



Managing Smooth Bedstraw in Forage Crops

Smooth Bedstraw (*Galium mollugo L.*) has become a problem weed in many forage crops. It can significantly reduce yields of forage grasses such as timothy or orchard grass as well as forage legumes such as red clover and yellow sweet clover.

Smooth Bedstraw management presents a challenge, as the weed proliferates even in established forage crop stands. To determine an appropriate management strategy, growers need to identify the species correctly, know its preferred growing conditions and understand how the weed spreads.

Is it Smooth Bedstraw?

Smooth Bedstraw is a perennial with numerous relatively upright stems. In contrast to the annual Catchweed Bedstraw (*G. aparine L.*), Smooth Bedstraw has an almost hairless, smooth stem (hence the name). Its leaf shape and leaf arrangement in whorls is typical for many bedstraw species (figure 1). Leaves less than 1 inch long are arranged in 6 or 8-leaf whorls. A close relative, the perennial Northern Bedstraw (*G. boreale*), has four longer (1-2 inches) leaves to each whorl. Smooth Bedstraw produces white to greenish flowers in June and July. If mowed soon after the first flowering, plants may flower a second time in August. Individual plants can grow 1 to 3 feet tall and spread to 3 feet or more in diameter.

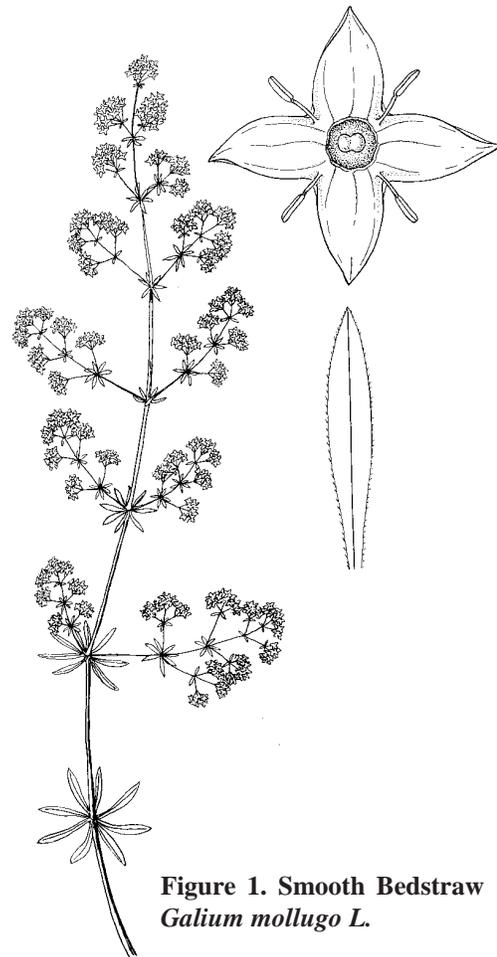


Figure 1. Smooth Bedstraw
Galium mollugo L.

Where does Smooth Bedstraw grow?

Smooth Bedstraw grows throughout southern Canada, the northern United States and as far south as Georgia. The weed appears often in infrequently-mowed hay fields of low soil fertility and low pH, but it also thrives in well-managed fields because of its adaptation to a wide variety of environmental conditions. Smooth Bedstraw prefers moist, cool conditions, but can tolerate drought. It will grow in almost any soil type. Smooth Bedstraw is well adapted to the high soil phosphorous levels typical on much of New England's forage land that regularly receives manure. The weed prefers calcium-rich, neutral soils and high nitrogen soils, but also does well on low-nitrogen, low-pH, soils. In fact, Smooth Bedstraw tolerates low soil N or low pH better than the desired forage species.

How does Smooth Bedstraw spread?

Smooth Bedstraw plants produce many seeds, which remain viable for about a year. Seeds get dispersed via birds, sheep, water, and contaminated crop seeds. The plants produce their seed at just the right height for grazing sheep to brush against the seedheads and transport the seed in their fleece from one field to another. Research hasn't yet shown whether bedstraw seeds can stay viable in the gut of an animal and then spread through manure. Thermophilic (hot) composting should kill any seeds that are in manure. Once established in the field or along the field edge Smooth Bedstraw can spread from rhizomes (underground stems) to other locations in the field.

How is Smooth Bedstraw controlled?

Cultural management

Providing the best growing conditions will help the desired forage plants compete effectively with bedstraw. That means supplying adequate nutrients and lime. Liming should raise the soil acidity to at least pH 6. Cutting the hay more than once during the growing season also keeps the forage grasses active and strong and will help control the weed somewhat.

Grazing is not a good management strategy since livestock usually prefer the forage grasses over bedstraw. Consequently, grazing reduces the bedstraw's competition, which allows it to spread.

An option for severe weed infestation is to take the field out of hay production for at least two years. The field should be plowed and then planted to a field crop or cover crop. Cultivated crops that form a dense canopy to keep the light from reaching the soil surface may reduce the germination of remaining weed seeds. Depending on the soil conditions, suitable crops include a densely planted alfalfa, forage soybeans planted at a narrow row distance, or cover crops such as buckwheat or sorghum-sudangrass hybrids.

Mechanical management

Mowing will reduce the vigor but not the number of established bedstraw plants because plants will just regrow due to the extensive energy reserves stored underground in roots and rhizomes. However, mowing before the bedstraw goes to seed will reduce the rate of spread in the field. Tillage is a good management option because it effectively kills the plants. Tillage of course requires reseeding with hay or planting of another crop. Although expensive, this solution may be the only one that works in some situations.

Chemical management

Systemic herbicides can also be used to manage Smooth Bedstraw. Because of the weed's large underground energy reserves, contact herbicides will provide only temporary control. Note that any effective herbicide will kill clovers and other legumes that many growers have in hay fields.

Past research has shown that herbicides containing 2,4-D, MCPA, Gyphosate or Dicamba as active ingredients must be applied at a high dosage to be effective. Applications of herbicides that contain triclopyr can be a good choice, though they may carry grazing and haying restrictions. Consult your County Extension Educator for specific pesticide recommendations, application rates, and restrictions.

Conclusion

Growing a competitive forage crop by providing all necessary inputs is key to preventing a severe Smooth Bedstraw infestation. Once established, Smooth Bedstraw is a tough weed to manage. Growers must use a combination of practices, including cultural, mechanical and—in some situations—chemical, to prevent this weed from causing serious economic damage.

Reference publications:

- Mersereau, D., and A. Ditommaso. 2003. The Biology of Canadian weeds.121. Galium mollugo L. Canadian Journal of Plant Science, 83:453-467.
- The Agronomy Guide, 2001-2002. Penn State University, University Park, PA.

For photos of the Smooth Bedstraw in different growth stages visit the Ohio Perennial & Biennial Weed Guide:

<http://www.oardc.ohio-state.edu/weedguide/singlerecord.asp?id=810>

For close up photos, visit the Virtual Field-Guide for UK Bio-diversity:

<http://www.bioimages.org.uk/HTML/R151198.HTM>

For additional information on bedstraw weed control visit the Ontario Ministry of Agriculture and Food:

http://www.gov.on.ca/OMAFRA/english/crops/facts/info_bedstraw.htm

Stop! This publication contains pesticide recommendations that are subject to change at any time. UNH Cooperative Extension provides these recommendations only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. Because of constantly changing labels and product registration, some of the recommendations offered in this publication may be outdated by the time you read them.

Contact the NH Division of Pesticide Control at (603) 271-3550 to check registration status. If any information in these recommendations disagrees with the label, you must disregard the recommendations and follow the label directions. No endorsement is intended for products mentioned, nor criticism intended for products not mentioned.

Store pesticides in their original containers in a locked cabinet or shed away from food. Dispose of unused pesticides or empty containers safely, according to NH regulations. If you suspect pesticide poisoning, call the New Hampshire Poison Control Center at **1-800-562-8236**.

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Illustrations of the Vascular Plants of Northeastern United States and Adjacent Canada,

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