

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).

Raphanus sativus L.; radish

Raphanus raphanistrum L.; wild radish

Radish and wild radish

Family: Brassicaceae

Range: Most western states, with the exception of desert regions.

Habitat: Although they are typically weeds of cultivated crops, orchards, vineyards, and neglected gardens, they can also be common in parks, roadsides, and disturbed locations in natural areas.

Origin: Both species are native to eastern Europe and Asia.

Impact: The weedy radishes can cause significant yield losses in crops, due to their quick establishment, fast growth rate, allelopathy, and strong competitiveness. In non-crop areas they can be toxic to livestock if consumed in large amounts.

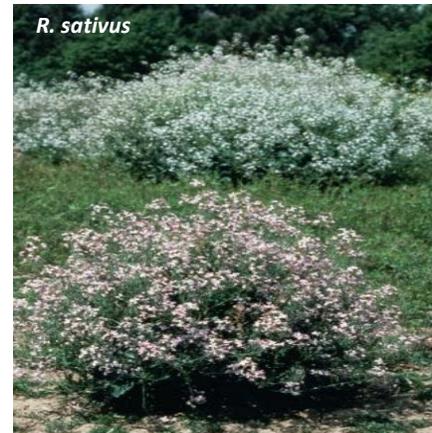
California Invasive Plant Council (Cal-IPC) Inventory: *R. sativus*, Limited Invasiveness

Wild radishes are winter or summer annuals, occasionally biennials. Mature plants are erect and up to 2 ft in height. Their cotyledons are distinctively kidney-shaped and 0.5 to 1 inch long. Plants form rosettes until the flower stem develops at maturity. The lower leaves are alternate and vary in size and shape from being deeply lobed and ovate to having leaflets, but are usually covered with stiff, flattened hairs. The lobed leaves are usually 2.3 to 8 inches long and have irregularly round edges or sharp toothed edges. The taproot can be more than 3 ft deep and provides the plant with access to water during dry periods as well as an underground energy reserve.

At maturity, several flowering stems develop. Flowering occurs from spring through summer. The flowers have four petals and can be white, yellow, pink, or purple. Radishes reproduce only by seed, producing yellow-brown pods that each contains 1 to 10 seeds. Seeds are not dispersed from the fruit and primarily fall to the base of the parent plant. The seeds have a long dormancy and can stay viable in the soil for several years.

NON-CHEMICAL CONTROL

<p>Mechanical (pulling, cutting, disking)</p>	<p>Hand-pull, removing most of the root system, before plants produce seed. Hand weeding may need to be repeated to control later developing plants.</p> <p>Mowing can help reduce seed production but does not harm the basal leaves, thus allowing plants to regrow. Repeated mowing is required to prevent seed set. This is not an effective means of control.</p> <p>Tillage is a common and effective method of control in agricultural areas and would also be effective, if practical, in natural areas or other non-crop sites.</p>
<p>Cultural</p>	<p>Maintain competitive grasses and avoid overgrazing.</p> <p>Radish is a very early season flowering plant, so burning is not practical for its control.</p>
<p>Biological</p>	<p>Redlegged earth mite, cabbage moth, thrips, Rutherglen bug, and white Italian snail attack wild radish but do not provide sufficient control.</p>



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	
2,4-D Several names	Rate: 1 to 2 pt product/acre (0.48 to 0.9 lb a.e./acre) Timing: Postemergence. Apply before budding when plants are small and rapidly growing. Remarks: 2,4-D is a broadleaf herbicide with no soil activity.
Dicamba <i>Banvel, Clarity</i>	Rate: 0.25 to 1 pt product/acre (2 to 8 oz a.e./acre) Timing: Postemergence. Apply before budding when plants are small and rapidly growing. Remarks: Dicamba is a broadleaf-selective herbicide often combined with other active ingredients. <i>Overdrive</i> , a premix of dicamba with diflufenzopyr, has been reported to be effective on wild radish. Diflufenzopyr is an auxin transport inhibitor which causes dicamba to accumulate in shoot and root meristems, increasing its activity. <i>Overdrive</i> is applied at 4 to 8 oz product/acre, postemergence to rapidly growing plants. Higher rates should be used on large annuals. Add a non-ionic surfactant to the treatment solution at 0.25% v/v or a methylated seed oil at 1% v/v solution.
BRANCHED-CHAIN AMINO ACID INHIBITORS	
Imazapic <i>Plateau</i>	Rate: 4 to 6 oz product/acre (1 to 1.5 oz a.i./acre) Timing: Either preemergence or postemergence before budding when plants are small and rapidly growing. Remarks: Applying preemergence provides suppression, while applying postemergence at a rate of 4 oz product/acre provides good control. Imazapic is not registered for use in California.
Rimsulfuron <i>Matrix</i>	Rate: 2 to 4 oz product/acre (0.5 to 1 oz a.i./acre) Timing: Preemergence or postemergence when the target weeds are 1 to 3 inches in height. Remarks: Rimsulfuron controls several annual grasses and broadleaves. Perennial grasses are tolerant to fall applications when established and grown under dryland conditions. Application to rapidly growing or irrigated perennial grasses may result in their injury or death. It provides soil residual control in cool climates but degrades rapidly under warm conditions. Rimsulfuron will not control summer annual weeds when applied in fall or spring. Add a surfactant when applying postemergence. For preemergence activity, the herbicide must be activated by rainfall or irrigation of at least half an inch. For the best results, rain should occur within 2 to 3 weeks of application and during cooler temperatures. Do not apply more than 4 oz product/acre per year.
PHOTOSYNTHETIC INHIBITORS	
Hexazinone <i>Velpar L</i>	Rate: 2 to 4 pt product/acre (0.5 to 1 lb a.i./acre) Timing: Either preemergence or postemergence. Remarks: Hexazinone is used as a nonselective herbicide in non-cropland areas and as a selective herbicide in reforestation practices. High rates of hexazinone can create bare ground, so only use high rates in spot treatments.

ECOMMENDED 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.