



## WEED MANAGEMENT

The Organic Farming Research Foundation **2022 National Organic Research Agenda (NORA)** is a report informed by surveys and focus groups conducted in 2020 with over 1,100 certified organic farmers and ranchers across North America.

### What Farmers Said

- In the NORA report, two-thirds of survey respondents (67%) cited weed management as a substantial production challenge.
- Specific feedback from organic farmers also underscores the need for additional research on controlling weeds such as bindweed, Canadian thistle, giant ragweed, foxtail, and nutsedge.

### Knowing Your Weeds

Farmers and researchers alike acknowledge that weeds pose the greatest barrier to building healthy soils in organic cropping systems. Management of weeds in an organic cropping system involves integration of many separate management tactics. Which tactics you use will depend on the weed species present, the crop, the time of year the crop is planted, the type of equipment you have available, other crops in the rotation, and other site and operation-specific factors. This is why understanding how weeds operate as species is so critical: Only through understanding can you effectively match your tactics to your site, your goals, and the weed problem at hand.

A crop rotation, cultivation tool, or integrated strategy that works wonders for one producer may require modification or fail entirely at another farm with a different soil, climate, weed flora, land base, and production system. So it is important to consider the following to guide the suite of practices for your farm:

- What are your top five or ten weed species? Get to know their life cycles - when they emerge and flower, ecological niche and nutrient responses, and weak points that can be exploited.
- What is your soil type, texture and condition; topography; climate and rainfall regime?
- What is your land base, scale of operation, enterprise mix, equipment, labor, and other resources?
- What crop rotation opportunities and constraints do you have based on production goals and market needs?

### Check Out the National Organic Research Agenda (NORA)

<http://www.ofrf.org/research/nora>

***Controlling Weeds is the #1 challenge among organic producers.***

## OUTSMART THE WEEDS

### ***Exclude weeds***

- » Avoid weedy manure and mulch hay.
- » Plant cover crop on harvest day or sooner.

### ***Confuse weeds***

- » Vary crops, tillage, and timing.

### ***Starve weeds***

- » Feed crops in row.
- » Avoid surplus plant-available N and P.
- » Mop up leftover nutrients with cover crops.

## KEYS TO SOIL HEALTH

- » Keep the soil covered.
- » Maximize living roots in the soil profile.
- » Minimize soil disturbance.
- » Energize the system with biodiversity.

<b>FIELD BINDWEED</b>	
<i>Family</i>	Morningglory family, Convolvulaceae
<i>Other common names</i>	TEuropean bindweed, lesser bindweed, corn bind, possession bind, bear bind, cornbine, barbine, European glorybind, field morning glory, creeping jenny, green vine, devil's guts, corn lily, laplove, hedge bells.
<i>Habit</i>	PTwining perennial herb spread by thickened horizontal roots
<i>Germination</i>	<b>Seeds:</b> Seedlings of field bindweed emerge readily from anywhere in the top 2" of soil; at 4" depth 10% of seeds will produce seedlings. Bindweed produces long-term, persistent seed banks with some seeds remaining viable in the soil for up to 20 years. <b>Roots:</b> Roots are the primary mode of reproduction. Emergence from vegetative root tissue occurs with the highest concentration in the top 6 inches. Roots can extend up to 30' laterally and form an extensive underground network. Lateral roots can develop buds, which can sprout into a new vine or a new rhizome, depending on soil depth.
<i>Season of emergence</i>	Overwintering roots will emerge in mid-spring and continue throughout the growing season. Seedlings are most abundant in late spring and early summer and will continue to emerge throughout the growing season.

## MANAGEMENT

Field bindweed prefers full sunlight and moderately dry to dry conditions. It is relatively drought tolerant and flourishes in poor soil that contains sand, gravel, or hardpan clay. It is a competitive and persistent weed in a wide range of crops and rangelands. In organic systems the common method for controlling field bindweed is persistent and consistent tilling, requiring cultivation every two - three weeks over a multi-year period.

In systems that work to enhance soil health it is recommended to reduce the frequency of tillage, which can be at odds with management strategies for bindweed infestations. Farmers working toward sustainable conservation tillage systems may first need to take steps to control a current infestation of weeds such as bindweed before returning to reduced tillage practices.



Photo Credit: Clemson University

Once control of bindweed is achieved, efforts should return to restoring soil health with reduced soil disturbances.

### ***If Tillage is Needed***

- Field bindweed control by tillage can require up to 4 years of consistent, frequent tillage. Field bindweed stores nutrient reserves in the roots and can be eradicated primarily by a thorough, well-timed tillage program.
- Tilling is recommended every 12-14 days until bindweed no longer appears.
  - It is optimal for tillage operations to be performed in dry soil, when no rain is predicted, since low moisture content in the soil will increase the probability of root fragment desiccation.
  - After a harvest it is recommended to plow 6" deep. Once the bindweed re-emerges (usually about 12-15 days), till the area with an implement such as a rod weeder or a sharp duck foot style field cultivator that cuts off all of the plants.
    - Repeat this sweep every two weeks until the bindweed shoots are exhausted or there is a frost.
  - Cultivate in a shallow manner - only as deep as necessary to completely cut off all of the shoots, usually 2" to 4".
- Clean roots and stems from equipment before moving out of each bindweed patch.

## Flaming

Flame weeding is an effective form of removal. Similar to mechanical cultivation, burning must be repeated prior to, or soon after, each cycle of emergence.

## Throw Some Shade

- Since bindweed is not very competitive under shady conditions, tall, shade-producing crops can reduce bindweed problems.
- A crop with early and vigorous growth in the spring may compete the best because it forces the bindweed to compete for light later in the season and reduces available moisture.
- Alfalfa can suppress bindweed by dense shading and repeated mowing.
- Plant dense leaf canopy summer-planted cover crops at a high density.

## Perennial Grasses

Many perennial grasses begin growing much earlier in the season than field bindweed does, and can take advantage of limited soil moisture early in the season and establish a canopy that competes with field bindweed for light.

- Use healthy, long-term stands of sod-forming grasses or dense plantings of bunch grasses and legumes as smother crops.
- Avoid early and mid-spring grazing or graze all plants in a short-duration high-intensity system to enhance the competition from desirable grasses.

## Heat It Up

Soil solarization can be an effective method of control: Irrigate prepared beds before covering with the plastic. This will reduce the number of seedlings and the reduction of weed pressure for up to 6 weeks

## PREVENTATIVE MEASURES

- Make sure all seeds are clean of bindweed contamination.
- Ensure that any soil introduced to fields is free of bindweed vegetative parts and seeds.
- Stay on top of the weed! Remove any seedlings before they become perennial plants. This will help prevent a build up of the weed seed bank.



Field Bindweed Seedling.  
Photo Credit: University of California, ANR

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### *This infosheet was informed by free resources available for download:*

- **Manage Weeds on your Farm.** (SARE Guidebook, 2021.)  
Provides in-depth information about dozens of agricultural weeds and the best ways to manage them. Part One describes the strengths and limitations of the most common cultural management practices, physical practices and cultivation tools. Part Two is a reference section that describes the identification, ecology and management of 63 of the most common and difficult-to-control weed species found in the U.S.  
<https://www.sare.org/resources/manage-weeds-on-your-farm/>
- **Field Bindweed** (University of Idaho Extension, 2005.)  
Provides detailed information on field bindweed and different management practices for producers in the Northwest US.  
<https://s3-us-west-2.amazonaws.com/smallgrains.wsu.edu/uploads/2013/11/Field-Bindweed.pdf>
- **Integrated Management of Field Bindweed: Ecological Management Planning**  
(Jessica Green, Oregon State University, 2021.)  
This is one of a three-part series from eOrganic on Field Bindweed.  
<https://eorganic.org/node/35141>

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