

Invasive Species, or Weed?

Ecologists define a **weed** as plants that live in disturbed areas. They establish easily in large numbers and reproduce quickly, often with large numbers of seeds. These plants can be helpful to stabilize a site after a disturbance.

Gardeners simply define weeds as unwanted plants. For many weeds, both definitions apply.

Invasive species are organisms from other parts of the world that readily establish in natural areas and disrupt ecosystem function and stability. Invasive plants have left the ‘pest’ species that control them behind in their homeland and are typically strong competitors in disturbed environments that reproduce prodigiously either by seed or vegetative spread. Invasive plants impact native plant communities (and the animals that depend on them) by overwhelming competition with native plants, and/or by impacting soil chemistry, biotic communities and stability, and local hydrology.

Wisconsin NR-40 Law:

This invasive species rule makes it illegal to possess, transport, transfer, or introduce listed invasive species in Wisconsin. Invasive organisms are classified into two categories: **Restricted** species are already present throughout the state. Spreading these species is illegal and control is encouraged. **Prohibited** species are not well-established in the state, the goal is to eradicate them before they become established.

For more information, see: <https://dnr.wi.gov/topic/Invasives/classification.html>

Invasive Risk Rating System (i):

I have developed a rating system to help clarify which weeds are bad, and which weeds are worse. The higher the rating, the more troublesome the weed. If a species is hazardous to human health, they are placed into a category higher than they would otherwise be in. These numbers are noted in color-coded signs on each sheet.

-5 Highly Invasive: These species can quickly invade and greatly alter a natural community, causing the loss of much species diversity. They should not be allowed to persist on any property.

-4 Exotic Invasive: These invasive species are slightly slower invaders or are easier to control than the “Highly Invasive” species. In time and the right site conditions they can spread extensively and cause a great deal of damage.

-3 Aggressive Weed: Although they cannot invade pristine natural areas, they can spread rapidly in disturbed areas, and should be managed.

-2 Persistent Weed: These plants can persist for a long period of time in an area, retarding the stabilization of the community by displacing desirable plants. Some weedy natives are included here.

-1 Minor Pest: These weeds, mostly annuals, are only a problem in lawns, agricultural lands, vegetable gardens or other disturbed or low diversity sites. Managing them is not critical.

Two Key Aspects of Weed Management:

1) **In order to kill the plant you have to kill the root.** Above ground portions of all plants (excluding coniferous trees), will regenerate if the root system is not killed or removed during control efforts.

2) **You should conduct weed control before they are able to produce seeds.** Doing so prevents reproduction and reduces the management effort needed to control your target species in the future.. By mowing or dead-heading in the flowering stage, you can limit the spread of perennial weeds and weaken the roots. Since annual and biennial plants die at the end of their first or second growing seasons respectively, by preventing seed production you cut off their life cycle entirely. Mow (repeatedly if needed) or simply harvest the seed heads.

Manual & Mechanical Weed Control Methods:

Pulling: Weakly rooted annual and biennial plants can sometimes be pulled, particularly in wet or sandy soil. Keep a tool on-hand to remove the roots of plants when the tops break off as you pull. Pulling before the plants flower or early in the flowering period eliminates the need to remove the dead plant from the site, greatly reducing the workload. If pulling late in the flowering period or after seeds have been produced, plants must be carefully removed from the site

Tap-Root Severing: Tap rooted species can be controlled by slicing the root off several inches below the root crown. Tools must be sharpened. Use a dandelion digger for smaller weeds. A Parsnip Predator is a purpose build tool for tackling larger tap-rooted weeds. A sharpened trowel or shovel can also be used.

Grubbing involves digging up the entire area where the weed is found and carefully removing every fragment of root of species with shallow, spreading root systems.

Smothering: Covering an entire patch of a weed with a temporary cover such as a tarp that is weighted down. Multiple rounds of smothering are typically needed with the site uncovered for 3-4 weeks in-between. For species lacking a robust root system, “sheet mulching” with a thick layer of paper or cardboard covered by 4-6” of mulch in-place for at least two months can leave you with a ready-to-plant mulched bed.

Mowing should be done as low as possible, and can be done with a tractor, lawn mower or weed whip when a more carefully targeted treatment is needed. Weed whips also have the advantage of being able to mow almost to ground level. Switch out the plastic string to a metal or hard plastic blade for species with more robust stems.

Tilling: Due to the disturbance to the soil biotic community and potential for erosion, tilling should be restricted to garden or agricultural settings. Repeated deep tilling can control most perennial weeds. Shallow disking is effective on annual and biennial species only.

Flame Weeding utilizes a propane torch to kill seedlings or young annual plants. It can also be used to maintain hardscaping and gardens and row-crop fields. If used in areas with other vegetation it should be done when the humidity is high (above 60%) and the vegetation is damp such as after a rainstorm or with morning dew. Only a very brief second of flame is needed to break-down the waxy cuticle on the leaf surface and top-kill the plant. As an additional precaution, have water handy to manage any potential escapade flames

Herbicide Application:

Considering the ecological damage invasive plants can cause, and the large areas these pests can cover, herbicides are often the only efficient control option. Careful herbicide application can also be the control option with the least negative impact when damage to surrounding plants, disturbance to the soil biotic community and potential for erosion are considered. Some invasive plants have such extensive root systems that they cannot be eliminated without using herbicide. Targeted and well-timed herbicide applications using the lowest volume and concentration of active ingredient possible are critical to successful control and avoiding harm to native plants and animals. **Always read the product label carefully, use them only as directed and follow safety recommendations listed there. The label is the law.** Below are basic descriptions for common herbicide application techniques:

Foliar Spray: Use a backpack sprayer or hand sprayer to cover the as much of the leaf surface of the plant as possible without overspray onto neighboring non-target plants. Apply only enough herbicide to cover the leaf surface you are spraying, and not so much that it drips off the target plant onto surrounding vegetation.

Glove-of-Death: Put-on an elbow-length rubber glove, and a disposable cotton glove over that. Saturate the palm and fingers of the cotton glove with herbicide. Gently rub the herbicide on the target plant while carefully avoiding contact with non-target plants. Typically this approach is used with “low-volume, high-concentration” herbicide mixtures to increase effectiveness since you will likely not be able cover all of the leaf surface with this approach.

Leaf Spritz: Use a 1:3 ratio of Garlon 4 in mineral oil in a low-pressure hand-sprayer. Apply just a few drops of herbicide (just enough that the drip runs down the stem an inch or two) to the upper growing points of target plants (tops of stems), or at the base of the plant. Be extremely careful to avoid overspray onto non-target plants.

Basal Bark: Paint or spray a 1:3 ratio of Garlon 4 in mineral oil all the way around the woody stem at the base of the tree/shrub in a strip about 6” tall. Apply enough herbicide to saturate the surface but minimize runoff.

Cut Stump: Apply herbicide to the cut surface. For very small stems (< 1/2” diameter), also applying herbicide for several inches below the cut may help increase absorption. For larger stumps, (>6”) only the thin outer rings of cambium on the stump needs to be treated; the heartwood is not living tissue.

Girdling: Remove a roughly 6” strip of the outer and inner bark around entire trunk. Or use a chainsaw to cut two parallel, shallow rings around entire tree trunk, at least 4” apart. Apply concentrated herbicide to girdled rings. Cutting too deep into the tissue will trigger a wound response from the tree to send up new shoots. For clonal trees, every stem must be treated to be effective.

Additional Resources:

- **Red Head Ecological Consulting’s Info Page:** <https://redheadeco.com/info>
- *Invasive Plants of the Upper Midwest: An Illustrated Guide to Their Identification and Control* by Elizabeth J. Czarapata
- *Weeds of the Northern U. S. and Canada* by Frances Royer & Richard Dickinson
- PCA’s “Least Wanted” List: <https://www.invasive.org/alien/factmain.htm>
- WDNR’s Invasive Species: Plants: <http://dnr.wi.gov/topic/invasives/>
- INHS’s Vegetation management Guideline: <https://dnr.illinois.gov/inpc/inpcmanagementguidelines.html>
- Cornell’s Weed Ecology & Management Laboratory: Organic Weed Management: <https://weedecology.css.cornell.edu/manage/>