



Suppression and Control of Field Bindweed – (Perennial Morning Glory) in Residential Areas

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Quick Facts

- Field bindweed (*Convolvulus arvensis*) is native to the Middle East but thrives in the West due to a similar climate.
- It is one of the most damaging introduced weeds in the West, where it reduces the productivity of agricultural land by 50% or more.
- It is also mistakenly called “morning glory.” However it is not true morning glory (*Ipomoea spp.*), which is a popular annual vine with large beautiful flowers.
- It is a deeply rooted perennial and spreads by underground runners (rhizomes), roots, and seed.
- Multiple control methods are needed to eventually suppress field bindweed.

Identification

Field bindweed vines grow out in a spiral fashion, allowing them to twist around whatever may be growing near them, up to about 6 feet high. Leaves are narrow to broad and arrowhead shaped, usually being 1 to 2 inches long, but may be larger in shaded locations (Image 1). Flowers are white, trumpet-shaped and approximately 1 inch long and wide. Flowers are usually present the entire growing season. Occasionally flowers can have shades of pink or combinations of white and pink in the same flower (Image 2). Field bindweed grows and forms dense mats on disturbed soil, including bare ground and within landscape and crop plantings (Image 3).

Life Cycle

Field bindweed seed germinates when soil temperatures are between 40 to 100 degrees F. After germination, new plants are able to reproduce through roots and rhizomes



Image 1. Field bindweed leaves.



Image 2. Field bindweed flowers. Flower color is normally white, but pink flower variations sometimes occur.



Image 3. Bindweed thrives in open areas and bare soil, even compacted, dry soils.

at around 6 weeks old. Once new plants begin to flower, they produce up to 600 seeds per season and typically spread 10 - 18 feet in one year, forming new plants through rhizomes or roots every 12-30 inches. Roots can go as far as 20 feet deep and roots as deep as 14 feet are capable of generating new plants. Even though bindweed is deeply rooted, 90% of the root mass is in the top foot of soil. Seeds are produced throughout the entire growing season and 90% are viable. Twenty-five percent of these can germinate immediately, while the remaining can stay dormant up to 60 years.

Suppression and Control Options

Prevention: Preventing bindweed from establishing is the best control option.

- Stop introduction by knowing where trucked-in topsoil originates, and inspecting it prior to purchase.
- Install filters on secondary irrigation systems to remove weed seeds.
- Maintain a healthy lawn. This includes mowing at a height of 2 ½ to 3 inches, irrigating deeply and less frequently, and fertilizing according to how turf is used. Weed seeds almost never germinate through dense, healthy turf (Image 4). Access USU Extension fact sheet [Basic Turfgrass Care](#) for more information.
- Apply 2-3 inches of mulch in flowerbeds and garden areas. Refresh mulch annually or on an as needed basis.
- Purchase compost from reputable sources, especially if using animal manures.
- Check nursery stock before purchasing, particularly potted and balled-and-burlapped trees and shrubs.



Image 4. Field bindweed in Turfgrass. Stressed lawns can easily be overcome with field bindweed. Increasing lawn health through fertilization, proper irrigation, and increasing mowing height can help reduce infestations. Fall applications of a broadleaf herbicide can also be very useful in managing infestations.

Non-herbicide Options: For those not wanting to use chemicals, suppression and control is possible, but will take persistence, and careful management. Table 1 summarizes these options.

Regular Cultivation: The objective of regular, shallow cultivation, such as removing vines by hand, hoeing, or shallow tilling (1-2 inches deep) is to force the roots to continually regenerate new vines. Newly germinated bindweed plants do not produce runners or seeds for several weeks and are more easily removed using this method. Regular cultivation depletes some energy from the plant's reserves every time vines are cut (Image 5).



Image 5. One non-chemical approach to suppressing field bindweed is to shallow till when runners are 4-6 inches long. This in combination with careful irrigation management can reduce its spread considerably. In the upper half of the image, bindweed has received irrigation and tilling, and is spreading abundantly. In the lower half, the bindweed has received tilling, but no irrigation, and its spread is limited

Table 1. Summary of Nonchemical Control Options.	
Control Method	Notes
Prevention	<ul style="list-style-type: none"> • Use topsoil not previously infested with bindweed. • Install filters on secondary irrigation. • Maintain a healthy lawn. Access USU Extension fact sheet Basic Turfgrass Care for more information. • Apply 2-3 inches of mulch in flowerbeds and garden areas. Refresh mulch annually or on an as needed basis. • Purchase compost from reputable sources, especially if using animal manures.
Solarization	<ul style="list-style-type: none"> • Remove existing weeds. • Moisten soil and cover it with clear plastic. • Overlap any seams at least 6 inches and thoroughly secure. • May take more than 1 year eliminate bindweed.
Plant-Based Mulch	<ul style="list-style-type: none"> • Apply 3 inches deep. • Vines occasionally penetrate through these kinds of mulches, but at much lower rates. • Mulch options include grass clippings, bark, shredded leaves, shredded newspaper. • Ground recycled rubber mulches and gravel are used similarly and do not need to be refreshed as often.
Other Mulch Options	<ul style="list-style-type: none"> • Weed control fabrics and plastic sheeting are often laid down and may or may not be covered with a plant based mulch. • Newspaper sheets are similarly used and always need to be covered with plant based mulch. • Vines may break through gaps and around edges.
Cultivation	<ul style="list-style-type: none"> • Newly germinated bindweed plants are easily removed using cultivation. • Allow new vines to grow to around 6 inches long before cultivating (every 2 to 4 weeks). • Use shallow cultivation to prevent unintentional propagation of runners.
Cover Crops	<ul style="list-style-type: none"> • Plant cover crops in early spring or late summer to fill in previously gardened areas. • Incorporate into the soil before they go to seed.
Competition from Desirable Plants	<ul style="list-style-type: none"> • Densely plant and properly maintain desirable plants such as ground covers, shrubs and lawn. • Remove bindweed by hand or shallow cultivation until desirable plants have filled in.

Allow new vines to grow to around 6 inches long (do not allow flower formation), and then remove them again. This usually occurs every 2 to 4 weeks. Using this method alone will take 3 to 7 years to eliminate well established plants. Keep in mind to not till or cultivate very deeply, severed runners as short as 2 inches can form roots, making the infestation worse.

Competition from desirable garden plants: Because bindweed is shade intolerant, another option is to shade the soil by densely planting desirable plants. Bindweed seed is also likely to germinate at lower rates when shaded. Some hand removal of vines will still be needed until desirable plants are well established. This suppresses but does not eliminate the bindweed.

Cover crops: Cover crops are usually grains or legumes planted in late summer or early spring to fill in areas where another crop was previously grown. They protect and stabilize the soil, out compete weeds by shading soil and using soil nutrients. They then add organic matter to the soil when cultivated back in. Cover crops should not be allowed to go to seed.

Covering with combination of mulch, weed fabric and/or cardboard: Mulch covers the soil. When using shredded bark, rock, or other materials, apply 3 inches deep. Bindweed seed will not germinate where sunlight cannot reach the soil. Keep in mind that vines can penetrate through these kinds of mulches, but do so at much lower rates than they otherwise would. In more permanent areas, weed fabrics are often laid down and

then a mulch is applied. This method can be highly effective at preventing seedlings and vines from appearing, although vines will break through any weak spots including gaps in weed fabric, at the edges of cement and holes in weed fabric made for desirable plants.

A slightly different method of mulching can be used. Cover the infested area with cardboard or weed fabric and then apply several inches of mulch over the top. Cardboard and mulch slowly break down and it may be necessary to annually rake mulch aside, lay new cardboard, and add more mulch. With complete coverage, it will take 3 to 4 years using this method to eliminate bindweed.

Solarization: Solarization is covering the soil with clear, construction grade plastic sheeting and allowing the soil to be heated daily for the entire growing season. This sterilizes the soil up to 6 inches deep. Clear plastic heats the soil better than black plastic sheeting. Remove all aboveground vegetation. It is not necessary to remove roots. Moisten the soil and cover it with the plastic. Overlap any seams at least 6 inches and thoroughly secure seams and edges so no vines can grow through. It will most likely take more than 1 year to completely eliminate bindweed plants.

Herbicide Options: Both pre and post emergent herbicides are useful. Pre-emergent herbicides kill seeds as they germinate. Post emergent types are applied after plants have germinated. Table 2 summarizes these options. **Read pesticide labels to ensure they are labeled to use where and for what you intend.**

Pre-emergent options: There are many pre-emergent products registered for use in lawns and flowerbeds. Isoxaben (Gallery, Galleria) is registered to control

bindweed seed in lawns and flowerbeds. Treflan (Preen and others) is registered for use in vegetable gardens and flowerbeds. When applying a pre-emergent be sure desirable plants are well established, that the product is registered for use around them, and that the ground is free of weeds and debris to maximize the effectiveness of the application. Pre-emergent products may also need to be watered in to activate them.

Post emergent options: There are some organic or reduced-risk products available, primarily consisting of acids or oils as active ingredients. They are not systemic, not selective, and do not kill the roots. Instead they wilt or scorch the foliage. Using them is similar to simple cultivation.

Otherwise, post emergent products are divided into selective and nonselective types. Selective herbicides are effective against a certain group of plants like grasses only, or broadleaf only. Non-selective herbicides kill pretty much everything. For best control, make sure the weeds they are applied to are well watered and healthy. Drought stressed or semi-dormant weeds absorb less herbicide than those actively growing. For field bindweed, late summer or early fall is the best time to apply because plants move nutrients into the roots in preparation for winter. Herbicides will also be moved to the roots, where they have a better chance of killing the plant.

Many non-selective herbicides contain glyphosate (RoundUp, Killzall, etc.). Glyphosate kills desirable grasses and garden plants if mistakenly applied to them. Glyphosate used by itself against field bindweed only offers suppression by only killing or yellowing the tops. Bindweed usually recovers in 1 to 2 months (which is longer than simple cultivation) after an application.

Table 2. Summary of Chemical Control Options.			
Landscape Area	Selected Herbicide Options		
	Pre-emergent	Post-emergent Selective	Post-emergent Non-selective
Lawns	Yes ¹ (dithiopyr, pendimethalin, prodiamine and others)	Yes (2,4-D, dicamba, quinclorac, and others)	No
Vegetable Gardens	Yes ¹ (treflan)	Yes ² (2,4-D, dicamba, and others)	Yes ² (glyphosate)
Flowerbeds	Yes ¹ (many options)	Yes ² (2,4-D, dicamba, and others)	Yes ² (glyphosate)
Non-cultivated Areas	Yes	Yes	Yes
¹ Pre-emergents are nonselective and generally prevent all seeds from growing.			
² All crop plants should be completely harvested before using these options.			

There are many selective herbicides formulated to kill broadleaf plants that are safe for lawns when used according to label. The most common contain 2,4-D and may be formulated with other herbicides such as dicamba, triclopyr, mecoprop or carfentrazone. A synergistic effect is obtained by using these in combination. Like glyphosate, these only suppress field bindweed, especially if only used once or applied in spring or early summer.

Quinclorac is a relatively new, selective herbicide registered for use in lawn areas. It has some effectiveness against bindweed and other broadleaf weeds, and it controls crabgrass and foxtail. It is the active ingredient in post emergent crabgrass herbicides. If applied alone, it has far fewer restrictions for use during the hottest part of the summer than other lawn weed killers. However, homeowner formulations of quinclorac are often mixed with other herbicides that should not be applied during the hottest part of the summer. When quinclorac is used on lawns it may be necessary to mulch clippings back into the lawn or put in landfill for a few weeks to several months, depending on the particular product. Do not use these clippings in flowerbeds or vegetable gardens until the label says it is safe.

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