

Showy Rattlebox

(*Crotalaria spectabilis*, Roth)

Row Crop

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Fig. 1. Showy rattlebox has simple, alternate leaves.

Fig. 2. Showy rattlebox plants have persistent bract and yellow flowers.

Fig. 3. Showy rattlebox can grow in poor sites, such as this roadside in southern Mississippi.

Introduction

Problems Caused

Showy rattlebox (*Crotalaria spectabilis* Roth)(Syn. *Crotalaria retzii* A.S. Hitchc.; *C. sericea* Retz., nom. illeg. [anomalous]), sometimes called showy crotalaria, is a non-native, annual legume native to Indomalaysia. It was introduced as a soil building cover crop on sandy soils. Showy rattlebox can be poisonous to livestock, particularly when seeds are consumed. Like other *Crotalaria* species, showy rattlebox contains pyrrolizidine alkaloids, which is present in greatest quantity in the seeds. All livestock including poultry are subject to poisoning. Symptoms include photosensitization and liver disease within a few days to 6 months following consumption.

Regulations

Showy rattlebox is a state noxious weed in Arkansas, but problematic in other MidSouth states. Movement of contaminated forage feedstocks or feed grain into Arkansas is a violation of state law.

Description

Vegetative Growth

The Genus *Crotalaria* belongs to the Legume (Fabaceae or Leguminosae) Family. In the MidSouth, some species are annual and others perennial. Showy crotalaria is an erect, summer herbaceous annual. Compared to native *Crotalaria* species, showy crotalaria can be quite large ranging from 1.5' to 6' tall. Stems are green or purplish and may be ribbed. Leaves are alternately arranged on the stem, but large and simple, 2" to 6" long (Figure 1). They lack a petiole and are broadest at the end (apex). Leaves are generally smooth (glabrous) above and densely hairy (pubescent) below. At the base of the leaf are persistent, ovate to lance-shaped stipules just less than 0.3" long. Seedlings have bean-shaped cotyledons that are green above and light green below. As seedlings develop, true leaves are smooth above but develop dense appressed hairs (pubescence) below. Seedlings have a distinct taproot.

Flowering

As the common and scientific names imply, flowers are large and showy at about 1 inch across, produced in clusters, and yellow in color (Figure 2). The calyx (sepals) is glabrous (smooth). Flowers stalks are subtended by persistent bracts 0.3" to 0.5" long (Figure 2). Fruit are cylindrical pods (legumes) nearly 2" long, which look inflated, that darken at maturity. When mature, seed may break free inside the pods and create a rattling sound when shaken; hence the name rattlebox. Seeds are kidney shaped, small, and brown to black at maturity. Seed are considered very toxic.

Dispersal

Dispersed by seed primarily through contaminated equipment, seed, or hay.

Spread By

Primarily spread by contaminated equipment, seed, or hay.

Habitat

Showy rattlebox is a problem in row crops, pastures and roadsides (Figure 3). An annual legume, it is spread primarily by seed. It prefers sites that are open and disturbed, but as a legume these sites tend to be poor nutritionally. It is often found on roadside or pasture slopes that may be more or less eroded.

Table 1. Suggested chemical control methods for showy rattlebox.

Crop	Method	Herbicide	Rate/Acre (lb ai)
Pasture/ hay	Preemergence	Diuron	0.8 to 2.4
	Postemergence	Dicamba	0.25 to 2.0
		Hexazinone	0.69 to 1.1
		Triclopyr	0.25 to 2.0
		Triclopyr + fluroxypyr	0.38 to 1.5 + 0.125 to 0.5
		2,4-D	0.5 to 1.0
		2,4-D + dicamba	0.38 to 1.4 + 0.12 to 0.5
		2,4-D + triclopyr	0.5 to 2.0 + 0.25 to 1.0
Corn	Preemergence	Atrazine	2.0
	Postemergence	Atrazine	2.0
		Dicamba	0.25 to 0.5
		Clopyralid	0.09 to 0.19
		Glyphosate	0.56 to 0.75 lb ae (Use only over Roundup Ready hybrids)
		2,4-D	0.24 to 0.72
		Postemergence directed	Ametryn
	Linuron		0.63 to 1.5
	Paraquat		0.25 to 0.5
	Soybean		Preemergence
Metribuzin		0.025 to 0.0625	
Postemergence		Acifluorfen	0.25 to 0.5
Postemergence directed		Fomesafen	0.25 to 0.375
		Glyphosate	0.56 to 1.125 lb ae (Use only on Roundup Ready cultivars)
		Lactofen	0.2
		Paraquat	0.059 to 0.117

Distribution

US

There are approximately 600 species of *Crotalaria* worldwide. Several species occur in the Midsouth, some native while others are non-native. Showy rattlebox is native to southern Asia, but now can be found worldwide. In the United States it occurs from Missouri to Virginia south to Florida and Texas, which includes all five Mid-South states. It has been used as forage in other parts of the world, but can be toxic to certain animals.

Mid-South

Showy rattlebox has escaped in all Mid-South states, but tends to occur at scattered localities.

Control Methods

Biological

No widespread biological controls are utilized for showy rattlebox.

Chemical

There are a number of chemical control options (Table 1) for showy rattlebox. These include both preemergence and postemergence herbicides in pasture and/or hay, corn, and soybeans. In pasture and/or hay, diuron can be used for preemergence control while dicamba, hexazinone, triclopyr, triclopyr mixes, 2,4-D, or 2,4-D mixes can be used for postemergence control. In corn, atrazine can be used for both preemergence and early postemergence control of showy rattlebox. Other postemergence options in corn include dicamba, clopyralid, glyphosate (only for Roundup Ready hybrids), or 2,4-D. Ametryn, linuron, or paraquat can be used postemergence directed in corn. In soybeans, flumioxazin or metribuzin can be used for preemergence control. Acifluorfen can be used for postemergence control, while fomesafen, glyphosate (only on Roundup Ready cultivars), Lactofen, or paraquat can be used postemergence directed control of showy rattlebox.

Mechanical

Small patches of showy rattlebox can be mechanically removed by hand. Remove plants prior to fruit ripening to avoid seed dispersal. Hand removal can be slow and labor intensive. In pastures, clipping can be an effective method of weed management to minimize exposure of grazing animals to plants that are toxic. Repeat as necessary to minimize likelihood of consumption by livestock and seed production. Care should be taken to prevent contamination of forages that will be fed as hay or silage to livestock with showy *crotalaria*. In feed grain crops, such as corn or soybean, care should be taken to avoid contamination of harvested grains with showy rattlebox seed. Sanitation should be used to prevent the movement of seed on tillage or harvest equipment from one field to other fields.

Physical

Physical controls are not widely used for showy rattlebox.

References

Knight, A.P., and R.G. Walter. 2001. A guide to plant poisoning of animals in North America.

Teton NewMedia, Jackson, WY. USDA, NRCS. 2007. The PLANTS Database (<http://plants.usda.gov>, 6 August 2007). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

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