

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).

Bromus hordeaceus L.; soft brome
Bromus japonicus Thunb. ex Murr.; Japanese brome

Soft brome (soft chess) and Japanese brome

Family: Poaceae

Range: Throughout the United States and in every western state.

Habitat: Soft chess is common in grasslands, sagebrush communities, rangeland, disturbed sites, orchards and vineyards. In addition to grasslands, Japanese brome is also present in desert shrub-grasslands, sagebrush communities, pinyon-juniper communities, low elevation coniferous forests, and cropland. Both species are most common on disturbed sites.

Origin: Both species are native to Eurasia.

Impacts: These bromes compete for limited spring moisture with desirable vegetation. They can reduce desirable vegetation cover and prevent establishment of native perennials and other forage crops. In rangelands, however, they are often considered excellent livestock forage.

California Invasive Plant Council (Cal-IPC) Inventory: *Bromus hordeaceus*, Limited Invasiveness



Both of these bromes are cool-season annual grasses with stems that grow to 3 ft tall. Soft brome leaves are mostly 3 to 10 mm wide, soft-hairy on both sides. Its sheath is often densely pubescent and it has a 1 to 2 mm long ligule. Japanese brome leaves are mostly 1.5 to 6 mm wide, glabrous to soft-hairy. Its sheath is sparsely hairy to pubescent and it has ligules 2 mm long. Roots of both species are fibrous, mostly in the top 6 inches of soil. Japanese brome roots have been reported to 5 ft deep under favorable conditions.

Spikelets on both species are narrowly ovoid, slightly flattened, breaking apart above glumes and between florets, with the central axis not visible in fruit. Both species have awns 4 to 11 mm long that are slender, weak, straight or curved. Soft brome has a dense panicle, mostly 1 to 5 inches long, and the spikelets are usually covered with short hairs. Japanese brome has an open panicle, 1.5 to 10 inches long, and spikelets that are glabrous or minutely scabrous. Reproduction is only by seed. The florets disperse by falling within the vicinity of the parent plant. Longer dispersal can be through soil movement, wildlife, human activities, and as crop seed contaminants. Both species can germinate and establish in thatch or litter. Most seeds germinate in fall when a moist substrate becomes available, although some seed will germinate in spring. Seed longevity in the soil depends on environmental factors. Japanese brome seeds have been reported to remain viable for several years. Land managers should expect seeds of both species to survive somewhere from 2 to 5 years.

NON-CHEMICAL CONTROL

<p>Mechanical (pulling, cutting, disking)</p>	<p>Small infestations can be removed by manual methods. Digging and hand-pulling are effective. Uproot the entire plant before flowering.</p> <p>Both species will rapidly regrow after mowing at early growth stages. Mowing in August increased Japanese brome populations in Kansas tall grass prairie. Avoid soil disturbance; avoid mowing desirable vegetation that can shade infestations during active growth, as neither species is shade tolerant.</p> <p>Tillage will control emerged plants but often stimulates germination. Deep tillage can reduce populations by burying seed deep enough to prevent germination and emergence. Land managers using tillage for seedbed preparation during reseeding should prepare for a flush of seedlings when soils become moist.</p>
<p>Cultural</p>	<p>Both species are palatable and considered desirable forage early in the season. Soft brome is palatable</p>

	<p>later in the season. Forage production is unpredictable and depends greatly on yearly precipitation. Both species are persistent on grazed lands. Studies suggest grazing can temporarily increase or decrease abundance of both species depending on site conditions and grazing timing. Both species maintain viable seed banks after several years of grazing. Intensive short duration grazing at the boot to early heading stage has reduced abundance of other winter annual grass weeds.</p> <p>Burning before seed dispersal has been shown to temporarily reduce populations. Control was dependent on annual precipitation and site conditions. It is recommended to burn in the ripe seed stage before seed disperse from dead plants. Sites often repopulate from the seedbank and outlying areas post-fire. Fire suppression appears to promote the increase of Japanese brome, since germination and establishment is favored by the presence of a litter layer.</p> <p>Promoting competitive vegetation can slow spread and help prevent establishment. Perennial grass stand density and vigor should be managed to minimize bare ground exposure.</p>
Biological	No known biological controls are available for either species in the United States.

CHEMICAL CONTROL

The following specific use information is based on 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

Growth regulator herbicides	Although they do not generally kill annual grasses, many of the growth regulator herbicides, particularly aminopyralid and picloram, have been shown to reduce seed production in Japanese brome.
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AROMATIC AMINO ACID INHIBITORS

Glyphosate <i>Roundup, Accord XRT II, and others</i>	<p>Rate: 1 to 3 pt (<i>Roundup ProMax</i>)/acre (0.56 to 1.7 lb a.e./acre). Spot treatment: 0.5% to 1% v/v solution</p> <p>Timing: Postemergence from seedling to boot stage. Applications at tillering often provide the best control in rangelands.</p> <p>Remarks: Glyphosate will only provide control during the year of application; it has no soil activity and will not kill seeds or inhibit germination the following season. Glyphosate is nonselective. It may damage or kill most non-target plants, creating bare ground conditions that are susceptible to weed recruitment. In areas with desirable vegetation, use spot treatment. Glyphosate is a good control option if reseeding is planned shortly after application, as it will not injure seedlings emerging after application. Add a surfactant when using a formulation where it is not already included (e.g., <i>Rodeo, Aquamaster</i>).</p>
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BRANCHED-CHAIN AMINO ACID INHIBITORS

Imazapic <i>Plateau</i>	<p>Rate: 4 to 6 oz product/acre (1 to 1.5 oz a.e./acre)</p> <p>Timing: Preemergence in fall.</p> <p>Remarks: Imazapic can be used in combination with glyphosate (premix trade name of <i>Journey</i>). Application during winter months in cold climates, when perennial species are dormant, would only control annual species. Higher rates may suppress seedlings of some cool-season grasses. Add an adjuvant if applied postemergence. Imazapic is not registered for use in California.</p>
Propoxycarbazone-sodium <i>Canter R+P</i>	<p>Rate: 0.9 to 1.2 oz product/acre (0.63 to 0.84 oz a.i./acre)</p> <p>Timing: Postemergence from the 2-leaf to 2-tiller stage when plants are growing rapidly.</p> <p>Remarks: Propoxycarbazone is a broad-spectrum herbicide that will control many species, including Japanese brome. Perennial grass species vary in tolerance. A non-ionic surfactant should be added at 0.25 to 0.5% v/v solution.</p>
Rimsulfuron <i>Matrix</i>	<p>Rate: 2 to 4 oz product/acre (0.5 to 1 oz a.i./acre)</p> <p>Timing: Preemergence in fall.</p> <p>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</p>

	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.
Sulfometuron + chlorsulfuron <i>Landmark XP</i>	Rate: 1 to 1.5 oz product/acre Timing: Preemergence in fall. Remarks: Controls several annual grasses and some broadleaves. Higher rates can injure some perennial grass species.

RECOMMENDED 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.