

Water Quality Enhancement Activity – WQL01 – Biological suppression and other non-chemical techniques to manage brush, herbaceous weeds and invasive species



Enhancement Description

This enhancement is for the reduction of woody brush, herbaceous weeds and invasive plants using non-chemical methods. Physical methods include pulling, hoeing, mowing, mulching or other similar techniques. Biological methods include use of natural enemies either introduced or augmented. Use of chemicals is prohibited with this enhancement.

Land Use Applicability

Pastureland, Rangeland, Forestland

Benefits

Environmental benefits will be site specific. Benefits may include but are not limited to improved water quality achieved through eliminating the use of synthetic pesticides resulting in no chemicals in surface runoff or leaching into the soil profile. Air quality will see similar impacts by eliminating chemical drift and volatilization. Controlling invasive species, brush and weeds will allow native plant communities to return and improve wildlife habitat.

Conditions Where Enhancement Applies

This enhancement applies to all pasture, range or forest land use acres.

Criteria

1. Develop a plan for managing invasive plants, brush and/or weeds that includes:
 - a. Assessment of existing conditions,
 - b. Identify strategies for control,
 - c. Control methods selected,
 - d. Monitoring and evaluation process, and
 - e. Operation and maintenance follow up activities.
2. Implementation of this enhancement requires the use of biological and/or physical pest suppression techniques instead of pesticides. These techniques, used individually or in combination, can include activities such as:
 - a. Grazing animals (primarily through the use of goats) to target undesirable vegetation.
 - b. Introduction of beneficial insects to attack undesirable vegetation.
 - c. Introduction of beneficial micro-organisms to attack undesirable vegetation.
 - d. Prescribed burning
 - e. Hand removal or cultivation



- f. Mowing or cutting
- g. Use of heavy equipment in areas with well established, dense brush cover
- 3. Biological suppression techniques should be based on techniques recommended by the local Land Grant University.
- 4. Biological suppression must be preceded by an analysis to ensure the proposed biological agent is compatible with the agronomic, ecological and social objectives of the operation.
- 5. Operation and maintenance activities must be followed to ensure regrowth or resprouting is controlled. Additional treatment of individual plants or areas needing retreatment should be completed as required to effectively controlling the targeted species.

Adoption Requirements

This enhancement is considered adopted when invasives are being managed via biological or physical methods described above and no pesticides were used.

Documentation Requirements

Written documentation for each treatment area and year of this enhancement including:

- 1. A full description of all biological and/or physical suppression techniques utilized include:
 - a. Method (s) of control used
 - b. Area (s) on farm control methods were applied
 - c. Number of animals or insect colonies distributed and the planned time frame of the treatment.
 - d. Photograph (s) of treatment applied
- 2. A map showing where the activities were applied including treatment acreage

References

- Bellows, T.S., and T.W. Fisher. 1999. Handbook of Biological Control. Academic Press.
- Bond, W. and A.C. Grundy. 2001. Non-chemical Weed Management in Organic Farming Systems. Weed Research 41: 383-405.
- DiTomaso, J.M., M.L. Brooks, E.B. Allen, R. Minnich, P.M. Rice, and G.B. Kyser. 2006. Control of Invasive Weeds with Prescribed Burning. Weed Technology 20(2):535-548.
- Peischel, A. and D.D. Henry, Jr. 2006. Targeted Grazing: a Natural Approach to Vegetation Management and Landscape Enhancement. American Sheep Industry.
- Popay, I., and R. Field, 1996. Grazing Animals as Weed Control Agents. Weed Technology 10(1):217-231.
- Upadhyaya, M.K., and R.E. Blackshaw. 2007. Non-Chemical Weed Management : Principals, Concepts and Technology. Cabi.
- USDA-NRCS. 2010. Conservation Practice Standards: Herbaceous Weed Control-Code 315, Integrated Pest Management-Code 595, and Prescribed Burning-Code338.
- USDA-NRCS. 2009. Conservation Practice Standard: Brush Management-Code 314.
- Valentine, J.R., 1989. Range Developments and Improvements, 3rd ed. Academic Press, MA.

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Reference:

- **314 – Brush Management**
- **315 – Herbaceous Weed Control**

Biological suppression is the use of animals, insects, plants or pathogens to control undesirable brush and weeds. For example, 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.

Information on non-chemical control and suppression techniques can be found at the following websites:

Natural Resources Conservation Service (NRCS) – Minnesota—*“Invasive Plant Species Pest Management,” Agronomy Technical Note #16*
<http://www.mn.nrcs.usda.gov/technical/ecs/agron/Tech%20Notes/TN16%20Inv%20Spp.pdf>

Minnesota Department of Agriculture
<http://www.mda.state.mn.us/plants.aspx>

Targeted Grazing: A natural approach to vegetation management and landscape enhancement. Chapter 9: Targeted grazing to manage weedy brush and trees. Campbell, E. and C.A. Taylor Jr. 2006.
http://www.cnr.uidaho.edu/rx-grazing/Handbook/Chapter_9_Targeted_Grazing.pdf

Control of Autumn Olive, Multiflora Rose, and Tartartian Honeysuckle. Jamey Darlington and Bruce M. Loyd. West Virginia University Extension Service, 1994
www.wvu.edu/~agexten/pubnwsltr/TRIM/5412.htm

Control of Leafy Spurge:

<http://www.mda.state.mn.us/plants/badplants/leafyspurge.aspx>

USDA NRCS Missouri: Prescribed Grazing 528 Appendix 3 Plant Control with Goats.

Wood, G. M. 1987. Animals for biological brush control. *Agronomy Journal* 79: 319-321.

Note:

Removal of woody vegetation on wetlands by livestock and deterioration of root systems over time to where cropping is possible may be a wetland violation.