

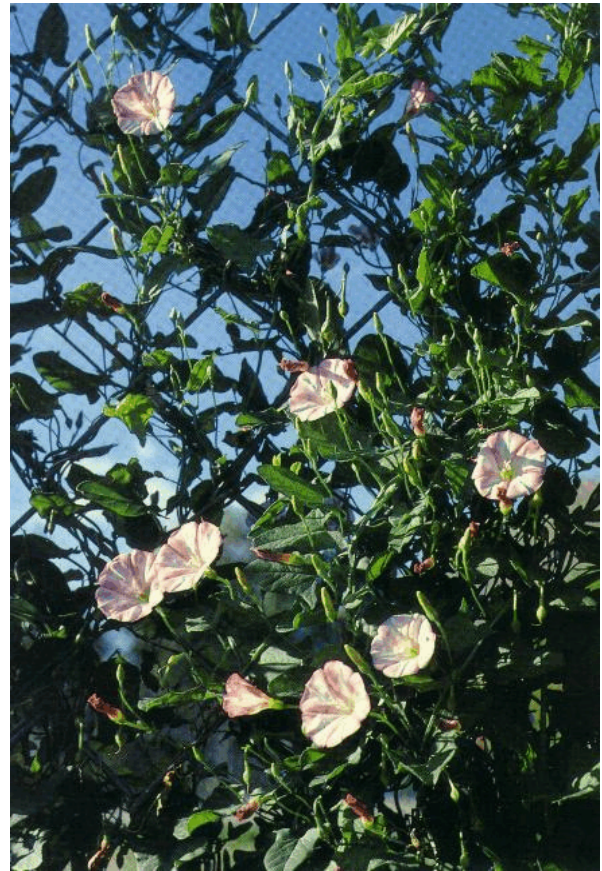
FIELD BINDWEED

(*Convolvulus arvensis*)

Description: Field bindweed, also referred to as creeping jenny, perennial morningglory, or wild morningglory, is a member of the Convolvulaceae or Morningglory family.

Field bindweed is a long-lived deep rooted perennial weed that often climbs or forms dense tangled mats. Stems are slender, glabrous to pubescent, prostrate, unless the plant is climbing on an object for support. Typical stems can grow to over four feet long. Mature leaves are alternate, simple, glabrous to finely pubescent, and are more or less arrowhead-shaped with pointed or blunt lobes at the base. Flowers, born singularly or in pairs, are bell- or trumpet-shaped, about 1 to 1½ inches in diameter, and white to pink in color. The flower stalk has two small bracts located about 1 inch below the flower. Dull, brownish-gray, coarsely roughened, ovoid to pear-shaped seeds are borne in two-celled, egg-shaped capsules with two to four seeds produced per cell.

Field bindweed is considered a noxious weed under North Dakota state law, thus landowners are required to eradicate or control the spread of the plant.



Field bindweed

Plant Images:



Stems



Leaves



Flower and bracts

Distribution and Habitat: Field bindweed was introduced from Europe and has become a widespread and serious weed problem in all parts of the United States except the southeastern states. The plant is found in temperate, tropical, and Mediterranean climates but is most troublesome in cereals, beans, and potatoes in the temperate zone. Field bindweed occurs in dry or moderately moist soils and can tolerate long periods of drought. The plant prefers rich, fertile soils but can persist on poor, gravelly soils as

well. Cultivated fields, pastures, gardens, lawns, waste places, roadsides, railways, vineyards, and orchards are areas where Field bindweed can flourish.

Life History/Ecology: Field bindweed is a herbaceous perennial that can reproduce by seed production and by an extensive fibrous root system. Seeds of the plant can germinate throughout the growing season when adequate moisture is available, but peak germination occurs in late spring or early summer. Six weeks after emergence, the taproot of the plant can reach depths of 2 feet and can develop three to six roots that later become secondary vertical roots that can reach a depth of 20 feet. Rhizomes develop from root buds on vertical roots and emerge as new plants. Above ground shoots then branch into vines. Freezing temperatures kill the shoots of the plant back to the roots and new growth arises from root buds the following spring. Plants can emerge as early as May and begin flowering in June until frost arrives in the fall. Field bindweed can also reproduce by seed, producing anywhere from 25 to 300 seeds per plant. Seeds of the plant remain viable in the soil for 20 years or more.

History of Introduction: Field bindweed is a native of Europe and western Asia and was first documented in the United States in 1739 in Virginia. The plant most likely arrived in the United States as a contaminant in farm and garden seeds. Field bindweed was reported in Pennsylvania in 1812 and Maine in 1824. The plant rapidly spread westward after completion of the railroad and appeared in Kansas by 1877. Field bindweed infested all of the western states by 1900. The plant is primarily a problem in dryland farming areas of the Great Plains and western states. In North Dakota, field bindweed has been found extensively throughout the state and has been reported in all counties.

Effects of Invasion: Field bindweed is listed as one of the ten most serious weeds in the world because the plant is prosperous in numerous cropping systems. The extensive root system of field bindweed makes the plant extremely difficult to control. Field bindweed out-competes desirable plant species for soil moisture. The twining growth habit of the plant interferes with harvesting operations that results in lodging of the crops. Therefore, crop yields can be severely reduced due to infestation of field bindweed.

Control:

Field bindweed is a persistent species that is difficult to control. Management objectives for field bindweed control should involve removing established plants, killing the roots and root buds of the plants, and preventing seed production and seedling establishment. Seeds of field bindweed can remain viable in the soil for a number of years, therefore particular attention is required for several consecutive growing seasons to prevent germination of new plants. Several management techniques should be integrated to effectively control field bindweed. Control methods combined with planting competitive crops that provide early shade can reduce field bindweed vigor and eventually control field bindweed growth.

Mechanical - Hand pulling field bindweed can be effective when the plant is in the seedling or young adult stage. Hand pulling mature plants is not as effective because root and rhizome fragments that are left behind will resprout into new plants. Intensive cultivation controls new seedlings, but may spread root fragments. Tilling eight to twelve days after each emergence continuously throughout the growing season will control field bindweed. However, tillage may need to be repeated for 1 to 5 years to exhaust the root reserves of field bindweed and to effectively control populations. Mowing is not a successful control method because the plant grows close to the ground. Burning alone is not thought to be an effective control method because the burn will only remove the aboveground growth and plants will likely regrow from the root system or buried seeds that are undamaged. Burning may be more effective in combination with other methods. Further research is needed to determine the effectiveness of

prescribed burns for field bindweed control. Mulches or black plastic can effectively control field bindweed if light is unable to reach the soil surface and the plant. However, this control method may require 3 to 5 years to eradicate infestations.

Chemical - Several herbicides are available for field bindweed control. In cropland, dicamba applied in the fall provides excellent control of field bindweed. Glyphosate will also effectively control the field bindweed if applied when the plant is actively growing or at full bloom stage. In pastures or rangeland, picloram will provide long-term field bindweed control when applied during the early bud to full bloom growth stage. 2,4-D can also be applied as a fall or spring application. Quinclorac can effectively control field bindweed if applied in the fall prior to a killing frost when the plant is at least 4 inches long and actively growing.

Contact your local county extension agent for recommended use rates, locations, and timing.

Biological - Three biological control agents have been released in the United States for field bindweed control. *Tyta luctuosa*, or European moth, will defoliate field bindweed as a caterpillar. *Chelymorpha cassidea*, a tortoise beetle, feeds on the leaves of the plant and is native to the United States. A gall forming mite, *Aceria malherbae*, has established on field bindweed in several states, including Washington, Montana, and Texas. Biological control of field bindweed has had little success at this time.

Sheep have been used to control field bindweed, but they will only eat the above ground parts of the plant when desirable vegetation is not available.

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Field bindweed, leaves, and flower and bracts photographs courtesy of Weeds of the West, Tom Whitson.

Stems photograph courtesy of King County Noxious Weed Control Board, Washington.