

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

BRUSH MANAGEMENT

(acre)
CODE 314

DEFINITION

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

Scope

Management of forest tree species is covered in Conservation Practice 666.

PURPOSES

This practice may be applied as 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.
- * Improve visibility and access for handling livestock.

CONDITIONS WHERE PRACTICE APPLIES

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

On forestland where heavy brush removal 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, and/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, biological, and prescribed burning or a combination of these methods.

Where applicable, Prescribed Grazing shall be applied to facilitate the desired response from treatments.

Additional Criteria For Improving Wildlife Habitat.

Brush management will be planned and applied to meet the habitat requirements of wildlife. It will not adversely affect threatened or endangered species or their habitats.

Additional Criteria for Reducing Wildfire Hazards.

Control undesirable woody plants in a manner that creates the desired plant community and reduces wildfire hazard.

Target species

Phenology and environmental constraints must be considered if initial treatments are to be successful. In addition, acceptable control levels should be specified in the planning phase.

Primary species included under this practice are:

Big sagebrush (*Artemisia tridentata*)

California Sagebrush (*Artemisia California*)

Silver sagebrush	(<u>Artemisia cana</u>)
Greasewood	(<u>Sarcobatus vermiculatus</u>)
Rabbitbrush	(<u>Chrysothamnus spp</u>)
Horsebrush	(<u>Tetradymia spp</u>)
Juniper	(<u>Juniperus spp</u>)
Willow	(<u>Salix spp</u>)
Buckwheat	(<u>Eriogonum spp</u>)
Chamise	(<u>Adenostoma fasciculatum</u>)
Coyote brush	(<u>Baccharis pilularis</u>)
Manzanita	(<u>Arctostaphylos spp</u>)
Ceanothus	(<u>Ceanothus spp</u>)
Sumac	(<u>Rhus spp</u>)
Shrub Oak	(<u>Quercus dumosa</u>)
Poison Oak	(<u>Toxicodendron diversilobum</u>)
Creosotebush	(<u>Larrea divaricata</u>)

Associated vegetation

Vegetation response is the determining factor indicating the success of a brush management practice. If increased forage is the objective, inability of forage species to take quick advantage of improved growing conditions by species may limit success. Availability of livestock water is a primary contributor to the ability to harvest forage increases and to extend the longevity of the brush management investment. If improvement of wildlife habitat is the objective, planning should include specified levels of cover for individual species. If fuel load reduction is the objective, acceptable levels of woody plant control should be specified. If water quality improvement is the objective, reasonable chances of improving herbaceous cover while reducing woody cover should exist. When improved recreation and aesthetic values through increased landscape diversity are the objectives, descriptions of desired vegetation type distribution should be provided.

Available methods of control

Brush management objectives and feasible methods of control are contained in the specification guide of this supplement.

Follow-up management

Management following initial treatments must be specified during the planning process. Decisionmakers must be aware of maintenance and management requirements to insure success and prolong the life of initial treatment.

Landuser objectives

Realistic goals for the management unit as well as the operating unit should be discussed and identified with decision-makers. A realistic assessment of goals may identify methods of vegetation manipulation that are less costly and have a higher probability of success than traditionally used methods.

Chemical Treatment

Certain pesticides have been designated as restricted use pesticides by the Director, Department of Pesticides Regulation, California Environmental Protection Agency. Any restricted material, with certain exemptions, can be used and possessed for agricultural use only under written permit of the County Agriculture Commissioner. Registration is a determination that the County Agricultural Commissioner may grant a possession and use permit for the California restricted material to certified commercial or private applicators.

Optimum time for chemical treatment:

Species	Growth Stage and Conditions
Big Sagebrush Ceanothus, Sumac, Silver Sagebrush, Shrub Oak, Buckwheat, Poison-Oak.	When twigs are elongating rapidly (2-3 in) and adequate soil moisture exists for further growth.
Greasewood Creosotebush	When leaves are full and soil moisture is adequate for rapid growth
Rabbitbrush Horsebrush	Early full leaf, new twig growth 3-4 in., good soil moisture and plant growth. When in mixed stands with Big Sagebrush, use this species as indicator for application time.
Willows	Early full leaf. Burn following initial chemical treatment and re-spray sprouts third and fourth year. Extreme care with chemicals is necessary to prevent water contamination.
Chamise	Early full leaf. Re-treatment will normally be necessary due to resprouting the following season.

All pesticides and containers that holds or has help pesticides will be stored, transported, handled, and disposed of in accordance with directions adopted by the Director, Department of Pesticide Regulation

When chemicals are used, they must be used in accordance with label instructions to prevent water

contamination from water soluble chemicals and increased sediment yields from the reduction of non-target plant species.

Prescribed Burning

The use of prescribed fire is an accepted method of vegetative management under appropriate circumstances. It is often an acceptable substitute for herbicides and mechanical treatment. Prescribed fire can reduce treatment costs and amounts of herbicides used while improving effectiveness and longevity of treatments.

Burns planned with NRCS assistance must adhere to all federal, state, county, and local laws regarding outdoor burning fire control, smoke management and air quality. Cooperators will be referred to the California Department of Forestry and Fire Protection (CDF) for development of the fire plan and a burn permit.

Cooperators will also be referred to their local air pollution control district (APCD) to comply with state agriculture burning requirements.

Prescribed burning releases phosphorous and potassium in a more soluble form and these materials are easily dissolved when precipitation occurs on the burned areas.

CONSIDERATIONS

It is the policy of the Natural Resources Conservation Service to encourage the use of pest-control methods having the least potential hazard or adverse impact on man, animals, and the environment.

Planners are to help land users understand the environmental impacts of brush management, both positive and negative, onsite and offsite by assisting cooperators in considering

- (1) the expected effect on wildlife habitat, recreation use, historic resources, wetlands, and attractiveness of the landscape;
- (2) the technical requirements, possible hazards, and costs of the practice;
- (3) the grazing management and maintenance measures that will insure success;

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

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

When primary use of rangeland is for domestic livestock, the objective may be to manipulate numbers, species, and distribution of brush to approximate that of natural conditions. When use is also for wildlife, the objective may be to maintain more brush than is natural for the site and to manage the brush in a pattern that favors both livestock and wildlife.

The objective on native pasture is to maintain a plant community that is not natural for the site and provides soil protection and benefits the uses planned for the land.

It is usually often a goal to exclude all brush on pastureland except for odd areas, mounds, and draws left for shade, wildlife, or esthetic value. Caution should be taken with an extreme no brush concept because livestock browse is a major contribution to summer and fall forage quality contributions.

Brush on land where wildlife is a primary or important use should be manipulated to provide optimum wildlife habitat and to facilitate wildlife management.

Mechanical, chemical, and biological procedures and prescribed burning may be used singly or in combination, depending on (1) kind of land (site); (2) topography; (3) species of woody plants-whether they are root-sprouters or non-sprouters; (4) size, abundance, and distribution of woody plants; (5) hazards of treatment, if any; (6) objectives of the land user; and (7) costs in relation to expected benefits.

It is the policy of the Natural Resources Conservation Service to encourage the use of pest-control methods having the least potential hazard or adverse impact on man, animals, and the environment.

Planners are to (1) encourage cooperators to consider fully the present and future land use opportunities including expected effect on wildlife habitat, potential recreation use, historically important artifact, culturally important sites, down-slope wetlands, and attractiveness of the landscape; (2) determine that the landowner understands the technical requirements, possible hazards, and costs of the practice and the landowner will apply the kind of grazing management and maintenance measures that will insure success; and

(3) help land users understand the environmental impacts of brush management, both positive and negative, onsite and offsite.

Water Quantity

This practice will increase infiltration and reduce runoff as grass cover replaces competing brush. In order to sustain improved water infiltration following brush management, sound management must be implemented.

Successful brush management results in improved vegetative cover. Improved vegetative cover slows surface runoff, reduces raindrop splash, traps snow, increases surface root mass, improves soil tilth, increases surface litter, and increases organic matter. Fuel management objectives reduces wildfire conflagration hazards and potential extreme impacts to water quantity. These attributes result in greater water infiltration. An increase in water infiltration exceeding evapotranspiration will result in deep percolation and aquifer recharge.

1. Changes in vegetation cover will directly influence volumes and rates of infiltration and runoff.
2. Consider the effects of snow catch and melt on the water budget.
3. Potential for a change in plant growth and transpiration because of changes in the volume of soil water.
4. Effects on downstream flows or aquifers that would affect other water uses or users.

Water Quality

Improved vegetation diversity and the decrease in runoff will reduce the amount of erosion and sediment yield. Improved vegetative cover acts as a filter strip to trap the movement of dissolved and sediment attached substances, such as nutrients and chemicals from entering downstream watercourses. Mechanical brush management may initially increase sediment yields because of soil disturbance and reduced vegetative cover. This is temporary until revegetation occurs.

1. Short-term soil disturbance will effect erosion and movement of sediment and soluble and sediment-attached substance carried by runoff.
2. Fuel management objectives reduce wildfire conflagration hazards impacts to water quality.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that critical periods, such as spawning, eggs in gravels, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications will be prepared for each pasture, field, or management unit where Brush Management will be applied.

Plans and specifications will be based on the practice standard and may include narratives, maps, drawings, job sheets, or similar documents. These documents will contain the following data as a minimum:

Brush canopy and/or species count, transect line locations and percent canopy and/or species numbers per acre of the target plant(s) prior to treatment.

As needed, maps or drawings showing areas to be treated and areas to be left undisturbed should be prepared.

For mechanical treatment methods, plans and specifications will include types of equipment and any modifications necessary to enable the equipment to complete the job adequately. Also included should be:

- * Dates of treatment
- * Operating instructions
- * Techniques or procedures to be followed

For chemical treatment methods, plans and specifications will include:

- * Herbicide name
- * Rate of application or spray volumes
- * Acceptable dates of application
- * Any special application techniques, timing considerations, or other factors that must be considered to ensure the safest, most effective application of the herbicide

Those guidelines included in regulations published by the Director, Pesticide Regulation for agricultural use.

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 used for effective control of target species
- * Maximum allowable degree of use on desirable non-target species
- * Special precautions or requirements when using insects or plants as control agents

Specifications guide

For major brush species; (1) dates of growth periods for effective treatment; (2) acceptable alternative materials, equipment, and methods; (3) types of areas, patterns of vegetation, and kinds and amounts of brush and trees that should be favored (left) for wildlife habitat, natural beauty, and recreation; (4) maintenance and management needed to follow brush management treatment.

OPERATION AND MAINTENANCE

Operations

Brush Management practices shall be applied using NRCS 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 number or canopy cover of target species 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, re-sprouting, or reoccurrence of brush should be expected. Spot treatment of individual plants or areas needing re-treatment should be done as needed.