

FIELD BINDWEED Science Page

DID YOU KNOW?

Field bindweed is used as a medicine. It is also a weed that can be very difficult to destroy. Its vines can wrap around and choke many crop plants and flowers.

A piece of its root only 5 cm (2 in) long can grow into a new plant.



Its seeds can still sprout and grow after being buried in the soil for 50 years!

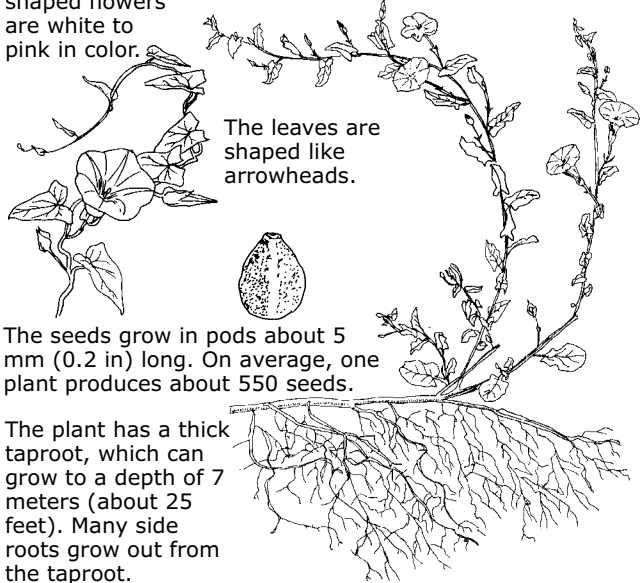
THE FIELD BINDWEED PLANT

Field bindweed is a perennial. Its long, slender stems trail on the ground or wrap around other plants.

The vines grow 0.3 to 1.8 meters (about 1-8 ft) long.

The funnel-shaped flowers are white to pink in color.

The leaves are shaped like arrowheads.



The seeds grow in pods about 5 mm (0.2 in) long. On average, one plant produces about 550 seeds.

The plant has a thick taproot, which can grow to a depth of 7 meters (about 25 feet). Many side roots grow out from the taproot.

ORIGINS

Field bindweed is native to Europe and Asia. People accidentally brought it to other parts of the world. Its seeds were mixed in with grains that were being shipped.

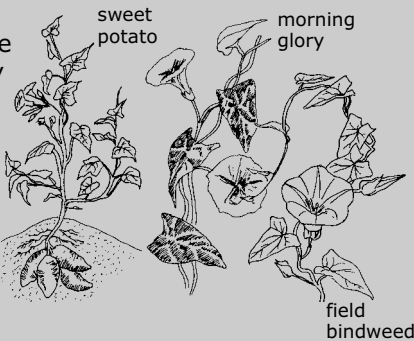


CLASSIFYING FIELD BINDWEED

FAMILY

Convolvulaceae (morning glory family)

The family is commonly called the morning glory family because most of the flowers open in the morning, and close again in the afternoon.



GENUS

Convolvulus

In Latin, this means "to wrap around."

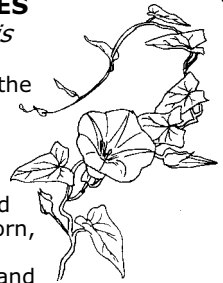
The stems of this family run along the ground and wrap around plants and other objects.



SPECIES

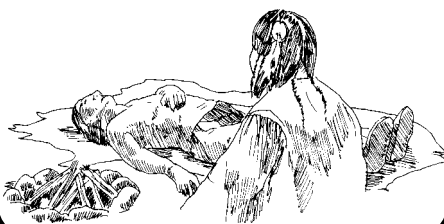
arvensis

"Arvensis" is Latin for "of the field." Field bindweed grows as a weed in orchards, and in fields of corn, small grains, sugarbeets, and grapes.



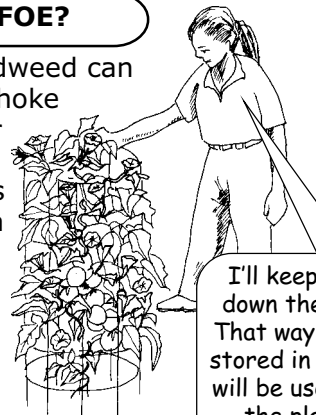
For many years, people have used field bindweed as a medicine. Native Americans have used it to treat spider bites, fevers, and wounds. Europeans have used it as a laxative.

FRIEND . . .



. . .OR FOE?

Field bindweed can quickly choke out other plants. The roots take up a lot of water from the soil, so crops and flowers growing near field bindweed cannot get enough water.



I'll keep cutting down the shoots. That way the food stored in the roots will be used up and the plant will eventually die. I'll also put a heavy layer of straw on the soil.



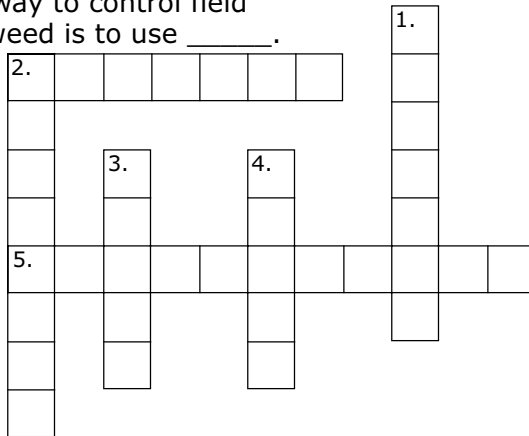
CROSSWORD PUZZLE

Across

- Field bindweed flowers open in the _____.
- The scientific name for field bindweed is _____ *arvensis*.

Down

- The flowers of field bindweed are shaped like _____.
- Field bindweed is sometimes used as _____.
- Field bindweed plants have _____ that wrap around anything they encounter.
- One way to control field bindweed is to use _____.



TRY THIS

HOW FAST DOES FIELD BINDWEED GROW FROM ROOTS?

What you need

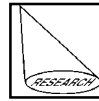
- * several pieces of field bindweed side roots, total length of at least 50 cm (1 ft 8 in)
- * measuring stick marked in centimeters
- * scissors
- * 25 popsicle sticks
- * paper and pencil
- * garden plot, about 1 meter² (about 11 ft²)

What to do

- Prepare the garden plot. Remove all weeds and smooth out the top of the soil.
- Use the measuring stick to mark out 9 squares each 30 cm x 30 cm (1 ft x 1 ft) in size. Mark the corners of each square with a popsicle stick.
- Measure and cut different lengths of roots, as follows:
 - 3 pieces 3 cm (about 1 in) long
 - 3 pieces 5 cm (about 2 in) long
 - 3 pieces 7 cm (about 3 in) long
- Label 3 popsicle sticks with each length — 3 cm, 5 cm, and 7 cm (a total of 15 sticks).
- To make the locations of each treatment plot random, close your eyes and pick the popsicle sticks one at a time. Place them in the squares from left to right, top to bottom.
- Read the label in each square to find out

what length of cutting to plant there. Plant one root cutting in each square, about 1-2 cm (about 1/2 - 1 in) deep.

- Draw a sketch of your test plot, labelling the root length planted in each square, in case the sticks are lost.
- For each square, observe how fast shoots grow from the bindweed roots. Measure the lengths of the stems at least once per week.
- Summarize your results on a chart. For example, you could put length of root on the x-axis and height of tallest shoots on the y-axis.
- Can you explain your results? Did the longer roots produce bigger or more shoots? If not, how might you explain your results?



SPOTLIGHT ON RESEARCH

The "Cancer of Weeds" or Cancer Drug?

Some farmers call field bindweed "the cancer of weeds," because it wraps itself around useful plants, and takes up valuable soil nutrients. However, field bindweed may also be a valuable plant for fighting cancer! It contains a substance called ProteoGlycan Mixture (PGM).

A team of scientists in Wichita, Kansas are trying to find out if PGM can be used to fight cancer. They boiled field bindweed leaves to extract the PGM. Then they measured the effects of PGM in several different ways. They injected it into the mice. In another experiment, they placed PGM on developing chicks that were still in their eggs. They also placed the PGM on cancer cells growing in test tubes.

Their results were very promising. The PGM did not kill cancer cells growing in test tubes. However, when the PGM was given to mice, it slowed the growth of their tumors by over 70 percent. It also stopped the growth of blood vessels in chicks. Therefore, the scientists believe it may stop the growth of blood vessels to tumors. If their blood supply is cut off, then the tumors cannot grow. Based on these results, the scientists believe that PGM deserves further study as an anti-cancer drug.

SOURCE: Meng, X.L., Riordan, N.H., Casciari, J.J., Zhe, Y., Zhong, J., Gonzalez, M.J., Mrianda-Massari, J.R., Riordan, H.D. (2002). Effects of a high molecular mass *Convolvulus arvensis* extract on tumor growth and angiogenesis. *Health Science Journal*. Vol. 21 (4), 323-8.



RIDDLE

Why did a man plant old car parts in his garden?

Answer: Because he wanted to raise a bumper crop!

2. medicine; 3. vines; 4. mulch.
Across: 2. morning; 5. *Convolvulus*. Down: 1. funnels;

Crossword puzzle answers