Natural Resources Conservation Service
WASHINGTON

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

CSP Enhancement Washington State Supplement

Land Use Applicability: Pastureland, Rangeland, Forestland — January 2014

Client/Operating Unit:		Tract Number:	
Farm/Ranch Location:		Farm Number:	
Specifications Date:		Field Number(s):	
Planned Installation Date:		Proposed Treatment Acres:	

Enhancement Description:

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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.

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 herbicides 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 for biological suppression and other non-chemical techniques to manage brush, herbaceous weeds and invasive species

1. Develop a plan for managing invasive plants, brush and/or weeds that includes:
   a. Assessment of existing conditions, and potential risks posed by the target vegetation,
   b. 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, physical and/or other non-chemical weed suppression techniques instead of herbicides. These techniques, used individually or in combination, can include activities such as:
   a. Grazing animals (primarily through the use of goats or multi-species grazing) 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, if appropriate for local conditions and target vegetation. Prescribed burning must comply with criteria of Conservation Practice Standard 338-Prescribed Burning.

e. Hand removal or cultivation

f. Mowing or cutting

g. Use of heavy equipment in areas with well established, dense brush cover

h. Planting of desired species after implementation of approved technique to provide competition and limit regrowth of unwanted vegetation.

i. Application of lime, compost, manure, or other natural soil amendments, based on soil test results, to give grasses, native plants, or other desired species a competitive edge over undesirable vegetation.

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 and ecosystem.

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.

Note: Amending poor or unproductive land based per soil test results and recommendations will allow desirable grass species to obtain a competitive advantage over undesired species.

Layout Sketch & Drawing (Provide sketch, drawings, maps, and/or aerial photographs.)

- Geo-referenced field map with all delineated treatment areas where CSP Enhancement WQL01 is to be applied.

Adoption Requirements

This enhancement is considered adopted when invasives are being managed via biological, physical and/or other non-chemical techniques described above and no herbicides 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 where control methods were applied
   c. Number and species of grazing animals utilized and/or number and species of introduced insect colonies distributed and the planned time frame of the treatment.
   d. Photograph(s) of treatment(s) 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-Code 338.

USDA-NRCS. 2009. Conservation Practice Standard: Brush Management-Code 314. Valentine, J.R., 1989. Range Developments and Improvements, 3rd ed. Academic Press, MA.

Field Office Technical Guide:

eFOTG, http://www.nrcs.usda.gov/technical/efotg/

Targeted Grazing: A natural approach to vegetation management and landscape enhancement. 2006. Edited by Karen Launchbaugh, Rangeland Ecology and Management Department, University of Idaho.

*** Some online documents may take several minutes to download.**

State Supplemental Information

State will need to get information from land grants on Biological suppression techniques that are suitable for their area. Need analysis information to determine which method is best.

Further information on Biological Control of Invasive Species can be found at:

http://invasives.wsu.edu/

Grazing animals (primarily through the use of goats) to target undesirable vegetation:

- The prescribed grazing treatment for control of brush will be for up to three years, or less if control is achieved sooner. Control will be considered achieved if no live plant tissue is observed for a period of two months after grazing in the growing season (April – Oct.). Grazing prescription to control invasive plants will target priority areas. Sufficient animals will be needed to maintain 85 percent or more defoliation. Stock the treatment area in early spring prior to green up. The objective is to deplete carbohydrate reserves of invasive plants.

- Stock density of 10,000 lbs./ac. is ideal (i.e. 100/100 lb. goats on one acre or 25/100 lb. goats on ¼ acre). Minimum stock density will be 4,000 lbs./ac. Stock density will depend on the palatability of the plant species being targeted and season of use. Vary the stocking rate and/or the area of treatment based on forage availability.

- Supplemental nutrients should be provided to animals to maintain Body Condition Score (BCS) of 4, moderate condition, or higher. Animals can be brought in or removed from the treatment area to maintain their body condition and health.

- Physical removal of undesirable plants can be accomplished by hand tools or other mechanical methods. No chemicals are to be used for this activity.

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- Always consider erosion impacts on sensitive areas. Monitor erosion potential; one option if erosion is a threat is to unroll hay which has seed of a desired species in it. Goats will tromp in mulch and seed, as well as fertilize the seeding with manure. Otherwise, establish cover using traditional methods.

- Extra care must be taken in mesic temperature regimes to avoid establishment and/or increase of annual grasses in the treated area.

Documentation Form

Producer: _____ **Date:** _____

Tracts: _____ **County:** _____

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.

Field Number	Acres	Existing Condition: Target Plant(s) % Cover	Control Method: Animals, Hand Removal or Cultivation	Planned Rotation or Interval of Mechanical Removal	Date and Status of Treatment

1.d. Photograph (s) of treatment applied

2. A map showing where the activities were applied including treatment acreage

Client's Acknowledgement (To be signed before the Enhancement is applied.)

By signing below, I acknowledge that I:

- **have reviewed and understand the site specific design, installation specifications and operation/maintenance requirements in this State Supplemental Sheet and have an understanding of the purpose(s) of this Enhancement;**
- **will install, operate, and maintain this Enhancement in accordance with the National Sheet, the Washington State Supplemental Sheet and the site specific specifications.**
- **will make no changes to the planned design and installation without prior written approval of the Natural Resources Conservation Service.**
- **will obtain all necessary permits and/or rights, and comply with all ordinances and laws pertaining to the installation, operation, and maintenance of this Enhancement, prior to the start of installation; and**
- **will assume responsibility for notifying all Utilities affected by the installation, operation and maintenance of this Enhancement.**

Signature	**Date**

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