NATURAL RESOURCE CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

BRUSH MANAGEMENT

(Acre)
CODE 314

DEFINITION

Removal, reduction, or manipulation of non-herbaceous plants.

Brush, as used in this standard, includes unwanted woody vegetation consisting of halfshrubs, shrubs, and trees.

PURPOSES

This practice may be applied as a part of a conservation management system to accomplish one or more of the following purposes:

- Restore natural plant community balance,
- Create the desired plant community,
- Reduce competition for space, moisture, and sunlight between desired and unwanted plants,
- Manage noxious woody plants,
- Restore desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality, and enhance stream flow,
- Maintain or enhance wildlife habitat including that associated with threatened and endangered species,
- Improve forage accessibility, quality, and quantity for livestock,
- Protect life and property from wildfire hazards, and
- Improve visibility and access for handling livestock.

CONDITIONS WHERE THIS PRACTICE APPLIES

On prairie, native or naturalized pasture, pasture, and hay lands where removal or reduction of excessive woody (non-herbaceous) plants is desired.

CRITERIA

General Criteria Applicable For All The Purposes Stated Above.

Brush management will be designed to achieve the desired plant community in woody plant density, canopy cover, or height.

Plans for brush management shall comply with all applicable federal, state, and local laws and regulations.

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, biological, prescribed burning or a

combination of these methods. (See Reference Section)

Plans for brush management shall be developed in accordance with the technical requirements of the NRCS Field Office Technical Guide (FOTG), technical notes, and procedures contained in the National Planning Procedures Handbook (NPPH).

Additional Criteria for Improving Wildlife Habitat.

- Brush management will be planned and applied in a manner compatible to the habitat requirements of wildlife.

- Brush management will be planned in a manner that will not adversely affect threatened or endangered species or their habitats. Areas of critically important wildlife habitat for endangered species will be pointed out and landowners will be encouraged to exclude them from treatment, use treatments that do not impact the desired habitat, or treat at a time when adverse impact will be minimal. (See Iowa Biology Technical Note #22 in regards to Indiana Bat and their Habitat Requirements when developing all brush management plans in Iowa).

- Where slope of the land provides opportunity, leave brush areas on steep escarpments, ravines, rocky hillsides, and other rough formations.

- When important to fisheries, sufficient woody cover will be retained in riparian areas to provide for shading and bank stability.

Where wildlife is to be the primary user of the habitat, manage brush to provide travel lanes, escape cover, loafing areas, and browse plants.

Additional Criteria for Consideration of Cultural Resources and Cultural Values.

Cultural resources will be considered when planning this practice. This practice has the potential for adversely affecting cultural resources and compliance with GM 420, Part 401 during the planning process is necessary.

Where appropriate, local cultural values will be incorporated into practice design in a technically sound manner.

Compliance with all applicable federal, state, and local laws and regulations, including permits, permissions, or notifications is required.

CONSIDERATIONS

Timing and sequence of brush management in a pasture and/or the entire operating unit should be planned to ensure needed grazing management.

Consider soil erosion potential and difficulty of vegetation establishment when choosing a method of control that causes soil disturbance.

Brush management objectives and procedures may be different depending on the kinds of land considered for treatment and the different uses of the land.

Certain aspects of brush management constitute potential agricultural pollutants to both water and air. To avoid possible contamination of these resources and to protect people, livestock, wildlife, and desirable plants, the following items will be considered in planning brush management.

1. Plan for safety, health, and control of water pollution.

    a. Landowners will be cautioned that improperly handled, used, or disposal of herbicides may cause injury to humans, domestic animals, desirable plants, fish, wildlife, and

may damage and/or contaminate nearby crops and other vegetation. Users of herbicides should follow the label guidelines and requirements and heed all precautions on the container label. Landowners should be aware of and adhere to the provisions of local, county, state, or federal laws and regulations concerning the use of agricultural chemicals. In addition, registrations of pesticides are under constant review by the U.S. Environmental Protection Agency. Consult your local county agricultural agent or state extension agent to be sure the intended use is still registered.

b. Mechanical brush management operations and controlled burning should be timed to prevent exposure of bare soil for extended periods of time. Plan management implementation to reduce wind and water erosion and subsequent movement of sediment into ponds, streams, and reservoirs.

2. Plan for safety, health, and control of air pollution. Follow guidance provided in Prescribed Burning Standard and Specifications (338).

Wildlife Considerations.

Areas of critical wildlife habitat should be pointed out and the landowners will be encouraged to exclude them from the treatment area, such as:

- Areas on steep escarpments, ravines, rocky hillsides, and other rough formations,
- Tree-lined drainage, and
- Tree-lined drainage ways can provide thermal cover and other habitat components. However, if the woody cover is excessive for the site, or is not native to the site, the adverse impact to hydrology may offset the wildlife benefit. Consideration may want to include 100% of undesirable woody vegetation control along at least one side of man-made drainage ditches to facilitate normal maintenance of the drainage channel.

Manage to provide adequate travel lanes, escape cover, loafing areas, and food plants.

Recreation and Beautification Considerations.

- Limit brush control measures to thinning or selective control on areas which have value or potential value for development of recreation areas, homesteads, or scenic beauty. Such areas generally occur near lakes, rivers, or major streams and along highway and scenic roadways.

Woodland Considerations.

- Sites containing commercially important tree species should be identified and excluded from treatment areas. Guidance will be provided to reduce possible damage to these areas from chemical drift. 1/
- In general, economically desirable trees in Iowa would include:

  Black Walnut

  Hickory Species

  White Oak

  Northern Red Oak

  Sugar Maple

  American Basswood

  White and Green Ash

  Black Cherry

  Eastern White Pine (NE Iowa)

1/ Any herbicide recommended or used to control woody species must be federally and locally registered and must be applied strictly in accordance with registered uses, directions on the label, and other federal or state policies and requirements.

(See Woodland Improvement Standard 666-1)

Soil Erosion Considerations.

Mechanical brush management operations and prescribed burning should be timed to prevent exposure of bare soil for undue periods of time to reduce wind and water erosion and subsequent movement of sediment into ponds, streams, and reservoirs.

Consider soil erosion potential and difficulty of vegetation establishment when choosing a method that causes soil disturbance.

PLANS AND SPECIFICATIONS

Plans and specifications will be prepared for each pasture, field, or management unit where brush management will be applied. These documents will contain as a minimum, maps or drawings showing the areas to be treated and the areas to be left undisturbed.

Mechanical Treatment.

For mechanical treatment methods, plans and specifications will include:

1. Types of equipment (such as mowing, hand cutting, and use of specific equipment),

2. Any modifications necessary to enable the equipment to adequately complete the job,

3. Dates of treatment,

4. Operating instructions, and

5. Techniques or procedures to be followed.

Chemical Treatment.

For chemical treatment methods, plans and specifications will include:

1. Herbicide name,

2. Rate of application or spray volumes,

3. Acceptable dates of application,

4. Mixing instructions (if applicable), and

5. Any special application techniques, timing considerations, or other factors that must be considered to ensure the safest, most effective application of the herbicide.

6. Reference to label instructions.

(See 1/ under Woodland Considerations)

Woody plants vary among species in susceptibility to herbicides, and accurate knowledge of target species is essential.

Preferred methods of treatment may include:

Foliage stem sprays: Sprays are applied to stem and foliage. This type of application is least effective on resprouting species. Application should be made from the time that leaves are fully expanded in the spring until fall color. Preventing drift to surrounding areas is more difficult with this method. Low-pressure coarse sprays with drift reduction additives are recommended.

Basal Bark Spray: Basal spraying is a technique to deaden small trees, shrubs, and occasionally vines by spraying the green bark of the lower trunk (12 to 18) inches with herbicide. The intent is for the herbicide to penetrate the bark and kill the tree and any basal buds that might sprout. Herbicides used for basal spraying are

generally applied in oil carriers. The technique is effective on trees less than four to six inches in diameter. As bark becomes rougher and thicker, this technique becomes less effective. Care must be taken when herbicide is applied to minimize the amount that runs into the soil. This is important not only from an environmental quality standpoint, but also to avoid damaging non-target woody species.

Cut Stump: Chemical is applied to freshly cut stump surfaces. Treat plants before the cut surface dries (within two to three hours after cutting) for optimum control. How much of the stump that should be treated depends on the formulation of herbicide used. Many of the herbicides labeled for cut stump application are water-soluble. It is not necessary to treat the entire stump with these materials. The critical area of the stump that must be treated to prevent sprouting is the sapwood and bark of the stump's cut surface. Stump treatment with water-soluble herbicides must be done immediately after cutting the tree or vine in order to be effective.

Other herbicides labeled for cut stump applications are formulated to be mixed with oil. These herbicides do not move readily within the plant, but penetrate the bark. To be effective in suppressing stump sprouting, the entire stump, and particularly the bark and exposed roots must be thoroughly sprayed. Timing is critical with these materials because they are not so dependent on movement downward from the cut surface to distribute the herbicide. In situations where immediate treatment of stumps is not possible, use a herbicide with a oil carrier rather than one with a water carrier. Treatment with an oil-carried herbicide is recommended in the spring when treating species that exhibit a spring "sap flow". Water-carried herbicides will usually not be adequately absorbed to be effective during the spring "sap flow".

Frill, hatchet, or girdling: Frilling and girdling are methods of controlling standing trees that may be done with or without a herbicide. The bark around the base of the trunk is cut and the herbicide is either applied as a separate step or injected simultaneously in the cambium area. These techniques require a considerable amount of time and labor to implement.

Space Cuts – Tree injection: Tree injection involves introducing an herbicide into the undesirable tree through spaced cuts made around the trunk of the tree with an axe, hatchet, or tree injector. The amount of herbicide to be placed in the cut is specified on the herbicide label, but is generally around 1 to 2 milliliters. There are various tree injectors available such as a "hypo-hatchet," which is a hatchet constructed to inject herbicide when it is struck into the tree.

Soil Application: This type of treatment includes pellets, beads, granules or concentrated liquids. The herbicide moves through the soil to the root zone and then translocates upward to kill the plant. Treatment is usually made at the base of the plant within the dripline. Nearby trees may be injured or killed if their roots extend into the treated area. Soil applied herbicides usually remain active in the soil for several months or even years. Treatments can be made at any time of the year when the ground is not frozen, but control will only occur after sufficient rain has fallen. This method should only be used on non-erosive soils.

Biological Treatment

For biological treatment methods, plans and specifications will include:

- Kind of biological agent or grazing animal to be used,
- Timing, 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, and
- Special precautions or requirements when using insects or plants as control agents

Prescribed Burning Treatment.

- Refer to Prescribed Burning Standard (338) for guidance.
- Species controlled by prescribed burning are generally more effectively and economically controlled prior to reaching a medium percentage of crown canopy.
- Successive prescribed burn treatments may be necessary to maintain desired control.

NEEDS AND PRIORITIES FOR TREATMENT

The kind and density of the species present and the land use objectives govern brush management planning on grasslands.

Density is based on percent crown canopy of the dominant and associated species. Crown canopy is defined as the percent of the ground shaded by a species with the sun in a vertical position over it.

Brush management priorities are determined by the percent crown canopy of the species of concern.

A medium priority indicates that the brush species is significantly reducing the growth of desirable herbaceous vegetation. Certain brush species such as Red Cedar, Osage Orange, Multiflora Rose, (a secondary noxious weed), and Russian Olive provide a seed source that is capable of serious infestations.

Brush densities of certain specific species that occur in lower frequencies usually are not considered in a priority need for treatment.

Grazing management and other management practices can generally control undesirable species that occur at lower densities.

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 regrowth or reoccurrence of target species after sufficient time has passed to monitor the situation and gather reliable data. Evaluation periods will depend on the methods and materials used.

Maintenance: Following initial application, some regrowth, resprouting, or reoccurrence of brush should be expected. Spot treatment of individual plants or areas needing retreatment should be done as needed.

REFERENCES

- http://muextension.missouri.edu/xplor/miscpubs/mp0581.htm
- http://www.ag.ohio-state.edu/~ohioline/for-fact/0045.html>
- http://texnat.tamu.edu/pubs/b1466.pdf>
- http://www.weeds.iastate.edu/reference/wc92/default.htm
- *Wilfarm Section II (Brush/Woody Plant Section)*
- *USDA-NRCS Biology Technical Notes #22*
- *Woodland Improvement Standard 666-1*
- *Brush Control in Wisconsin, Doll, J.D., October 1987*
- *Forest Herbicides for Weed Control in the Great Lakes States 1990, Lantagne, D.O. et al, Michigan State University Extension Bulletin E-2219, April, 1990*
- *Ohio State University Fact Sheet F-45, controlling Undesirable Trees, Shrubs, and Vines in your Woodland (Randall B. Heiligmann, Associate Professor of Forestry Extension Specialist, Forestry)*