

Water Quality Enhancement Activity – WQL02 – *Biological Suppression and Other Non-chemical Techniques to Manage Herbaceous Weeds and Invasive Species*



Biological Suppression and Other Non-Chemical Techniques to Manage Herbaceous Weeds

This enhancement is for the reduction of invasive species and/or herbaceous weed 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 herbaceous weed 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 herbaceous weeds will allow native plant communities to return and improve wildlife habitat.

Criteria

- 1) Develop a plan for managing invasive and/or herbaceous weeds 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 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



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- Mowing or cutting
- 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 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 biological suppression:

The use on non-chemical suppression techniques is limited to control through animal grazing and use of biological control agents.

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 for the following noxious weeds are:

- Canada Thistle (*Cirsium arvense*): *Ceutorhynchus litura*, *Urophora cardui*
Dalmatian and Yellow Toadflax (*Linaria dalmatica*, *L. vulgaris*): *Brachypterolus pulicarius*, *Calophasia lunula*, *Eteobalea intermediella*, *Eteobalea serratella*, *Gymnetron antirrhini*, *Gymnetron linariae*, *Gymnetron netum*, *Mecinus janthinus*
Diffuse, Meadow, Spotted, and Squarrose Knapweeds (*Centaurea diffusa*, *C. nigrescens*, *C. stoebe* ssp. *micranthos*, *C. virgata* var. *squarrosa*): *Agapeta zoegana*, *Bangasternus fausti*, *Chaetorellia acrolophi*, *Cyphocleonus achates*, *Larinus minutus*, *Larinus obtusus*, *Metzneria paucipunctella*, *Pelochrista medullana*, *Pterolonche inspersa*, *Sphenoptera jugoslavica*, *Terellia virens*, *Urophora affinis*, *Urophora quadrifasciata*
Field Bindweed (*Convolvulus arvensis*): *Aceria malherbae*, *Tyta luctuosa*
Leafy Spurge (*Euphorbia esula*): *Aphthona abdominalis*, *Aphthona cyparissiae*, *Aphthona czwalinae*, *Aphthona flava*, *Aphthona lacertosa*, *Aphthona nigriscutis*, *Chamaesphecia empiformis*, *Chamaesphecia hungarica*, *Dasineura* sp. nr. *Capsulae*, *Hyles euphorbiae*, *Oberea erythrocephala*, *Spurgia esulae*
Mediterranean Sage (*Salvia aethiopsis*): *Phrydiuchus tau*
Puncturevine (*Tribulus terrestris*): *Microlarinus lareynii*, *Microlarinus lypriformis*
Purple Loosestrife (*Lythrum salicaria*): *Galerucella calmariensis*, *Galerucella pusilla*, *Hylobius transversovittatus*, *Nanophyes brevis*, *Nanophyes marmoratus*
Rush Skeletonweed (*Chondrilla juncea*): *Bradyrrhoa gilveolella*, *Cystiphora schmidti*, *Eriophyes chondrillae*, *Puccinia chondrillina*
Tansy Ragwort (*Senecio jacobaea*): *Longitarsus jacobaeae*
Yellow starthistle (*Centaurea solstitialis*): *Bangasternus orientalis*, *Chaetorellia australis*, *Eustenopus villosus*, *Urophora sirunaseva*

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. Cattle, goats and sheep have been used to effectively control a variety of noxious and invasive species. Effective techniques for targeted grazing applications can be found at: <http://www.cnr.uidaho.edu/rx-grazing/Handbook.htm>

Physical Suppression

Physical suppression typically includes pulling, hoeing, mowing, and tilling.

Use of chemicals for noxious and invasive herbaceous species control is prohibited. Producers are encouraged to work with their local Cooperative Weed Management Area (CWMA).

For additional information, refer to:

Idaho NRCS Practice Standard 595, *Pest Management*.

<http://efotg.nrs.usda.gov/References/Public/ID/595.pdf>

Idaho NRCS Technical References, *Pest Management*.

http://www.id.nrcs.usda.gov/technical/pest_management.html

Idaho State Department of Agriculture, *Idaho's Strategic Plan for Managing Noxious and Invasive Weeds*.

<http://www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/Documents/general/StrategicPlan-10-11-05.pdf>