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Horsenettle (*Solanum carolinense* L.)-Identification and Management in Connecticut Pastures and Rangelands

By Jatinder S. Aulakh

HORSENETTLE

Other names: bull nettle/Carolina nettle/sand brier

Horsenettle is a perennial, rhizomatous, broadleaf plant (Fig.1) that belongs to the nightshade family, *Solanaceae*. It is a highly difficult-to-control weed in grass pastures, meadows, and hay fields.



Figure 1: A Carolina horsenettle plant.

IDENTIFICATION

An herbaceous, broadleaf plant with a stem height varying from 1 to 3 feet. Leaves are alternate, elliptic-oblong to oval with lobed margins, and the leaf midrib and petiole are studded with sharp prickles. Horsenettle plants blossom (May to September), at about thirty days after the emergence. Flowers are

star shaped, have five white to pale-violet petals, and are borne in clusters (Fig. 2). Anthers at the center of the flower are yellow, tubular structures.



Figure 2: A Carolina horsenettle flower cluster.



Figure 3: Mature horsenettle fruits/berries.

Fruits of horsenettle, called berries, are initially green and turn yellow with maturity (Fig. 3). Each berry contains 40 to 170, smooth, golden yellow, disc-shaped seeds. Horsenettle propagates through seed and creeping rhizomes. Freshly produced seeds are dormant. The dormancy is broken by an overwintering period. Optimum temperature for germination ranges from 68° to 86°F (20° to 30°C).

LIVESTOCK TOXICITY

Horsenettle is a toxic plant, however, reports of animal poisoning are very rare. Usually, most animals tend to stay away due to its sharp prickles that can cause injury in the mouth and food pipe. A toxic component, a glycoalkaloid known as solanine, occurs in varying concentrations in different plant parts. Solanine can cause gastrointestinal irritation and nervous disorders in cattle. Toxicity symptoms include bloating, trembling, nasal discharge, salivation, and breathing difficulties. The order of toxicity is: unripe berries > ripe berries > leaves > stems > roots i.e. the unripe berries are the most toxic and the roots are the least toxic parts. Toxicity is usually higher in late summer to fall than in the spring. Cattle are more susceptible than sheep. There are no reports, as yet, of toxicity to goats and horses.

MANAGEMENT

Mechanical control methods such as mowing, hoeing, and tillage have shown very little success in horsenettle control. Extensive root systems make mechanical control difficult. Tillage, in fact, helps in horsenettle spread by distributing root pieces. Cultural control will involve rotating the contaminated field to Roundup ready corn or soybean. Sequential applications of glyphosate in Roundup ready crops at 1 qt/acre can effectively control horsenettle throughout the growing season.

Chemical control is perhaps the most effective method for horsenettle management. Herbicides containing aminopyralid (Milestone, Milestone VM, and Milestone VM Plus/Capstone), or picloram (Grazon P +D) can effectively control horsenettle. However, current labels for these products do not allow use on Connecticut pastures and rangelands.

Products containing dicamba (Banvel or Clarity, 32 floz/ acre), triclopyr (Garlon 3A, 4 qt/ acre), triclopyr in combination with fluroxypyr (PastureGard HL, 1 qt/acre), and 2,4-D in combination with dicamba (Weedmaster, 5 pt/acre), or triclopyr (Crossbow, 4 qt/acre) in 10 to 100 gallon solution per acre can provide acceptable levels of horsenettle control. Researchers at the Louisiana State University obtained 87 to 94% control of 12 to 15 inches tall horsenettle with August applications of PastureGard (triclopyr plus fluroxypyr) at 1 qt/acre. The University of Maine recommends a mixture of 4 pints of 2, 4-D (3.8 lb/gal formulation) and 2 pints of Banvel/Clarity (dicamba) per acre when horsenettle is in the flower bud stage (late summer or fall). Complete control of horsenettle will not be achieved with a single application of any herbicide. Long term control is possible if herbicide applications are properly timed and repeated over multiple years. Remember, all these herbicides can severely injure or kill desirable forage legumes such as clover and alfalfa etc. Always make sure to thoroughly read and follow the herbicide label for precautionary statements, directions for use, rotational and re-entry interval restrictions, prior to application.

GRAZING AND HAYING RESTRICTIONS

Banvel/Clarity/Weedmaster (dicamba containing products): Do not graze lactating

animals for at least seven days after treatment up to 1 pt/ acre, and 21 days after 2 pt/ acre, and 40 days after 4 pt/ acre of Banvel. Remove meat animals from treated areas 30 days before slaughter. There is no waiting period between treatment and grazing for non-lactating animals. Do not harvest grass for hay from the treated areas at least 37 days after treatment up to 1 pt/ acre, and 51 days after 2 pt/ acre, and 70 days after 4pt/ acre of Banvel. Refer to the product label for Banvel and Clarity (<http://www.cdms.net/ldat/ld279006.pdf>), (<http://www.cdms.net/ldat/ld797012.pdf>), respectively, for additional information on safe use of these pesticides.

Garlon 3A/Crossbow/ PastureGard

(triclopyr containing products): There is no waiting period between treatment and grazing for non-lactating animals. Do not graze lactating animals until next growing season following treatment with Garlon 3A. Remove meat animals from treated areas at least 3 days before slaughter. Do not harvest hay from the treated areas until 14 days after treatment. Refer to the product label for Garlon 3A, PastureGard HL, and Crossbow at <http://www.cdms.net/ldat/ld0AU007.pdf>, <http://www.cdms.net/ldat/ldA8B000.pdf>, and <http://www.cdms.net/ldat/ld02H006.pdf>, respectively, for additional information on safe use of this pesticide.

The mentioning of trade names in this publication is solely for the purpose of providing specific information. The CAES does not guarantee or warranty the products named, and references to them in this publication do not signify our approval to the exclusion of other products of suitable composition.

INFORMATION SOURCES

- 1) Identification and Control of Horsenettle (*Solanum carolinense*

L.) in Virginia.

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- 2) Managing Silverleaf and Carolina Horsenettles. <https://www.unce.unr.edu/publications/files/nr/2003/FS0358.pdf>
- 3) Chemical weed control in grass pastures. <http://umaine.edu/livestock/home/pasture-course/lesson-4/life-cycle-of-plants/table-2/>
- 4) Weed management-Horsenettle. <http://extension.psu.edu/pests/weeds/weed-id/horsenettle>
- 5) Control of Broadleaf Weeds in Pastures Using Non-2,4-D Containing Herbicides. www.lsuagcenter.com/NR/rdonlyres/72B28120-7869-4413-A196-3463C54715FA/67054/ForagesandWeedControl.pdf