

HEMP DOGBANE

(*Apocynum cannabinum*)

SEEDLING DESCRIPTION

Hemp dogbane seedlings are erect and sturdy. The stem below the seed leaves (hypocotyl) is smooth, green, and often red at the base. Seed leaves (cotyledons) are oval, about ¼ inch (6 mm) long and half as wide, and green with a white midvein. The first true leaves are about ½ to 1 inch (12 to 25 mm) long, half as wide, bright green above and pale below. Leaf margins are smooth and the leaves themselves are rather thick for their size. Leaves usually have a short leaf stalk (petiole) but may be attached directly to the main stem.

1. Seedlings are smooth, erect, and sturdy.
2. Young plants will resprout if cut off at ground level.
3. Hemp dogbane commonly infests corn.
4. Long seed pods are distinctive.
5. Leaves have a strong white midvein.
6. Perennial, laterally spreading roots are difficult to control.

BIOLOGY

Hemp dogbane is a member of the Dogbane family (Apocynaceae). A perennial broadleaved weed, it reproduces by seed and by its spreading root system. The seeds are extremely small and germinate best from a depth of ¾ inch (9 mm), but in fine-textured soil may emerge from nearly 2 inches (5 cm) deep. Most seedlings emerge in spring, but shoots from the rhizomes may appear throughout the growing season, even into early fall. Seeds remain viable up to two years in soil. Germination may occur at any temperature between 50° and 104°F (10° and 40°C), but the optimum range for seedling development is between 68° and 77°F (20° and 25°C).

The plant emerges as a single stem but soon divides to form a bushy plant 1 to 5 feet (30 to 150 cm) tall. Stems are smooth, erect, and red to green, often turning en-

tirely red in autumn. When broken, the stems release a milky white sap.

Leaves are arranged in opposite pairs and have slightly pointed tips and a narrow oval shape. They grow 2 to 5 inches (5 to 13 cm) long and ¾ to 1¼ inches (2 to 4 cm) wide. Margins and upper leaf surfaces are smooth; lower surfaces may be slightly downy or entirely smooth. The upper surface is a dull dark-green and has a prominent network of white veins.

Flowers appear in mid- to late summer. They form in round clusters called "cymes," about 2 inches across, in which the central flowers open first. Each urn-shaped flower is less than ¼ inch across and consists of five greenish-white petals.

Some of the flowers become fertilized and in late summer develop into pairs of long, slender green pods called follicles. The pods are sharply pointed, 4 to 8



PODS (10 TO 20 CM) LONG AND ONLY ABOUT 1/8 inch (3 mm) in diameter. When dry, they split lengthwise, each half twisting in a spiral and releasing the tiny flat seeds. Attached to each seed is a pappus, or tuft of silky hairs, that is easily carried away by the wind. Each plant produces an average of 20 pods, with about 200 seeds in each pod.

The weed's persistence is due to its perennial root system rather than its seeds. Ten-day-old seedlings already have perennial capabilities; they can resprout if cut off at ground level. Roots grow laterally and send up new shoots, so one hemp dogbane plant can quickly turn into a large patch. In fields under cultivation, tillage chops the roots into small pieces. A root segment less than one inch long with a single bud can produce a new plant.

SIMILAR SPECIES

Common milkweed is often confused with hemp dogbane because the two weeds have similar leaves and sticky white sap. However, milkweed flowers are pink rather than green and have a more complicated structure than the simple five-petaled blossoms of hemp dogbane. Before flowers appear, the two plants can be distinguished by their growth habits. Hemp dogbane stems are multi-branched, forming a bushy plant. Milkweed has a single stalk, occasionally divided once or twice at the top.

When the plants are still very young, the leaves hold a clue to identification. Hemp dogbane leaves are smooth on both surfaces, whereas milkweed leaves usually have a soft downy covering on the lower surface.

NATURAL HISTORY

Hemp dogbane, a native of North America, grows throughout most of Canada and the United States, especially in the mid-Atlantic region. It grows in meadows, prairies, waste places and dumps, and along roadsides, streams, and woodland borders. It grows best in medium- to fine-textured soils, but it also does well in coarse soil if fertility and moisture are adequate.

Hemp dogbane is a serious problem in non-cultivated land, and thrives in moist fields. Crop reduction due to hemp dogbane infestation varies. Under irrigation, crop yield loss is slight, but non-irrigated sites in Nebraska showed a 15 percent reduction in corn, 32 percent loss in sorghum, and as much as a 37 percent loss in

soybeans.

Much of the literature on hemp dogbane claims that it is poisonous to livestock, but these claims were based on an early investigation in which oleander (*Nerium oleander*) was mistaken for hemp dogbane. While the two plants belong to the same family and their leaves are similar, all parts of oleander are extremely poisonous to humans and all classes of livestock. As little as 0.005 percent of the animal's weight has proven fatal to horses; 12 ounces could be a lethal dose for a 1,500-pound horse. A human being can die from eating a single oleander leaf.

Hemp dogbane itself actually poses little danger. Animals find fresh hemp dogbane distasteful, but can eat it in hay without suffering ill effects.

Hemp dogbane extract has been used in medicinal preparations, and researchers have studied the effects of its compounds on animals. Two types of toxins — resins and glycosides — have been identified in hemp dogbane extracts. In concentrated form, the toxins cause cardiovascular problems, digestive disturbances, and death in dogs and cats.

Mature stems of hemp dogbane contain long, tough fibers which the Native American Indians used to make rope, bowstrings, nets, and thread. The Indians also used the milky juice to poison fish, and the root extract as a medicine. An archaeological dig in Utah uncovered a drawstring bag, from about 5000 B.C., made of *Apocynum* fibers.

A natural dye can be made from hemp dogbane. When mixed with alum, the plant produces a dark tan color. Using copper as a mordant produces a black dye.

The scientific name derives from three Greek words: *apo* (against), *kynakos* (dog), and *kannabin* (hemp). Hemp dogbane is also called Indian hemp, Indian physic, Choctaw root, bowman's root, and rheumatism weed.

CONTROL

When conventional tillage was a standard farming practice, hemp dogbane was rarely a problem. In recent years, however, the use of selective herbicides in reduced-tillage farming has allowed hemp dogbane to form stands as large as 10 to 12 acres.

Prevention is an important part of hemp dogbane control. This weed is often introduced to clean fields when machinery carries root pieces from infested land. Establishment occurs quickly once the buds on

these roots are allowed to sprout, so all machinery should be cleaned before moving on to the next field. Buying weed-free certified seed is strongly recommended. Fencerows and other noncultivated land around the farm are frequent sources of weed seed. Mowing these areas helps prevent reinfestation.

Control in corn is difficult because hemp dogbane seedlings emerge one to three weeks earlier than corn seedlings, and shoots continue to emerge throughout summer. Herbicides applied as a pre-emergence or early postemergence treatment kill the early weed seedlings but have no effect on shoots that emerge later from root buds. Preharvest chemical control in corn would require an airplane or high-boy sprayer, so few farmers choose this treatment.

Crop rotation is one of the surest methods of subduing hemp dogbane. A rotation that includes corn, small grain, and several years of hay provides effective competition against hemp dogbane. It also allows for chemical control in the fall after small grain harvest or in the last year of a hay crop.

Alfalfa is one of the best competitors against hemp dogbane. During the last year of the hay crop, a nonselective systemic herbicide should be applied three or four weeks after the last hay cutting. Allowing this length of time for regrowth insures that the dogbane will be large, actively growing, and able to translocate the chemical to its roots. Treatment should be at least one week before killing frost is expected, since the chemical works by moving through an actively growing plant.

For specific recommendations, consult your county Extension agent or the most recent *Weed Control Manual and Herbicide Guide*, available through Meister Publishing Company, 37841 Euclid Avenue, Willoughby, Ohio 44094. Follow label instructions for all herbicides and observe restrictions on grazing and harvesting procedures.

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Issued in furtherance of Cooperative Extension work, Acts of Congress, May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and the Pennsylvania Legislature. L. F. Hood, Director of the Cooperative Extension Service, The Pennsylvania State University.

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File No. IV C 9 10M587 U.Ed. 86-792