



NORTHWEST CENTER FOR
ALTERNATIVES TO PESTICIDES



Managing Common Bindweeds

Field bindweed / Photo: Stevens Co. Noxious Weed Control Board

Introduction

Convolvulus arvensis (field bindweed) and *Calystegia sepium* (hedge bindweed) are both in the family Convolvulaceae, which is derived from the Latin word 'convolere', meaning to entwine.¹ The Washington State Noxious Weed Control Board listed this family of plants in 1988 because of the ability to outcompete natives and reduce crop yields.

Field and hedge bindweed are found through-

out the Northwest United States, while hedge bindweed is mostly found east of the coastal ranges.² They are prolific at producing seeds, the seeds can survive for over 50 years and the plants have impressive root systems. Once established, both field and hedge bindweed are nearly impossible to eradicate. Anyone tasked with control should prioritize prevention and long term management.

Identification

Field bindweed is widely considered more pervasive than hedge bindweed, but hedge bindweed can be more competitive in humid conditions found in Washington State³. Because of morphological similarities, both plants respond to similar management techniques.

The following are quick tricks for telling the two apart. Hedge bindweed (right) has larger flowers and leaves — the leaves are mostly hairless, while field bindweed (left) leaves are covered in tiny hairs.²



Field Bindweed

Photo: WA State Noxious Weed Control Board



Hedge Bindweed

Photo: Rachel Kramer, Brandeis University

Spreading by Seed

Flowers of both plants wilt after one day which makes it difficult to observe the beginning of this crucial window for preventing new seeds from forming.⁴ Through regular monitoring, new seeds can be prevented from being incorporated into the seedbed.

Field Bindweed:

On average, seed pods contain viable seeds within three weeks of a flower blooming.⁵ One plant can produce 30 to 550 seeds and the seeds can survive in soil for up to 50 or 60 years.^{2,6} Six weeks after seeds germinate, they begin to send out lateral shoots from buds on roots.²

Hedge Bindweed:

Hedge bindweed normally flowers for one to three months during the summer, but may also bloom in the fall and will produce one to three seeds per flower.^{4,6}

Spreading by Root Buds

Established plants of both field and hedge bindweed can overwinter by relying on impressive root systems. What you see above ground is likely not a good representation of the number of plants in any given area because one plant can send out numerous shoots from root buds, making one plant look like multiple on the surface. It is important to dispose of removed root/stem fragments because pieces as short as two inches may have a viable bud that can set new roots.² Keep in mind that low moisture in the soil decreases chances of root segments re-establishing.²

Field Bindweed:

Vertical roots can extend down 20 to 30 feet^{2,6} but 70% of the total root mass occupies the top two feet of soil.²

Hedge Bindweed:

Vertical roots can extend down to 10 feet, but the majority (approximately 85-95%) extend out horizontally and are relatively shallow.⁴

How to Remove Bindweed

Prevent Spreading

Purchase clean seed, plant starts, mulch, and soil amendments. Be careful not to move soil or mulch that is contaminated by seeds or root/stem segments to unaffected areas. Prioritize preventing seed from setting, and disturbing young plants before large root systems can form (three to four weeks after germination).²

Mechanical Disturbance/ Continued Cultivation

Disturbing the soil surface every two to three weeks as needed can be effective.^{2,3,6,7} Cultivation is less effective after mature shoots are established, which has been observed in field bindweed six weeks after germination.² Although established plants are somewhat drought tolerant, it is best to cultivate while the soil is dry.³

Bio Controls

Biological controls for bindweed are best left to professional applicators. The bindweed mite, *Aceria malherbae*, feeds on the plants causing deformities⁶ and the fungi *Phomopsis convolvulus* and *Stagonospora convolvuli* strain LA39 are also identified to stress the field bindweed. Widespread adoption is limited.²

Smother Crops

The use of plants that grow quickly and shade out both field and hedge bindweed can be effective.^{2,3,6,8} Smother crops are particularly useful where they germinate earlier in the spring and grow rapidly.^{2,8} Use plants that have these characteristics in your area to trial this technique. Choosing native plants like this will complement ecological restoration.

Flaming

This technique can be effective to manage top growth if used regularly (every two to three weeks), particularly in the heat of summer.² Seeds, however, will not be affected by such short bursts of heat.

Chemical

Volunteers and residents should not apply any chemicals on city parks or public property. Any application of herbicide should be used with other management techniques.^{3,7,8} Acetic acid is a least-toxic chemical to aid in the removal of top growth, though it can leach and be a severe skin irritant. Imazapyr is considered more toxic and impacts groundwater and aquatic life, as well as leaching and severe skin irritation. Anyone applying pesticides should be trained to follow safety measures, and if using on organically certified land, be sure to check with the certifying body. Seed viability may not be impacted by herbicides.

Soil Barriers

Preventing light from reaching the plant with landscape fabric or cardboard on top of organic mulches or rocks can be effective.^{2,9} Complete plant death may take three to five years, and this will not prevent seeds from germinating after the plastic is removed or through holes in the barrier.^{2,7}

Hand Removal

A thick layer of mulch or compost makes it easier to pull up roots and stems with a hand tool.⁷ Removing new above ground growth with a hand tool every week throughout the growing season for two and a half years has been shown to be effective.^{2,7} When plants are flowering most energy is stored above ground, making it the ideal time to remove top growth.⁷ Dispose of weed material in your curbside yard waste bin or burn pile. If home composting, insure methods will be effective on root nodules and seeds.

Summary

Key components of any integrated weed management plan are sustained effort, constant monitoring and evaluation, and the ability to adapt as new site specific information becomes available. Set realistic goals and ensure individuals involved in implementation understand why specific management techniques were chosen so they can take an active role in shaping the plan. Get started by conducting a site evaluation that takes into consideration what techniques may work best, access resources, and then begin scheduling management activities.



Hedge bindweed / Photo: Rachel Kramer, Brandeis University

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Hedge & Field Bindweed Scouting Worksheet

Location: _____ Time: _____ Weeks since last scouting: _____

Date: _____ Name of observer: _____

Goals: 1) Quantify how well established the population of bindweed you are managing is.
2) Identify, plan, and track effectiveness of management techniques.

Was hedge bindweed found? (circle one) Yes / No Was field bindweed found? (circle one) Yes / No

Determining frequency: Approximately what percentage of the area being managed on the site you are scouting has bindweed growing on it? (circle)

Hedge Bindweed: Minor 0-20% Moderate 21-50% Severe 51-100%

Field Bindweed: Minor 0-20% Moderate 21-50% Severe 51-100%

Were hedge bindweed flowers observed? Yes / No Were field bindweed flowers observed? Yes / No

Were hedge bindweed seed heads observed? Yes / No Were field bindweed seed heads observed? Yes / No

Other key observations:

Has the site been managed specifically for bindweed? Yes / No

What techniques were used, and how effective were they?

After reviewing the suggested management strategies above, what new techniques will be trialed?

Plan for executing recommended management techniques:



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