

Water Quality Enhancement Activity - WQL01- Biological Suppression and Other Non-Chemical Techniques to Manage Brush on pastures

Biological control is the use of animals, insects, plants or pathogens to control brush. Grazing animals can be used to either promote or reduce brush abundance. Goats and sheep are two examples of livestock that will eat brush. Sheep and more often, goats are known to forage on multiflora rose and autumn olive. The key to control is repeated heavy defoliation in spring and early summer without overgrazing the grasses and legumes.

A Brush Management plan will include the following bulleted items:

- identify the kind of biological agent or grazing animal to be used.
- The timing of use, duration and intensity of grazing or browsing are specified.

Research suggests that the grazing of sheep or goats for two seasons at a rate of eight to twelve goats/sheep per acre may be required in the early season. This stocking rate may be reduced later when pasture growth slows. A rotation system works best. Multi-species grazing (Table 1.) can be effective at clearing and subsequent killing of brush in pastures.

Goats will defoliate and debark bushes, saplings, and small trees. By standing on their hind legs, they can defoliate stems to a height of 5 feet.

Spring and early summer are critical times for goat and sheep control of brush.

Depending on the objective, grazing animals may be used to reduce or sustain brush in the pasture.

Brush reduction

For brush reduction, identify the priority paddock or area. Use high density grazing beginning when the leaf of the target brush is one half to two thirds full size in the spring. Percent defoliation to achieve depends on the species of brush. Up to 95% defoliation is needed to suppress knapweed. Follow the grazing schedule for rotation in the grazing plan. Pull animals out of rotation and put them back into the priority area to achieve desired defoliation. Repeat this process. It may take years to see a change. Once the reduction has been achieved, designate a new priority paddock.

Alternatively, a 30 day in and 30 day out switchback method may be used to defoliate target species at least 65% and up to 95%. Multiple years of grazing animal control will be needed to obtain desired control. Alternate the starting paddock or area each year.

Sustaining brush levels

To maintain a desired level of brush for browsing livestock, utilize the multi-paddock rotation but lower the defoliation to 25% of the current growth. Set the rest period so that the woody plants are not defoliated more than twice per growing season.

The 30 day switchback method stocked to obtain 20% defoliation in 30 days can also be utilized.

Sheep and/or goats may be introduced only once per growing season for no longer than 30 days with a target defoliation of 50%.

Other biological agents

Natural enemies, such as insects or disease, can weaken or kill the target host plants. Insects that effect

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knapweeds have been identified. Consult MSU Extension educators regarding the timing, duration and intensity of insect damage needed for brush reduction. Plant viruses transmitted by insects may be of local importance in brush control, but are not a permanent control and other methods must be used to control new plants.

Table 1. Stocking rate guide for brush control.

Pasture Type	Brush Canopy	Cows	Goat or Sheep Alone	Cows + Goat/Sheep
Brushy Pasture	10-40%	1	9-11	1+(2 to4)
Brush Eradication	>40%		8-12	0.5+ (6 to 8 per acre)
Sustainable Browse Management	10-40%		1 to 3 per acre	0.25 + (1 to 2 per acre)

On brushy pasture, 9-11 goats could run on the same amount of land required to run 1 head of cattle. The number of goats to add to an existing cattle stocking rate on brushy pasture would be 2 to 4 per existing cow.

Reference:

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