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### G83-665 Hemp Dogbane

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## Hemp Dogbane

This NebGuide describes hemp dogbane, including how it spreads, and provides recommendations for cultural and chemical control.

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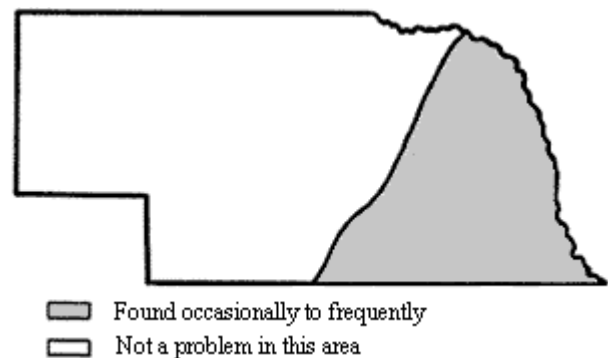
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- [Description](#)
- [Cultural Control](#)
- [Chemical Control](#)
  - [Cropland](#)
  - [Non-cropland](#)

Hemp dogbane is a perennial broadleaf weed native to North America. In Nebraska it is most prevalent in the eastern and central areas, but is occasionally found throughout the state (*Figure 1*).

Studies have shown that hemp dogbane can cause yield reductions of 40 percent in grain sorghum, 38 percent in soybeans and 10 to 15 percent in irrigated corn.

Under some crop production systems hemp dogbane infestations are spreading and becoming more severe. Root sections of hemp dogbane are moved by tillage implements, thereby spreading infestations. Reduced tillage and no-till systems provide favorable conditions for its development. In some instances, substituting preemergence herbicides for tillage has favored hemp dogbane spread.



**Figure 1. Hemp dogbane distribution in Nebraska.**

### Description

Hemp dogbane (*Apocynum cannabinum* L.) is a member of the dogbane family, but is similar in appearance to common milkweed during early vegetative growth stages. It reproduces by seed and from

buds on its root system (*Figure 2*). The root system is extensive, often penetrating 5 to 10 feet into the soil. Like the milkweed family, all parts of the plant contain a white, milky sap.



**Figure 2. Buds on hemp dogbane root system.**

Hemp dogbane is listed as a poisonous plant in many references. The milky sap does contain a cardiac glycoside similar to that found in digitalis species. Little is known concerning the toxicity of dogbane to livestock. Animals find the plant distasteful. Reported cases of poisoning are rare.

Small greenish-white flowers are produced in clusters at the ends of branches from June through August. Each flower produces two slender, pencil-like pods 2 1/2 to 4 inches long. These pods contain reddish-brown seeds that have a tuft of white fluffy fiber at one end. The seed is easily carried by wind. New plants readily become established from seed in areas free of other plant competition. Hemp dogbane becomes a perennial (capable of vegetatively reproducing from its root system) approximately 6 weeks after seedling emergence.

New shoots developing from the roots begin emerging in April, and the plants grow faster than spring-seeded row crops such as corn and sorghum. This rapid emergence and development allows hemp dogbane to compete strongly with row crops. Corn withstands hemp dogbane competition better than sorghum or soybeans.

## Cultural Control

An alfalfa stand cut three times a year for three years will substantially reduce stands of hemp dogbane. Competition from alfalfa and the frequent cuttings deplete the weed's root system.

Including winter wheat in a crop rotation helps control hemp dogbane. Winter wheat grows rapidly in the fall and early spring when hemp dogbane is inactive. Periodic summer tillage after harvest and before wheat seeding further weakens the weed. A single winter wheat crop will not eliminate hemp dogbane, but will reduce infestations.

Preventing seedling establishment is an important part of controlling hemp dogbane. Cultivation or an application of 2,4-D will control hemp dogbane during the seedling stages. It is much more difficult to control after buds have developed on the roots. Till idle land or treat it with 2,4-D during the growing season to prevent hemp dogbane from becoming established. Control hemp dogbane in fence rows and noncrop areas to eliminate sources of infestation.

## Chemical Control

### Cropland

Hemp dogbane can be controlled in cropland with 2,4-D and combinations of 2,4-D + Banvel (*Table I*). Apply spring treatments when hemp dogbane is in the early flower bud stage. Best results are obtained where hemp dogbane is undisturbed by tillage prior to treatment and growing conditions are good. Tillage prior to spraying disrupts hemp dogbane roots and limits effectiveness. Wait 4 to 5 weeks after tillage before treating. Permissible application rates in June will prevent seed production and reduce infestations over a period of years.

Hemp dogbane is most effectively controlled in corn and grain sorghum with herbicides applied in late

August or September (*Table II*). Movement of nutrients and herbicides into the root is better at this time of the year. Crop tolerance in early summer does not permit the use of the higher, more effective herbicide application rates.

*Table III* illustrates the difficulty of eradicating hemp dogbane. After five spring treatments, hemp dogbane still persisted regardless of the control measures used. In this study no permanent stand reduction occurred until after the second year of spring treatment. The herbicides burned off the top growth, but there was apparently little movement into the root system. The least costly treatment of 1/2 pint of 2,4-D ester provided reasonably good control after the second year and gave the highest corn yields.

<b>Table I. Herbicides for hemp dogbane control.</b>			
<b>Herbicide</b>	<b>Amount of Commercial Product/A</b>	<b>Application Time</b>	<b>Remarks</b>
2,4-D	1 to 1.5 qt*	Spring flower bud stage.	Non-crop areas. Retreatment necessary in following years.
2,4-D ester	1 pt*	Spring flower bud stage.	Retreatment necessary in following years. Can be used in small corn.
2,4-D	1 to 1.5 qt*	After corn silks brown or milo is in soft dough and dogbane root buds have swollen.	Surfactant may help. Can be used in standing corn and milo. Use the lower rate on milo.
2,4-D + Banvel	1 qt + 0.5 pt*	After corn silks turn brown or milo reaches soft dough until dogbane leaves turn yellow. Root buds on dogbane should be pink and swollen.	Can be used in standing corn and milo. Do not apply within 30 days of milo harvest or 7 days of corn harvest.
Roundup	3 to 1 ration in pipewick.	Spring.	Dogbane 8 to 10" taller than crop. Avoid treating on windy days when crop leaves may be blown against pipewick.
*4 lb active ingredient per gallon.			

		Percent Control <sup>1</sup>	
Treatment <sup>2</sup>	lb/A	June Applications for 2 Consecutive Years	September Applications for 2 Consecutive Years
2,4-D amine	1	36	70
2,4-D amine	2	64	90
2,4-D ester	1	72	81
2,4-D ester	2	78	90
2,4-D amine + Banvel	1 +1/4	--	94

<sup>1</sup>Treatments were applied to hemp dogbane on idle land. Thick stands of corn or milo would intercept some of the herbicide, reducing control.  
<sup>2</sup>Herbicide rates exceed labeled rates for June treatment of corn and milo except for 2,4-D amine at 1 lb/A on corn.

**Table III. Hemp dogbane control in corn with annual herbicide treatments applied in mid-June 1978 through 1982, Aurora, Nebraska, when dogbane was typically 18 to 24 inches and corn 8 to 12 inches tall.**

Treatment	Ave. No. Stems/100 sq. ft.			Corn Yields	
	Fall Count	Spring Count		1978-82	1981-82
	1978-82 <sup>a</sup>	1979	1980-82 <sup>a</sup>		
Untreated	101	98	84	150	147
1/2 lb 2,4-D ester	34	124	40	157	163
1 lb 2,4-D amine	38	88	47	146	145
1/8 lb Banvel + 1/2 lb 2,4-D amine	58	110	57	150	153
1/4 lb Banvel + 1 lb 2,4-D amine <sup>b</sup>	37	88	35	142	149
33% Roundup (ropewick) <sup>c</sup>	44 <sup>d</sup>	94 <sup>d</sup>	59 <sup>e</sup>	--	139

<sup>a</sup>In addition to stand reduction, dogbane vigor was substantially reduced.  
<sup>b</sup>Exceeds labeled rate.  
<sup>c</sup>First applied in June 1981. Not labeled for use in corn.  
<sup>d</sup>1981 average.  
<sup>e</sup>1982 average.

Late August or September herbicide applications can be made anytime after corn silks turn brown or milo reaches the soft dough stage up until hemp dogbane turns yellow. Root buds on hemp dogbane should be enlarged or swollen at the time of treatment. For best results, treat two years in a row. Avoid herbicide residues in the grain by making applications at least 7 days before corn harvest and 30 days before sorghum harvest.

*The effectiveness of fall herbicide applications are greatly reduced when made to plants on which leaf yellowing has been induced by frost or drought. Do not treat after a freeze even if dogbane leaves are*

*green.*

Small infestations of dogbane can be easily located in May and sprayed with 2,4-D or Banvel plus 2,4-D, or wiped with Roundup. Repeat treatments in subsequent years will be needed. Larger areas can be mapped and spot-treated aerially in the fall. Dogbane will spread if control measures are not taken.

Most preemergence herbicides have little effect on shoots coming from the root system, but they may control plants starting from seed.

Field observations and recent research show that Sutan + used preplant incorporated for weed control in corn provides 60 percent or better suppression of established hemp dogbane for about 8 weeks in the year of application.

Roundup can be applied with pipewick applicators in sorghum and soybeans when there's suitable height differences between the hemp dogbane and the crop. All herbicide treatments require repeat applications in subsequent years.

### **Non-cropland**

Established stands of hemp dogbane can be controlled with herbicides. On non-cropland (i.e., roadsides, utility sites, or railroad rights-of-way, but not idle land or grazing land), Tordon, higher rates of 2,4-D or Banvel, Roundup, or soil sterilants such as Pramitol and Kyvar will provide control.

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***File G665 under: WEEDS***

***A-7, Field and Pasture***

*Issued June 1983; 12,000 printed.*

*Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.*

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