



United States Department of Agriculture

## Natural Resources Conservation Service

### NEW JERSEY CONSERVATION PRACTICE STANDARD

### BRUSH MANAGEMENT

#### Code 314

#### (Ac.)

#### DEFINITION

The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.

#### PURPOSE

- Create the desired plant community consistent with the ecological site.
- Restore or release desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality or enhance stream flow.
- Maintain, modify, or enhance fish and wildlife habitat.
- Improve forage accessibility, quality and quantity for livestock and wildlife.
- Manage fuel loads to achieve desired conditions.
- Control pervasive plant species to a desired level of treatment that will ultimately contribute to the creation or maintenance of an ecological site description "steady state" addressing the need for forage, wildlife habitat, and/or water quality.

#### CONDITIONS WHERE PRACTICE APPLIES

On all lands except active cropland where the removal, reduction, or manipulation of woody (non-herbaceous or succulent) plants is desired.

This practice does not apply to removal of woody vegetation by prescribed fire (use Prescribed Burning (338)) or removal of woody vegetation to facilitate a land use change (use Land Clearing (460)).

#### CRITERIA

##### **General Criteria Applicable to All Purposes**

Brush management will be designed to achieve the desired plant community based on species composition, structure, density, and canopy (or foliar) cover or height.

Brush management will be applied in a manner to achieve the desired control of the target woody species and protection of desired species. This will be accomplished by mechanical, chemical, burning, or biological methods either alone or in combination. When prescribed burning is used as a method, the Prescribed Burning standard (338) will also be applied.

When the intent is to manage trees for silvicultural purposes, use Forest Stand Improvement (666). NRCS will not develop biological or chemical treatment recommendations except for biological control utilizing grazing animals. In such cases, Prescribed Grazing (528) is used to ensure desired results are achieved

Conservation Practice Standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [Local Service Center](#) or visit the [Field Office Technical Guide](#).

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and maintained. NRCS may provide clients with acceptable biological and/or chemical control references. Cooperator shall apply only herbicides labeled for the species to be controlled. Advise the cooperator to follow instructions on the label precisely. Herbicides to use must be chosen from the current Pest Management Recommendations by Rutgers Cooperative Extension. Follow-up treatments may be necessary to achieve objectives.

**Additional Criteria for Creating the Desired Plant Community Consistent with the Ecological Site**

Use applicable Ecological Site Description (ESD) State and Transition models, to develop specifications that are ecologically sound and defensible. Treatments must be congruent with dynamics of the ecological site(s) and keyed to state and plant community phases that have the potential and capability to support the desired plant community. If an ESD is not available, base specifications on the best approximation of the desired plant community composition, structure, and function.

**Additional Criteria for Restoring or Releasing Desired Vegetative Cover to Protect Soils, Control Erosion, Reduce Sediment, Improve Water Quality or Enhance Stream Flow**

Choose a method of control that results in the least amount of soil disturbance if soil erosion potential is high and revegetation is slow or uncertain leaving the site vulnerable to long-term exposure to soil loss. In conjunction with other conservation practices, the number, sequence and timing of soil disturbing operations shall be managed to maintain soil loss within acceptable levels using approved erosion prediction technology.

**Additional Criteria to Maintain, Modify or Enhance Fish and Wildlife Habitat**

Brush management will be planned and applied in a manner to meet the habitat requirements for wildlife species of concern as determined by an approved habitat evaluation procedure.

Conduct treatments during periods of the year that accommodate reproduction and other life-cycle requirements of target wildlife and pollinator species and in accordance with specifications developed for Wetland Wildlife Habitat Management (644) and Upland Wildlife Habitat Management (645).

**Additional Criteria to Improve Forage Accessibility, Quality and Quantity for Livestock and Wildlife**

Timing and sequence of brush management shall be planned in coordination with specifications developed for Prescribed Grazing (528).

**Additional Criteria to Manage Fuel Loads to Achieve Desired Conditions**

Control undesirable woody plants in a manner that creates the desired plant community, including the desired fuel load, to reduce the risk of wildfire, facilitate the future application of prescribed fire.

**Additional Criteria to Control Pervasive Plant Species to a Desired Level of Treatment that will Ultimately Contribute to the Creation or Maintenance of an Ecological Site Description “steady state” Addressing the Need for Forage, Wildlife Habitat, and/or Water Quality.**

Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

**CONSIDERATIONS**

Consider using Integrated Pest Management (595) in support of brush management.

**Method of control considerations:**

*Mechanical control:*

Consider that there are many mechanical devices and techniques for controlling brush. Mowers, heavy disks, bulldozers, blades and power saws are some of the equipment that can be used. Cut shrubby growth as close to the surface as possible. Chaining and cabling may be effective for control or eradication of woody plants.

This method is best used when plant stems are 2 to 6 inches in diameter and have lateral root systems. The best time for mechanical control of brush is late July or early August. This is the plant growth stage when root reserves are low and leaf growth is at its maximum. Early spring is next best. It may be necessary to apply such treatment during both of these periods if the invasion is heavy.

Large woody plants may be destroyed by girdling. Best results are obtained in spring or late summer but satisfactory results can be obtained all year. Cut a band completely around the shrub from 1 to 6 inches wide through the bark and cambium layers. Girdle as close to the ground surface as practical.

*Biological Control:*

Consider that grazing of brush by goats or sheep may provide satisfactory control and be very economical. Be sure that species to be grazed pose no toxicity hazard to grazing livestock.

*Chemical Control:*

Use foliar sprays for widespread general control. Apply when brush is actively growing. Applications made between May 1 and July 15 are the most effective; between July 15 and October 1 are next best. Use basal sprays or cut-stump sprays for selective treatment according to label. Application can be done anytime during the growing season. Foliar spray is preferable to basal or cut stump methods.

Consider impacts and consequences to obligate species (species dependent on the target woody species) when significant changes are planned to existing and adjacent plant communities.

Consider impacts to wildlife food supplies, space, and cover availability when planning the method and amount of brush management.

State issued licenses may be required when using chemical pesticide treatments.

For air quality purposes, consider using chemical methods of brush management that minimize chemical drift and excessive chemical usage and consider mechanical methods of brush management that minimize the entrainment of particulate matter.

## PLANS AND SPECIFICATIONS

Plans and specifications for the treatment option(s) selected by the decision maker will be recorded for each field or management unit where brush management will be applied.

Prepare brush management plans and specifications that conform to all applicable federal, state, and local laws. These documents will contain the following data as a minimum:

- Goals and objectives clearly stated.
- Pre-treatment cover or density of the target plant(s) and the planned post-treatment cover or density and desired efficacy.
- Maps, drawings, and/or narratives detailing or identifying areas to be treated, pattern of treatment (if applicable), and areas that will not be disturbed.
- A monitoring plan that identifies what should be measured (including timing and frequency) and that documents the changes in the plant community (compare with objectives) will be implemented.

**For Mechanical Treatment Methods:** Plans and specifications will include items 1 through 4, above, plus the following:

- Types of equipment and any modifications necessary to enable the equipment to adequately complete the job.
- Dates of treatment to best effect control
- Operating instructions (if applicable)
- Techniques or procedures to be followed

**For Chemical Treatment Methods:** Plans and specifications will include items 1 through 4, above, plus the following:

- Acceptable chemical treatment references for containment and management or control of target species
- Evaluation and interpretation of herbicide risks associated with the selected treatment(s)
- Acceptable dates or plant growth stage at application to best effect control and dampen reinvasion
- Any special mitigation, timing considerations or other factors (such as soil texture and organic matter content) that must be considered to ensure the safest, most effective application of the herbicide
- Reference to product label instructions

**For Biological Treatment Methods:** Plans and specifications will include items 1 through 4, above, plus the following:

- Acceptable biological treatment references for containment and management or control of target species
- Kind of grazing animal to be used, if applicable
- Timing, frequency, duration and intensity of grazing or browsing
- Desired degree of grazing or browsing use for effective control of target species
- Maximum allowable degree of use on desirable non-target species
- Special mitigation, precautions, or requirements associated with the selected treatment(s)

## OPERATION AND MAINTENANCE

**Operation:** Brush management practices shall be applied using approved materials and procedures. Operations will comply with all local, state, and federal laws and ordinances.

Success of the practice shall be determined by evaluating post-treatment regrowth of target species after sufficient time has passed to monitor the situation and gather reliable data. Length of evaluation periods will depend on the woody species being monitored, proximity of propagules (seeds, branches, and roots) to the site, transport mode of seeds (wind or animals) and methods and materials used.

The operator will develop a safety plan for individuals exposed to chemicals, including telephone numbers and addresses of emergency treatment centers and the telephone number for the nearest poison control center. The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon, may also be given for non-emergency information: **1-800-858-7384** Monday to Friday 6:30 a.m. to 4:30 p.m. Pacific time. The national Chemical Transportation Emergency Center (CHEMTRAC) telephone number is: 1-800- 424-9300.

- Follow label requirements for mixing/loading setbacks from wells, intermittent streams and rivers, natural or impounded ponds and lakes, and reservoirs.
- Post signs, according to label directions and/or federal, state, tribal, and local laws, around fields that have been treated. Follow restricted entry intervals.
- Dispose of herbicides and herbicide containers in accordance with label directions and adhere to federal, state, tribal, and local regulations.
- Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS). MSDS and pesticide labels may be accessed on the Internet at: <http://www.greenbook.net/>
- Calibrate application equipment according to recommendations before each seasonal use and with each major chemical and site change.
- Replace worn nozzle tips, cracked hoses, and faulty gauges on spray equipment.
- Maintain records of Brush/shrub control for at least two years. Herbicide application records shall be in accordance with New Jersey Pesticide Control Program Pesticide Recordkeeping requirements: <http://www.nj.gov/dep/enforcement/pcp/index.htm>

**Maintenance:** Following initial application, some regrowth, resprouting, or reoccurrence of brush may be expected. Spot treatment of individual plants or areas needing re-treatment should be completed as needed while woody vegetation is small and most vulnerable to desired treatment procedures.

Review and update the plan periodically in order to:

- incorporate new IPM technology;
- respond to grazing management and complex plant population changes; and
- avoid the development of plant resistance to herbicide chemicals.

## **REFERENCES**

Branson, F. A, G. F. Gifford, K. G. Renard, R.

F Hadley, and E. H. Reid, ed. 1981. Rangeland Hydrology, 2nd ed., Society for Range Management, CO.

Heady, H. F. and D. Child, 1994. Rangeland Ecology and Management, Westview Press, CO.

Holechek, J. L., R. D. Pieper and C. H. Herbel. 2000. Range management principles and practices, 5th edition. Prentice Hall, NJ.

Krausman, P. R., ed. 1996. Rangeland Wildlife. Society for Range Management, CO.

Monsen, S. B., R. Stevens, and N.L. Shaw, comps. 2004. Restoring Western Ranges and Wildlands, Volume 1. Gen. Tech. Rep. RMRS- GTR-136-1, USDA, Forest Service, Fort Collins, CO.

United States Department of Agriculture, Natural Resources Conservation Service. 2003. National Range and Pasture Handbook. Washington, DC.

United States Department of Agriculture, Natural Resources Conservation Service. 2008. General Manual: Title 190 – Ecological Sciences: Part 404 – Pest Management.. Washington, DC.

Valentine, J. R., 1989. Range Developments and improvements, 3rd ed. Academic Press, MA.

Vavra, M., W. A. Laycock, R. D Pieper, eds. 1994. Ecological Implications of Livestock Herbivory in the West. Society for Range Management, CO.