Bindweeds

We have discovered two types of bindweed in our plantings – Field bindweed (*Convolvus arvensis*) and Hedge bindweed (*Calystegia sepium*). This isn't good news when some researchers have called Field bindweed the 12th and the 10th "worst weed in the world". (Pfirter, Mitich) Field bindweed has the status of a serious weed in 14 countries and a problem weed in 19 countries. Both plants have the ability to vine up other plants as they grow; making it difficult to control without collateral damage.

These bindweeds have been a problem in 2 of the 5 plantings that we have. Why it skipped three of them, I don't understand, but am certainly glad for it. We also find it in 1 of the 3 propagation gardens.

Field bindweed has had a bad reputation since it was first introduced. Its introduction was either Montana in 1739 or California in 1884. In 1890, it was called "the most dreaded of the perennial weeds." (Mitich) Interestingly, there are 84 known names for field bindweed; I know I have a few that I call it!!! Linnaeus named it in 1753. The botanical name is a "combination of Latin meaning 'to roll together' or 'to entwine' and 'of the field.'" (Jacobs) Field bindweed is native to the Mediterranean and first described by Pedanius Discorides, a Greek medical herbalist. (Mitich)

Sadly, with all the negativity surrounding these plants, field bindweed is still around and used by gardeners as an ornamental. Pretty remarkable that the Morning Glory would be legal to plant today knowing its history and its ecology.

Field bindweed Facts

- A vining perennial that can grow from seeds, roots, or rhizomes
- Root system is both vertical and horizontal.

- Vertical roots can reach 20-30’ and horizontal roots are found in the top 2’ of soil. The horizontal roots will eventually turn and move vertically. (Jacobs, Mitich, Wright et al, Graham)
- A single plant can create a 10-20’ radiating spread in one growing season.
- Roots can bud, meaning that root pieces laying on the ground can propagate; even those as small as 5mm. Wright found that buds can be produced with roots found 14’ underground.
- Food reserves in the roots allow the plant to survive underground for more than 3 years without replenishment.
- Root nutrients are lowest in May before it begins growing.
- Flowers last for only 1 day and are pollinated by Halictidae, honeybees, bumblebees, butterflies, and moths
- Seeds can be viable for up to 60 years; on average one plant can produce 550 seeds; and tests have shown 87-99% are viable. One test showed 62% were viable after 50 years when stored at room temperature. (Jacobs)
- Drought tolerant
- Prefers heavy clay soil
- Not shade tolerant

Diagram of the root system. ©Wright et al

This growth represents only a few days.

A good look at the leaf shape and plant growth habit.

This is how long the root is and it broke off when I pulled it. This is a plant that is merely days old.

Hedge bindweed Facts

- A vining perennial
- Native to eastern U.S. but considered a noxious weed in many states; it’s also native to Eurasia.
- Stems can reach up to 10’
- Roots are shallow but can extend up to 10’
- Spreads by seeds or rhizomes and forms clones
- Is allelopathic – produces a chemical that prevents other plants from growing around them
- Releases Calystegines which can be poisonous to arthropods and mammals
- Adapts to full sun or partial shade as well as a variety of soil conditions

The rosette of Calystegia sepium.

The root system of the rosette. Shows that it can be easily pulled in this early stage.

How the bindweeds grow together and form a ground cover that does not allow other for plants.

Control based on Studies

Mowing is not the answer for the bindweeds; they are too low growing for it be effective. Smothering can be effective if done for several consecutive years and no vines find an opening to poke through.

One research document states that “there is currently no evidence of a successful biological control agent…” (Graham) I’m not sure when Graham wrote her paper but in 1997, Pfirter et al found 5 fungi were successful against *C. sepium* and 2 against *C. arvensis*; this research was not done in the U.S., so there could be more issues if these fungi are not native to America. Jacobs found a gall mite (*Aceria malherbae*) will attack the leaves and stems and a moth (*Tyta luctuosa*) will attack the flowers and leaves; neither of these are native to the U.S., so one could be introducing more problems than solutions. I am not a proponent of biological control so I did no further research on these.

Herbicides are effective but may need to be applied more than once and for more than one year. Some of the effective ones are triclopyr (Garlon 4®), glyphosate, metasulfuron (Escort® or Oust®) dicamba (Banvel® or Clarity®), fosamine (Krenite®),

and 2,4-D. Wiese tested a variety of herbicides but found that glyphosate, fosamine, dicamba and 2,4-D were the most effective of those tested and effective at any time of the year but glyphosate had the best kill rate. They recommend using glyphosate at a rate of 7.3 lbs/2.5 acres. I have found that a 2% solution of 41% concentrate works well; that's 2 2/3 oz of glyphosate to a gallon of water. Of course, this can differ slightly depending on the calibration of your sprayer.

Herbicide effectiveness lessens in years of drought. Field bindweed has a waxy surface, which is "three times greater" in drought conditions. (Jacobs) Using ammonium sulfate or Miracle Gro® at 2% by weight of will help the herbicide to penetrate the leaves. This is about 5 tablespoons of Miracle Gro® to 1 gallon of water.

Hedge bindweed, when in the rosette stage, can be hand pulled because of its shallow roots. If left to grow the roots will become too long for pulling. It can be controlled with herbicide in the same manner as field bindweed.

Resources

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