

This WEED REPORT does not constitute a formal recommendation. When using herbicides always read the label, and when in doubt consult your farm advisor or county agent.

This WEED REPORT is an excerpt from the book *Weed Control in Natural Areas in the Western United States* and is available wholesale through the UC Weed Research & Information Center (wric.ucdavis.edu) or retail through the Western Society of Weed Science (wsweedscience.org) or the California Invasive Species Council (cal-ipc.org).

Rumex acetosella L.

Red sorrel (sheep sorrel)

Family: Polygonaceae

Range: Throughout the United States, including all western states.

Habitat: Agronomic and vegetable crops, pastures, fields, roadsides, gardens, landscaped areas, nursery crops, orchards, vineyards, turf, grasslands, open disturbed sites in forest and forest plantations, coastal dunes, disturbed riparian areas, and other disturbed sites. Red sorrel generally thrives on sites that are infrequently disturbed, and reportedly requires open soil for germination. It tolerates serpentine and moderately acidic soils.

Origin: Native to Europe.

Impact: Red sorrel occurs nearly worldwide and is a weed of pastures, natural areas, and various crops. In natural areas, it can displace native grasses and forbs. The foliage contains variable amounts of oxalates and under certain conditions can be toxic to livestock, particularly horses and sheep, when large quantities are ingested within a short period. However, most animals avoid consuming large amounts of the sour-flavored foliage if more palatable forage is available. The oxalic acid in red sorrel can also cause dermatitis in some animals.

California Invasive Plant Council (Cal-IPC) Inventory: Moderate Invasiveness



Red sorrel is an erect perennial with slender stems to 1.5 ft tall. Plants typically grow in clonal patches of a single sex that can persist for several years. It has creeping roots, arrowhead-shaped leaves, and male and female flowers on separate plants (dioecious). Red sorrel can be identified by its reddish flowering stems and distinctly arrowhead-shaped leaves. The first and subsequent few leaves are ovate, with a membranous sheathing stipule at each node (ochrea). Later leaves are generally arrowhead-shaped with outward-spreading basal lobes. The lower leaves are mostly arrowhead-shaped with narrow outward-spreading basal lobes. The foliage consists of glabrous alternate leaves, mostly near the base of the plant. The stipules are long and membranous with a silver-white sheathing.

The male flowers of red sorrel are initially yellowish-green and the female flowers are reddish and drooping. Plants reproduce vegetatively from creeping roots and by seed. Under suitable conditions, root fragments 0.5 inch long or more can regenerate into new plants. The seeds are dispersed widely by animals, water, and agricultural and landscape operations. Some seeds survive ingestion by livestock and birds. Buried seeds can survive for more than 25 years.

NON-CHEMICAL CONTROL

Mechanical
(pulling, cutting,
disking)

Control of red sorrel can be difficult because of its creeping rhizomes and long-lived seeds, but is most effective when infestations are caught early. Careful hand pulling (removing all plant parts) can be effective when conducted before the root and rhizome systems are established. On a small scale this can be done effectively with a pick or shovel.

Plants are too short to be affected by mowing or grazing.

Where possible, repeated cultivation during the dry season may reduce patches by weakening the root system. Cultivation must be at short intervals to deplete root reserves, but plants must be allowed time to produce 2 or 3 inches of new green tissue between cultivations for maximum depletion of reserves. Occasional cultivation can disperse root fragments and may result in an increase in the population, especially under moist conditions.

Liming and the addition of nitrogen fertilization can increase soil pH and enhance the growth of other

	plants. This can reduce red sorrel infestations.
Cultural	<p>There is no evidence of grazing as an effective tool to control red sorrel. Although red sorrel is potentially poisonous to livestock because of the presence of soluble oxalates, it is grazed by sheep, cattle, and mule deer. In Idaho red sorrel increases under heavy grazing regimes and decreases under light grazing regimes. However, in Oregon the frequency of red sorrel was not affected by late season cattle grazing in a riparian mountain meadow.</p> <p>No studies were found that used prescribed fire as a tool to control red sorrel. Studies suggest that controlled burning generally has little effect and may actually increase red sorrel abundance.</p> <p>Reduction of disturbance will leave less open area for seed germination. Seeding a competitive crop after cultivation may further reduce the abundance of red sorrel.</p>
Biological	There are no biological control efforts for the management of red sorrel.

CHEMICAL CONTROL

The following specific use information is based on published papers and reports by researchers and land managers. Other trade names may be available, and other compounds also are labeled for this weed. Directions for use may vary between brands; see label before use. Herbicides are listed by mode of action and then alphabetically. The order of herbicide listing is not reflective of the order of efficacy or preference.

GROWTH REGULATORS	
<p>Clopyralid <i>Transline</i></p>	<p>Rate: 0.3 to 1.3 pt product/acre (2 to 8 oz a.e./acre)</p> <p>Timing: Postemergence, to small, rapidly growing weeds.</p> <p>Remarks: Clopyralid is a broadleaf-selective herbicide with a fairly short soil residual activity. It is very safe on grasses.</p>
<p>Dicamba <i>Banvel, Clarity</i></p>	<p>Rate: 0.5 to 1 pt product/acre (0.25 to 0.5 lb a.e./acre)</p> <p>Timing: Postemergence when red sorrel has new foliage, usually from mid-fall to mid-spring. Spring applications control spring-germinating seedlings better than earlier treatment timings.</p> <p>Remarks: Dicamba kills red sorrel seedlings and most of the old plants. It prevents surviving plants from setting seed.</p>
<p>Other growth regulator tank mixes and premixes</p>	<p>There are a number of tank mixes and premixes that have been shown to give effective control of red sorrel, including aminopyralid + metsulfuron (<i>Opensight</i>) at 2 to 2.5 oz product/acre, 2,4-D + dicamba + metsulfuron (<i>Cimarron Max</i>), triclopyr + clopyralid (<i>Redeem R&P</i>), picloram + fluroxypyr (<i>Surmount</i>), and picloram + 2,4-D (<i>Grazon P+D</i>). All formulations that include metsulfuron or picloram are not registered for use in California.</p>
AROMATIC AMINO ACID INHIBITORS	
<p>Glyphosate <i>Roundup, Accord XRT II, and others</i></p>	<p>Rate: 50% v/v solution of glyphosate (<i>Roundup ProMax</i>) in water using a wiper application</p> <p>Timing: Postemergence treatment when plants are growing rapidly but before seed production.</p> <p>Remarks: A wiper application can prevent damage to other non-target species. Apply the wiper only to the foliage of red sorrel.</p>
PHOTOSYNTHETIC INHIBITORS	
<p>Hexazinone <i>Velpar L</i></p>	<p>Rate: 2 to 6 pt product/acre (0.5 to 1.5 lb a.i./acre)</p> <p>Timing: Preemergence or postemergence.</p> <p>Remarks: Hexazinone is nonselective at high rates but selective at low rates (e.g., 1 to 2 pt product/acre). It is not considered the most effective product for red sorrel control. In some studies, control with hexazinone appeared promising at first but red sorrel recovered and produced a large number of seeds. High rates of hexazinone can create bare ground, so only use high rates in spot treatments.</p>

COMMENDED CITATION: DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.