Convolvulus arvensis L.

Field bindweed

Family: Convolvulaceae
Range: Found in all contiguous states and Hawaii.
Habitat: Cultivated crops, gardens, pastures, abandoned fields, and roadsides. Grows best on moist, deep fertile soils. Tolerates poor, dry gravelly soils, but seldom grows in wet soils. Inhabits regions with temperate, Mediterranean, and tropical climates. Found at elevations up to 9000 ft.
Origin: Native to Europe.
Impact: Field bindweed is considered one of the most noxious weeds in agricultural climates in the temperate zone. Plants typically form large patches that are difficult to control due to their extensive root system and long-lived seeds. It is not as important a problem in wildlands and natural areas as it is in croplands.
Western states listed as Noxious Weed: Arizona, California, Colorado, Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming

Field bindweed is a long-lived herbaceous perennial with vine-like stems and an extensive system of deep roots. The glabrous stems twine around other plants for support and are up to 4 ft in length. The leaves are typically dull green and arranged alternately on the stem. Leaves vary in size and shape depending on environmental factors. They are typically 1 to 2 inches in length and vary from arrowhead-shaped to almost round. The root system is an extensive network of vigorous primary and secondary taproots, horizontal creeping roots, and lateral feeder roots. The taproots can grow to a depth of 10 ft or more depending on the available soil moisture and soil depth, while most of the horizontal creeping roots develop in the top 2 ft of soil.

Plants flower from spring to the first frost. The white or pinkish flowers open for one day; they are insect pollinated and self-incompatible. The flowers are axillary, solitary or in cymes of 2 to 4, on stalks about 1 to 3 inches long. The flowers are typically 1 to 2 inches long, funnel-shaped with five fused petals with pleating that is spiraled in the bud.

Field bindweed reproduces sexually through seed and vegetatively through deep horizontal creeping roots and rhizomes. Seeds form in capsules and are dispersed only short distances. One plant can produce up to 500 seeds that can survive buried for 15 to 20 years or more. Most young plants do not produce seed in their first season.

NON-CHEMICAL CONTROL

Mechanical (pulling, mowing, tilling, solarization)	Pulling can be effective on seedlings or young adults but is not effective when the plant has developed a deep, extensive root system. Mowing is not effective due to the low profile of the plant. Intensive cultivation will control new seedlings but spreads the roots and seeds, which may spread the plant. Tilling conducted 8 to 12 days after each emergence throughout the growing season can control field bindweed, but this requires repeated treatments for 1 to 5 years. Deep tillage using shanks down to 3 ft with a cross bar will reduce emergence for a season. Shallow cultivation that kills all above-ground shoots can be effective if repeated several times over a couple of years.

	Solarization is an effective control method, but the black plastic or mulch must be left on the site for 3 to 5 years to eradicate field bindweed.
Cultural	Sheep and cattle have been used to graze field bindweed but this does not affect the roots of the plant and regrowth occurs quickly. Burning is not considered an effective control method as it only removes the aboveground biomass while the root system and seeds are left intact. A combination of burning with other control measures in an integrated approach is more effective.
Biological	Three biological control species have been released in the United States. *Tyta luctuosa* (European field bindweed moth) defoliates field bindweed as a caterpillar. *Chelymorpha cassidea* (tortoise beetle) is native to the United States and feeds on the leaves. *Aceria malherhae* (bindweed gall mite) is a gall mite that has established in several states and feeds on the leaves, stem, and root bud. None of these species has controlled field bindweed in most areas, although the gall mite has shown some success in Colorado.

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 amine Several names	**Rate:** 4 to 6 pt product/acre (1.9 to 2.85 lb a.e./acre) **Timing:** Postemergence at bud stage or in fallow in mid-summer, before bindweed is under moisture stress. **Remarks:** Use 2,4-D to help reduce bindweed stand 60 to 80% and prevent seedling establishment. 2,4-D applications must be made for several years consecutively to prevent regrowth. Avoid drift to sensitive crops.
Aminocyclopyrachlor + chlorsulfuron *Perspective*	**Rate:** 4.75 to 8 oz product (*Perspective*)/acre **Timing:** Postemergence when vegetation is fully developed. **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 (San Luis Valley).
Dicamba *Banvel*, *Clarity*	**Rate:** 1 to 4 lb product/acre (0.5 to 2 lb a.e./acre) **Timing:** Postemergence when weeds are growing rapidly. Do not apply after bud break. **Remarks:** Recommended rates only suppress field bindweed. Follow-up treatments are generally necessary. Dicamba can be tank mixed with 2,4-D (0.5 to 2 lb a.e./acre) or glyphosate (3 lb a.i./acre). Dicamba is available mixed with diflufenzopyr in a formulation called *Overdrive*. This has been reported to be effective on field bindweed. Diflufenzopyr is an auxin transport inhibitor which causes dicamba to accumulate in shoot and root meristems, increasing its activity. *Overdrive* is applied postemergence at 4 to 8 oz product/acre. Higher rates should be used when treating perennial weeds. Add a non-ionic surfactant to the treatment solution at 0.25% v/v or a methylated seed oil at 1% v/v solution.
Fluroxypyr *Vista XRT*	**Rate:** 22 oz product/acre (7.7 oz a.e./acre) **Timing:** Postemergence when the target plants are growing rapidly. **Remarks:** Provides suppression and not control. Control is reduced if the plants are under stressed growth conditions.
Picloram *Tordon 22K*	**Rate:** 1 to 2 qt product/acre (0.5 to1 lb a.e./acre) **Timing:** Postemergence in the growing season when bindweed is visible. Timing is not critical, but results are most consistent if bindweed is in early bud to full bloom.

	Remarks: Apply as a coarse, low-pressure spray in sufficient volume to cover adequately. Picloram has long soil residual activity. Picloram is a restricted use herbicide. It is not registered for use in California.
Triclopyr *Garlon 3A*	**Rate:** 3 to 4 pt *Garlon 3A*/acre (1.13 to 1.5 lb a.e./acre) **Timing:** Postemergence at bud stage or at summer fallow in mid-summer. **Remarks:** Retreatment is usually necessary for effective control. Triclopyr has no soil residual activity and controls many broadleaf species.
AROMATIC AMINO ACID INHIBITORS	
Glyphosate *Roundup*, *Accord XRT II*, and others	**Rate:** 3 to 4 qt product (*Roundup ProMax*)/acre (3.4 to 4.5 lb a.e./acre) **Timing:** Postemergence when plants are growing rapidly, up to the beginning of seed production. Plants should not be under drought stress at time of application. Application in late summer is also effective. **Remarks:** Cover foliage thoroughly but avoid spray runoff. Repeat treatments may be needed for complete control. Control improves if treated area is tilled 2 to 3 weeks after treatment. Add non-ionic surfactant or 10 to 15 lb of ammonium sulfate. Glyphosate is a nonselective herbicide. It can be tank mixed with 2,4-D or dicamba.
BRANCHED-CHAIN AMINO ACID INHIBITORS	
Imazapic *Plateau*	**Rate:** 8 to 12 oz product/acre (2 to 3 oz a.e./acre) **Timing:** Postemergence, from 25% bloom through fall to rapidly growing bindweed. **Remarks:** For more effective control add 1 qt/acre methylated seed oil. Imazapic is not registered for use in California.
Imazapyr *Arsenal*, *Habitat*, *Stalker*, *Chopper*, *Polaris*	**Rate:** 1 pt product (*Arsenal*)/acre (4 oz a.e./acre) **Timing:** Preemergence or postemergence when plants are growing rapidly. **Remarks:** Imazapyr is fairly nonselective and may injure some desirable species, including grasses and broadleaves. It has fairly long soil residual activity, depending on the site.
Metsulfuron *Escort*	**Rate:** 1 to 2 oz product/acre (0.6 to 1.2 oz a.i./acre) **Timing:** Postemergence to rapidly growing bindweed in bloom stage. **Remarks:** Metsulfuron only suppresses field bindweed. Use a non-ionic or silicone surfactant to improve control. Metsulfuron is not registered for use in California.
Propoxycarbazone-sodium *Canter R+P*	**Rate:** 0.9 to 1.2 oz product/acre (0.63 to 0.84 oz a.i./acre) **Timing:** Postemergence to young, rapidly growing plants. **Remarks:** Propoxycarbazone is a broad-spectrum herbicide that will control many species. It will provide only partial control of field bindweed. Perennial grass species vary in tolerance. A non-ionic surfactant should be added at 0.25 to 0.5% v/v solution.

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.