Perennial

Field bindweed

Convolvulaceae

Convolvulus arvensis

Field bindweed is an extremely difficult noxious weed to control throughout Wyoming because, in part, of its root system that goes 20 feet or more deeply into the soil and repeatedly gives rise to numerous long rhizomes.

Origin: Europe and Asia

Description: Part of the morning glory family. Long vining stems twine around other plants and objects. Emerges in the spring

Color: Green leaves and stems with white to pink flowers

Roots: 2 to 20 feet deep taproot with white, fleshy horizontal underground rhizomes continually giving rise to more spreading roots

Stems: 1 to 6 feet long, viny, twining and prostrate on the ground or climbing

Leaves: Alternate arrowhead shaped

Flowers: 1 inch long white to pink bell or trumpet-shaped from June thru September and until the first frost. Open during the morning and close late in the day

Seeds: 25 to 300 seeds per plant dependent upon environmental conditions

Viability: Up to 40 years

Toxicity: Pseudotropines are present in all parts of the plant. The seeds are especially toxic. May cause mild laxative distress in swine and chronic colic and weight loss in horses.

Lookalikes: Common knotweed (*Polygonum arenastrum*)
Wild buckwheat (*Polygonum convolvulus*)
Morning glory (*Convolvulus* spp)

Field bindweed is widespread in cultivated areas, pastures, lawns, gardens, roadsides, and waste areas from 4,000 to 8,000 feet in elevation.

Containment and persistence are necessary to control existing stands. This weed needs to be continually stressed to exhaust the root system and deplete the seedbank. A healthy cover of desirable perennial plants will assist in discouraging establishment.

On the backside of this sheet are field bindweed management recommendations.

Recommended range and pasture management methods:

Cultural

Establishment of selected, aggressive grasses can be an effective cultural control. Contact your local Extension office or Natural Resources Conservation Service office (NRCS) for seed mix recommendations.

Proper grazing management will stimulate grass growth and keep pastures healthy. Healthy pastures are more resistant to invasion. Bare spots caused by overgrazing are prime habitat for weed infestations.

Mechanical

Cutting, mowing, or pulling has a negligible effect unless the plants are cut below the surface in the early seedling stage. Well-established populations have a large seed bank in the soil that can remain viable for over 40 years.

Biological

The bindweed gall mite, *Aceria mahlerbae*, has proven to be effective in reducing field bindweed infestations. Biocontrol agents can be obtained from the Colorado Department of Agriculture's Insectary. Go to https://ag.colorado.gov/conservation/palisade-insectary for more information.

Additional bindweed mite release instructions are included with this handout on a separate page.

Herbicides

The following recommendations can be applied to range and pasturelands. Optimum results occur when the plants have recently received moisture and are actively growing.

Herbicide	Rate	Application Timing	Comments
Clarity (dicamba) + 2,4-D Amine	1 qt/acre each OR 1 oz/gal water each product	Spring at or just after full bloom and/or fall.	DO NOT apply when outside temperatures will exceed 85 degrees. DO NOT apply near or under trees or where soils have rapid permeability or where water level is high. Add non-ionic surfactant @ 0.32 oz/gal water or 1 qt/100 gal water.
Tordon 22K (picloram) Restricted use pesticide +2,4-D Amine	1 qt/acre for each product or 1oz/gal water for each product	Spring- at or just after full-bloom and/or fall.	DO NOT apply when outside temperatures will exceed 85 degrees. DO NOT apply near or under trees or where soils have rapid permeability or where water level is high. Add non-ionic surfactant @ 0.32 oz/gal water or 1 qt/100 gal water.
Roundup Ultra (glyphosate) **Non-selective** *Will kill all vegetation*	4-5 qts/acre OR 4-5 oz/gal water	Apply at full bloom and/or fall.	Add a non-ionic surfactant @ 0.32oz/gal water or 1 qt/100 gal water. Use caution when applying near grasses or other desirable vegetation. Roundup ***will possibly kill*** surrounding vegetation

ALWAYS READ, UNDERSTAND, AND FOLLOW HERBICIDE LABEL DIRECTIONS

The herbicide label is the LAW

Managing Field Bindweed with the Bindweed Mite

Field bindweed (*Convolvulus arvensis*) is one of the most widespread and difficult to manage weeds throughout the United States. The vining plant produces an extensive root system which stores enough nutrients to fuel growth. The plant thrives in the arid western states and will grow on many sites where other plants cannot exist. Control with herbicides is difficult, but the weed can be successfully managed on some sites with fall applications of glyphosate containing herbicides. Control in localities with desirable vegetation, inaccessible areas, and in many agricultural systems is nearly impossible with herbicides.

The bindweed mite, *Aceria malherbae*, is a **microscopic mite** imported from southern Europe as a biological control agent for field bindweed. The bindweed mite feeds only on field bindweed and closely related wild morning glories. It does not damage other plant species, and it requires bindweed to survive.

Bindweed mite feeding causes the formation of gall-like growth of plant leaves. Leaves of infested plants are thickened and have a "fuzzy" texture. In heavily infested plants, the shoots are misshapen and growth is severely stunted. Recently infested plants have newly emerged leaves that appear folded. The thickened texture and fuzzy appearance are good diagnostic characteristics to identify bindweed mite presence.

Bindweed mites have the potential to aid in suppression or control of field bindweed in many arid regions, and under many plant management regimes. It can be useful in wildland settings, pastures, roadsides, disturbed areas, landscape plantings, and other areas.

The best results will be obtained with active management of the mite population, especially by mowing of the bindweed which moves the mites around and stimulates new growth for the mites to feed on. Bindweed mites survive better in drier settings. Their impact in sprinkler irrigated settings, especially lawns, will probably be less than in non-irrigated sites.

Bindweed mites spend the winter on underground buds on bindweed rhizomes. They have successfully over wintered in Canada and Montana. Excessive moisture appears to be the environmental factor that limits its establishment. Mites migrate to underground buds during drought when plant tops die down.

Bindweed mites are available from collections of infested plant material. Several mite nursery sites have been established in western Colorado and Weld County. Distribution of bindweed mites is coordinated by Weld County Weed Division and the Colorado Department of Agriculture in Palisade.

It is best to release mites in the cooler part of the day to maximize their survival. The infested plants should be placed in direct contact with the bindweed that is to be infested. It should be either tucked under the infested plants or twisted up with the bindweed vines to keep it in place and from blowing away. Newly infested galls (folded leaves) should be apparent within a week or so. Do not disturb the release site for a few weeks. After

this time, mow the area to distribute the mites and stimulate new bindweed growth. When galls are easily found, they can be harvested and spread to new areas to help distribute mites.

Success in managing field bindweed with bindweed mites is highly dependent on your expectations. If you expect the bindweed to disappear shortly after releasing the mites, you will be disappointed. The initial impact will be a reduction of growth and limited flowering and seed production of infested plants. It will take a year or more for infested plants to die. Control of bindweed over a large area can take years. Be patient, mow, move mites manually and you will increase your chances of success.

RELEASE OF ACERIA MALHERBAE (THE BINDWEED MITE) ON FIELD BINDWEED

Select an area of healthy, lush bindweed. Those patches where the vines are growing up on to each other are ideal. You are looking for the tender growing tip (tips) on green stems with large leaves.

For gall placement, take about three inches of a galled stem – a gall in a curled leaf or any odd looking growth – and twist the growing tip of your bindweed around the gall. Keep twisting the two together until you reach the soil level where you can tuck the whole thing under the plant. This is done just to keep the two tightly together. You want the microscopic mite to have no place to go as the gall dries out other than to the new leaf in your patch. You should begin to see the folding and curling of new galls in about 10 days.

After a month, the galls are mature enough to run a mower across them if mowing is possible.

The wind will also spread the mites as time goes by. You can also collect from your own mite patch as galls form and continue to transfer the mites to new locations.