United States Department of Agriculture
Natural Resources Conservation Service

Water Quality Enhancement Activity –*WQL01 – Biological Suppression and Other Non-chemical Techniques to Manage Brush and Invasive Species*

Biological Suppression and Other Non-Chemical Techniques to Manage Brush
This enhancement is for the reduction of invasive species and/or woody brush using physical and or biological control methods. Physical methods include pulling, hoeing, mowing, mulching or other similar methods. Biological methods include use of natural enemies either introduced or augmented. Use of chemicals is prohibited with this enhancement.

Land Use Applicability
This enhancement is applicable on pasture, rangeland, and woodland in which an invasive plant and/or brush problem exist.

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 and/or brush will allow native plant communities to return and improve wildlife habitat.

Criteria
1) Develop a plan for managing invasive and/or brush that includes:
    - Assessment of existing conditions
    - Identify strategies for control
    - Control methods selected
    - Monitoring and evaluation process
    - 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:
    - Grazing animals (primarily through the use of goats) to target undesirable vegetation.
    - Introduction of beneficial insects to attack undesirable vegetation.
    - Introduction of beneficial micro-organisms to attack undesirable vegetation.
    - Hand removal or cultivation

- Mowing or cutting
- 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.

Documentation Requirements

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

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

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Additional guidance for non-chemical suppression:

Biological Control Agents
The producer should work through their local Cooperative Weed Management Area (CWMA) to assistance with biological control agents – release and monitoring. Currently, approved biological control agents are only available for saltcedar and scotch broom:

Saltcedar (*Tamarix* sp.): *Diorhabda elongata*
Scotch Broom (*Cytisus scoparius*): *Bruchidius villosus, Exapion fuscirostre, Leucoptera spartifoliella*

For additional information on biological control, refer to the Noxious Weed Program at the Idaho Department of Agriculture:
http://www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/Bio_Control.php

Targeted Grazing
Animal grazing can be effectively used to manage and manipulate plant communities – known as targeted grazing. Goats and sheep have been used to effectively control a variety of brushy species. Effective techniques for targeted grazing applications can be found at: http://www.cnr.uidaho.edu/rx-grazing/Handbook.htm

Physical Suppression
Physical suppression includes pulling, hoeing, mowing, and mulching. Selection of mechanical methods such as chaining, shredding/chopping, and grubbing, where heavy equipment is used, should be based on site-specific conditions.

Use of chemicals for brush and invasive species control is prohibited.

For additional information, refer to:

Idaho NRCS Conservation Practice Standard 314 (and specifications), *Brush Management*.
http://efotg.nrcs.usda.gov/References/Public/ID/314.pdf