*Galega officinalis* L.

# Goatsrue

**Family**: Fabaceae
**Range**: Oregon, Washington, Utah and Colorado.
**Habitat**: Cropland, irrigation waterways, pastures, fence lines, roadways and wet marsh areas. Prefers full sun, but will tolerate light shade.
**Origin**: Native to the Middle East, but it has been naturalized in Europe, western Asia, and western Pakistan. Goatsrue has been cultivated as a forage crop, an ornamental, a bee plant and as green manure. Was introduced in 1891 for evaluation as a forage crop in Utah and escaped cultivation.
**Impacts**: Goatsrue can form monotypic stands in wetlands, displacing native and beneficial plants and reducing food and nesting resources for wetland wildlife. Despite its sometime use as forage for livestock, the stems and leaves of goatsrue contain a poisonous alkaloid that can be fatal to humans, sheep and cattle if ingested.
**Western states listed as Noxious Weed**: California, Nevada, Oregon, Washington. Federally listed as a noxious weed

Goatsrue is a perennial herbaceous plant 2 to 6 ft tall. It closely resembles the native plant wild licorice (*Glycyrrhiza lepidota*), so care should be taken to accurately identify it before implementing control practices. Goatsrue forms dense crowns capable of regenerating for several seasons. It has hollow, tubular stems with alternate odd pinnately compound leaves that have 13 to 21 leaflets.

Its pea-like flowers vary from light purple to white and are clustered (20 to 50 flowers) at the tops of the stems and from leaf axils, resembling a vetch. Plants produce pods about 1 inch long with dull yellow, bean-shaped seeds about 2.5 to 3 mm long. Plants spread primarily by seed and can produce up to 15,000 seed pods per plant. Seeds disperse mainly by falling near the parent plant, but can move longer distances through the activity of humans and animals, when ingested. Seeds can remain viable in the soil for at least 5 to 10 years.

## NON-CHEMICAL CONTROL

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| **Mechanical** (pulling, cutting, disking) | Small populations can be manually removing by digging or pulling up individual plants, including as much of the root system as possible, followed by frequent removal of root sprouts and seedlings. Plants will resprout without repeated effort.<br>Mowing, clipping and cutting are not effective when used alone. Plants will flower and produce seeds even when cut short. Seed pods can be clipped and disposed of to help prevent the spread of seeds into uninfested areas. Mechanical measures can be followed with herbicide treatment when the plants regrow. |
| **Cultural** | Grazing is not a control option, as the plant is very toxic to livestock.<br>Burning is not an effective control method, as fire stimulates root sprouting. |
| **Biological** | A rust fungus, *Uromyces galegae*, has been investigated as a biological control agent for goatsrue in Chile. Goatsrue had a high susceptibility to the rust, which decreased seed production, while other legume species were unaffected. After this discovery the fungus was distributed across Chile. The south central zone of the country had the best results due to a climate that promoted distribution and growth of the rust fungus. Currently, no registered biocontrol agents for goatsrue are available in the United States. |

## 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.

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| **GROWTH REGULATORS** | |
| 2,4-D<br>Several names | **Rate:** 2 qt product/acre (1.9 lb a.e./acre)<br>**Timing:** Postemergence from bud stage to full flower in early to mid-summer.<br>**Remarks:** Broadleaf herbicide with little soil residual activity. Repeated applications at the label rate may be effective. Do not apply ester formulations when outside temperatures exceed 80°F. It has been shown to be inconsistent in the control of goatsrue, which may be related to site differences. |
| Aminocyclopyrachlor + chlorsulfuron<br>*Perspective* | **Rate:** 4 to 6 oz product/acre<br>**Timing:** Postemergence when plants are in bud stage to full flower in early to mid-summer.<br>**Remarks:** *Perspective* provides broad-spectrum control of many broadleaf species. Although generally safe to grasses, it may suppress or injure certain annual and perennial grass species. Do not treat in the root zone of desirable trees and shrubs. Do not apply more than 11 oz product/acre per year. At this high rate, cool-season grasses will be damaged, including bluebunch wheatgrass. Not yet labeled for grazing lands. Add an adjuvant to the spray solution. This product is not approved for use in California and some counties of Colorado. |
| Aminopyralid<br>*Milestone* | **Rate:** 5 oz product/acre (1.25 oz a.e./acre)<br>**Timing:** Postemergence when plants are in bud stage to full flower in early to mid-summer.<br>**Remarks:** Broadleaf herbicide similar to picloram, but more selective and with shorter soil residual activity. It is very safe on most grasses, particularly postemergence. Broadcast applications will also provide preemergence control of germinating seeds. Very effective for the control of goatsrue. |
| Aminopyralid + metsulfuron<br>*Opensight* | **Rate:** 2.5 to 3.3 oz product/acre<br>**Timing:** Preemergence at 3.3 oz in fall or postemergence when plants are seedlings to rosettes.<br>**Remarks:** Not registered for use in California. |
| Dicamba<br>*Banvel*, *Clarity* | **Rate:** 2 qt product/acre (2 lb a.e./acre)<br>**Timing:** Postemergence when plants are in bud stage to full flower in early to mid-summer.<br>**Remarks:** Broadleaf herbicide with little soil residual activity. Very effective for the control of goatsrue. Mixtures of 2,4-D at 8 oz product/acre + dicamba at 4 oz product/acre applied twice during the growing season for 2 consecutive years will provide control of goatsrue. However, control was most effective when mechanical methods were combined with herbicide applications, by clipping plants when the initial growth reaches 2 ft tall, followed by spraying the regrowth at 2 ft. |
| Picloram<br>*Tordon 22K* | **Rate:** 2 pt product/acre (0.5 lb a.e./acre)<br>**Timing:** Postemergence when plants are in full flower in early to mid-summer.<br>**Remarks:** One of the most effective chemical control options. Long soil residual, so broadcast applications will also control germinating seed. It is safe on most grasses. Restricted use herbicide; not registered for use in California. |
| Triclopyr<br>*Garlon 3A* | **Rate:** 2 qt product/acre (1.5 lb a.e. (*Garlon 3A*)/acre)<br>**Timing:** Postemergence when plants are in bud stage to full flower in early to mid-summer.<br>**Remarks:** Triclopyr is a broadleaf herbicide that has no soil residual activity. It has been shown to be very effective for the control of goatsrue. |
| **BRANCHED-CHAIN AMINO ACID INHIBITORS** | |
| Chlorsulfuron<br>*Telar* | **Rate:** 1 oz product/acre (0.75 oz a.i./acre)<br>**Timing:** Postemergence when plants are in bud stage to full flower in early to mid-summer.<br>**Remarks:** Chlorsulfuron has some soil residual activity. It is primarily a broadleaf herbicide and has been shown to be very effective for the control of goatsrue. |

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| Imazapyr<br>*Arsenal*, *Habitat*, *Chopper*, *Stalker*, *Polaris* | **Rate:** 2 pt product/acre (8 oz a.e./acre)<br>**Timing:** Postemergence when plants are in bud stage to full flower in early to mid-summer.<br>**Remarks:** Imazapyr has a fairly long soil residual and is nearly nonselective, so may kill desirable competitors. It has been shown to be effective for the control of goatsrue, but less effective compared to other compounds, particularly the ALS inhibitors and some growth regulators. |
| Metsulfuron<br>*Escort* | **Rate:** 1 oz product/acre (0.6 oz a.i./acre)<br>**Timing:** Postemergence when plants are in bud stage to full flower in early to mid-summer.<br>**Remarks:** Some soil residual activity. Generally safe on most grasses, and shown to be very effective for the control of goatsrue. Metsulfuron is not registered for use in California. |

**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.