehicles before they are allowed onto uninfested lands, especially if they have been used in infested lands. It may be necessary to restrict access of recreational activities in uninfested areas. Back-packers must purge their animals (feed them weed-free feed for three days in a corralled area) and use weed-free feeds while moving across invasive weed-free lands. In addition, always select and plant weed-free forage seed.

Mechanical Control: On small and isolated infestations, hand pulling or digging of young plants may be effective if repeated several times per season. Remove resprouts before they get large and certainly before they flower and produce seed. Plants that have been pulled or dug should be taken away from the area and destroyed, burned or buried deeply, to prevent vegetative regrowth and seed distribution. Small infestations should be bagged and buried in a landfill.

Mowing or cutting is not an effective method of management, but it may reduce the spread of the plant if done before seeds form. It may be necessary to cut the plant several times during the growing season to prevent seed production. This should be weighed however, against its increased



Figure 2. A mature plant of St. Johnswort.

vegetative spread due to mowing, which stimulates the vegetative growth of St. Johnswort.

Burning of St. Johnswort actually increases the density and strength of its stand. This may be due to increased germination of seeds exposed to severe heat, and to vegetative regrowth from the fire-resistant root crowns and lateral root buds. Frequent burning also reduces decaying organic matter and potential nutrient levels in the soil, and may aid the survival of St. Johnswort by lowering population densities of competing plants that are not tolerant of fire.

Cultural Control: Repeated cultivation destroys St. Johnswort. Consequently, it is not found in cultivated crops. Afforestation has been used in forestlands to control St. Johnswort because it does not grow well in dense shade, but this does not eradicate the weed entirely. It will grow along roadways or waterways in forested areas, and will often invade sites where forests are thinned or logged. The pinyon/juniper forests in Nevada would not be shady enough to compete with St. Johnswort, but pine/fir communities may be shady enough to be competitive. Preserving and producing competitive communities can help control St. Johnswort by making it tough for the

plant to establish and flourish. Hand control and spot spray may then be practical.

Biological Control: The first intentional introduction of insects into North America to control a weed species occurred after the success of several insects tested as biological control agents for St. Johnswort in Australia. The beetles *Chrysolina quadrigema* and *Chrysolina hyperici* were released in the Pacific Northwest in 1948 with great success in some highly infested areas, with the latter being better adapted to wetter sites. *C. quadrigemina* was very successful in California, reducing the existence of St. Johnswort to about 1 percent of its previous level. *Agrilus hyperici*, a root-boring beetle introduced from Southern France, has become established in eastern Washington and northern Idaho. A defoliating moth, *Aplocera plagiata*, has also been released and established in the northwestern United States. The effectiveness of biological controls is very dependent upon the climate of the area infested.

Chemical Control: St. Johnswort can be difficult to eradicate with herbicides because of its extensive root system, but control of new or small infestations can be accomplished. In pasture, rangeland, and non-cropland sites, foliar applications of 2,4-D at 2 quarts per acre will destroy the plant in seedling and pre-flowering stages. Spring application of one quart per acre of picloram is also effective and recommended. Note: picloram is a restricted use herbicide in Nevada and as such can only be purchased and applied legally by a certified pesticide applicator. To control St. Johnswort after emergence, an application of metsulfuron at one ounce per acre can be effective. Repeated applications may be needed. Metsulfuron should be used with caution. It is persistent in alkaline soils and can affect the establishment of broad-leaved crops and some grasses for months following treatment.

Herbicides are likely too expensive for large infestations and therefore should only be used when economically justifiable. The best management with herbicides is obtained when the timing of the treatment corresponds with the susceptible life stages of the weed; at bud stage before flowering occurs and late in the fall when the plant is going dormant for the winter.

Conclusion

St. Johnswort is an invasive weed that is severely affecting rangelands, pastures and other lands across the western U.S., but not cultivated cropland. Preventing its introduction to an area is best, least expensive and most important environmentally. Mowing and burning St. Johnswort is not effective. Digging, constant cultivation, use of several biocontrol agents (if they are adapted to the climate), along with judicious use of herbicides in an integrated approach has proven most effective in controlling St. Johnswort.

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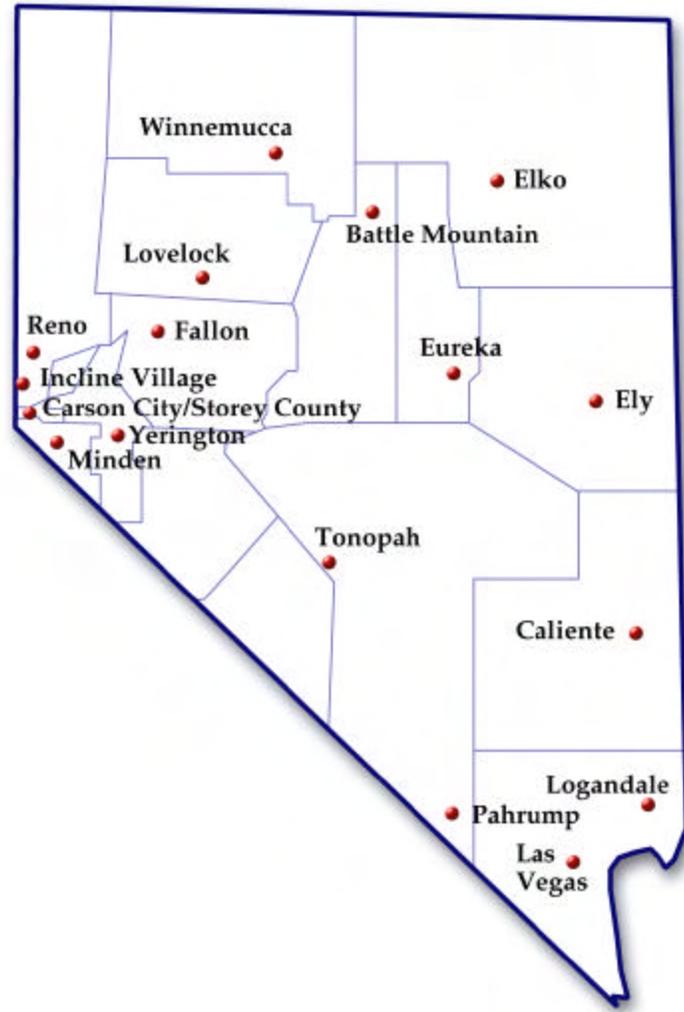
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