

AGR-20

NODDING THISTLE AND ITS CONTROL IN GRASS PASTURES

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Introduction

Nodding Thistle (*Carduus nutans*) is the most widespread thistle species found in Kentucky. Its name describes the large flowers because they bend over and appear to nod or droop. Musk Thistle is another common name for this plant.

Like other weeds, nodding thistle lowers the productivity of pastures. Also, the plant discourages livestock from grazing close by because of its spiny nature. An understanding of the nodding thistle's growth and life cycle is useful for controlling it.

Identification and Life Cycle

The plant is easiest to identify when it is in the flowering stage. Nodding thistle produces a red to purplish flower about 2 inches in diameter. The flower is attached to an erect stem that can be 3 to 6 ft tall and the flower frequently droops or nods. The plant's lower portion is branched with 1 to 3 flowers per branch. Large plants are capable of producing 50 or more flowers.

Nodding thistle, like other biennial plants, usually requires 2 years to complete its life cycle. However, it can develop as an annual or winter annual depending on environmental conditions. Its only method of reproduction is by seed. Seed germinate in the fall or early spring and the seedling forms a rosette. The rosette is a circular cluster of leaves with the growing point close to the ground. A young rosette can range from 4 to 8 inches in diameter.

The plant remains in the rosette stage throughout its first year of growth. The second spring after emergence, the rosette size increases to about 12 to 18 inches across, the stem begins to elongate and flower stalks develop. Flowers begin to form in late May to early June.

One reason nodding thistle can be difficult to control is that one plant can produce several thousand seed. A large, mature plant produces over 4,000 seed that can become new plants next year. Some of the seed remain viable for at least 10 years. Also, the seed are easily carried or spread by wind, water, animals, farm equipment and in hay. Since nodding thistle only reproduces by seed, effective control programs depend on preventing seed production and spread.

Cultural and Mechanical Control Practices

Nodding thistle becomes easily established on areas with bare or exposed soil. It is frequently found in overgrazed pastures, areas with poor fertility and disturbed sites. Under these conditions, desirable grasses are unable to grow vigorously and compete effectively against this weed's emergence and growth.

A control program for nodding thistle should involve good management practices that will help establish and maintain productive pastures. These practices include maintaining good soil fertility and proper soil pH and managing pastures to prevent over grazing. It is also important to avoid the spread of nodding thistle seed by keeping fence rows and adjacent lots weed-free and by preventing transport of seed by farm equipment.

Mechanical methods for control consist of mowing or hand removal. These methods may not eliminate

this weed problem but should reduce seed production. With mechanical controls the plant should be mowed or removed as close to the ground as possible before it begins to flower. Some regrowth will probably occur, but seed production will be noticeably less than if no mechanical control practices were used.

Control Using Herbicides

When to Spray

The optimum time for nodding thistle control with herbicides is while the plant is in the rosette stage. Apply herbicides in the spring during late March or early April before thistles produce a flower stalk. A fall application in late September, October or early November will also kill many of the rosettes of first-year plants. Herbicide treatment may need to be repeated the following spring.

The rosette must be actively growing for effective control. Plants absorb more herbicide and move it to the roots when soil moisture conditions are good and air temperatures are above 50 F for several days. Applying herbicides after flower stalks begin to elongate can result in inconsistent control.

Herbicides to Apply

Herbicides that can be used in grass pastures include the 2,4-D Amine or 2,4-D Ester formulations, and Banvel. Apply 2,4-D Amine or 2,4-D Ester at 1 to 2 qt/A (i.e. assuming a 2,4-D formulation containing 3.8 lb acid equivalents/gal). Note: when applied at 1 qt/A a 2,4-D formulation containing 3.8 lb ae (acid equivalents)/gal as stated on the label equals approximately 1 lb ae/A of 2,4-D. The lower rate of 2,4-D should be used only at temperatures above 60 F and/or before flower stalk elongation. Use the higher rate when air temperature is 40 to 60 F or after large rosettes develop. Apply Banvel at 1 to 2 pt/A.

Good plant coverage with the herbicide is essential for best results. When making broadcast applications use a spray volume of 20 to 40 gal of water/acre and spray pressures less than 40 p.s.i. This spray gallonage and low pressures help provide good spray coverage and also reduce the potential for off-site movement of spray particles.

Spot treatment of thistle plants may be adequate on areas containing a few scattered plants and along fence lines. Use a spray mixture of 2 or 3 TBS of 2,4-D concentrate (i.e. assuming a 2,4-D formulation containing 3.8 lb acid equivalents/gal) for each gallon of water. Apply enough to moisten the nodding thistle leaves without run-off.

No herbicides are available to control nodding thistle in grass pastures interseeded with legumes such as red clover or alfalfa. A thistle control program in grass-legume mixtures must rely on cultural and mechanical practices.

Precautions

Read and understand precautions on the herbicide label before you spray.

- Red clover, alfalfa and lespedeza interseeded in pastures are likely to be killed by 2,4-D or Banvel.
- Avoid spray drift and spraying near sensitive crops. Do not spray when spray particles and vapors may be carried by air currents to areas where sensitive crops are growing. Crops sensitive to both 2,4-D and Banvel include tobacco, soybeans and some vegetables.
- Do not use spray equipment which has contained 2,4-D or Banvel for spraying other pesticides on susceptible crops.
- Check the label for animal grazing restrictions following herbicide use. These restrictions may vary

depending on the herbicide used and the amount applied. Most 2,4-D herbicide formulations require a waiting period of 7 to 14 days after application before livestock can graze treated pastures.

Integrating Control Strategies

In most situations, no single weed control practice alone will eliminate or maintain thistle-free pastures.

Best control comes from an integrated approach using various control strategies.

Effective thistle control programs begin with preventing establishment and spread of the weed. In situations where severe nodding thistle problems exist, combine timely chemical controls with pasture improvement. Doing so promotes competitiveness of the desirable forage grasses. A persistent effort for several years is generally required.