

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE SPECIFICATION**

**BRUSH MANAGEMENT**

(Ac.)

**CODE 314**

**MANAGEMENT**

- I. Brush management in Colorado will be applicable when growth of a single targeted woody species exceeds 20 percent canopy and other conditions indicate a declining habitat, except for the following species:
  - a. Basin big sagebrush (*Artemisia tridentata tridentata*), mountain big sagebrush (*Artemisia tridentata vaseyana*), and Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) – control should be limited to areas where these sagebrush significantly exceed the maximum allowable percentage in the Historic Climax Plant Community (HCPC) as indicated in the ecological site/range site description or exceed 15 percent canopy.
  - b. Sand sagebrush (*Artemisia filifolia*) – Control of sand sagebrush should be limited to areas where the canopy is greater than 15 percent or 10 percent above the potential in the HCPC.
  - c. Pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), and oneseed juniper (*Juniperus monosperma*) – Pinyon-Juniper control is applicable when these species have either invaded the site and the percentage composition of the potential plant community is exceeded, the canopy cover is greater than 10 percent or there is more than 154 plants per acre. Pinyon-Juniper management should be limited to sites which have favorable soil, slopes, and potential of producing a good ground cover. The practice is not applicable to sites with more than a 30 percent slope, shallow soils, and having low potential forage production.
  - d. Rabbitbrush (*Chrysothamnus sp.*) – Species of *Chrysothamnus* may be sprayed. Rabbitbrush management is applicable where the percentage composition of the HCPC exceeds 15 percent or has a canopy in excess of 15 percent.
  - e. Snakeweed (*Xanthacephalum sarothrae*) – Snakeweed control is applicable in Colorado on loamy plains, alkaline plains, and sandy plans range sites in Major Land Resource Area (MLRA) 69 and MLRA 67 in Kiowa, Prowers, Baca, and Las Animas counties. Control will be limited to areas where percentage constitutes at least 15 percent of the HCPC or has a five percent canopy.
  - f. Small soapweed (*Yucca glauca*) – Control is applicable where the percentage of small soapweed constitutes at least 10 percent canopy of the existing plant community.
  - g. Wormwood (*Artemisia sp.*) – Control is applicable where the percentage of wormwood constitutes at least 10 percent canopy of the existing plant community.
  - h. Black greasewood (*Sarcobatus vermiculatus*) – Black greasewood control is applicable where the percentage is greater than 15 percent canopy.
  - i. Woody species shown on the State Noxious Weed A, B, and C lists have no threshold requirements for control.

## SPECIFICATIONS

- I. All areas treated with brush management will be protected from grazing by domestic stock for a minimum of 15 months from the end of treatment (*longer deferment may be necessary if drought conditions exist*). All subsequent grazing operations will be done according to a Prescribed Grazing (528) management plan. A variance on the deferment period may be granted by Area Specialists based on the desired habitat.
- II. Reseeding should be planned following brush management activities for areas where natural re-establishment of an adequate plant community is unlikely, i.e., poor range condition or ecological site index of <25%. Grazing will be deferred from all seeded areas until the stand is determined to be established.
- III. Provide for the practical preservation of the natural, aesthetic, and recreational qualities. This could include providing view barriers of untreated land along major roads. It may also include the preservation of irregular strips along perennial streams, lakes, marshes, and upland meadows.
- IV. Include the needs of wildlife species in the overall management plan. If the on-site evaluation identifies deficiencies, the NRCS Biologist and Colorado Division of Wildlife will be consulted.
- V. Completion of the Brush Management-314 Job Sheet is **required**.
- VI. An undisturbed sagebrush buffer must be maintained around sage grouse leks with corridors to link other grouse habitat. The minimum buffer width is 1300 feet.

Improvement of mountain and/or Wyoming big sagebrush should not be planned on areas designated as critical wildlife habitat unless the stand has become decadent and through consultation, with an NRCS Biologist and/or Colorado Division of Wildlife (CDOW) Biologist, it is agreed that improvement is necessary.

- VII. Brush management treatment methods:
  - a. Burning treatment, refer to Prescribed Burning (338) Specification for requirements.
  - b. Mechanical treatment
    - i. Plowing or Rotary Tiller Equipment
      1. Adaptation – Effective on all shrubs such as big sagebrush (all subspecies), broom snakeweed, tall rabbitbrush, black greasewood, and tamarisk *sp.* on range sites with relatively stone-free soils and level to moderate slopes (*generally less than 25 percent*).
      2. Equipment – Moldboard plow, wheatland plow, heavy offset disk, brushland plow, heavy sweep and root-type plows, and heavy roto-tiller type equipment.
      3. Time of Operation – Late spring or early summer when soil conditions are favorable for plowing before shrubs have matured seed or as specified by the equipment manufacturer for the species being treated. Soils should be dry enough to severely limit regrowth of partially covered plant roots and crowns.
      4. Methods – Plow or rotary-till at a depth sufficient to sever taproots. Operate disk-type plows at a sharp angle to insure roots are completely cut. A follow-up disking in late August to may be needed to complete the kill.
      5. Refer to seeding specifications for Range Planting (550) for re-establishment of forage cover.
    - ii. Railing and Dragging
      1. Adaptation – Limited primarily to mature to decadent stands or big sagebrush, having fair to good understory of native grass. If seeding is needed, broadcast seeding at time of operation provides for some seed incorporation by implement. This practice is not effective on shrubs such as rabbitbrush, silver sagebrush, sand sagebrush, black greasewood.

2. Equipment – Heavy rails of various types and design (e.g. Dixie harrow). Must be heavy enough to get desired reduction. Motor patrols and bulldozers can be used for surface scalping, but care must be exercised to insure adequate protection against erosion during critical periods of revegetation of this site.
  3. Time of Operation – After brush has become dry and brittle, but before sagebrush has matured seed and replenished food reserves in the roots. This date will vary widely with seasonal conditions and elevations. Documented variations on these guidelines are acceptable as long as the desired result is obtained.
  4. Methods – Rail or dragging in opposite or diagonal directions.
- iii. Chaining
1. Adaptation – Chaining is most valuable on old, brittle sagebrush, pinyon and juniper trees having a fair to good understory of native grasses, unless seeding is planned.
  2. Equipment – Heavy anchor chains 75 to 90 pounds per link. The heavier chains (*70 pounds plus*) are better for big sagebrush and for making partial seedbeds. Use two crawler-type tractors and 150 to 200 feet of chain with swivel joints connecting the chain to the tractors. Percent reduction can be increased by welding 18 to 30 inch pieces of rail to every second link.
  3. Time of Operation – Sagebrush will be treated after it becomes brittle but before seed sets. Juniper-Pinyon will be treated in early to late spring while moisture is still good. Documented variations on these guidelines are acceptable as long as the desired result is obtained.
  4. Refer to seeding specifications for Range Planting (550) for re-establishment of vegetative cover.
- iv. Beating, Chopping and/or Cutting
1. Adaptation – Limited to stone-free areas supporting stands of mature big sagebrush having a fair to good understory of native grasses, unless seeding is planned. Not effective on tall rabbitbrush, silver sagebrush, sand sagebrush, black greasewood, tamarisk *sp.*, and other shrubs that sprout from roots when tops are killed or where there are many young, immature plants of any shrub species.
  2. Equipment – Flail rotary and circular beaters, choppers, and circular saw-type equipment (e.g. *hydroax, roller-chopper, Lawson Aerator*).
  3. Time of Operation – Same as riling and dragging.
  4. Methods –
    - a. Beating or Cutting – Set equipment to operate about four inches above the ground so that low brush will be cut or shattered. Adjust travel speed to brush conditions. Reduce speed in heavy brush to permit all brush to be cut.
    - b. Chopping – Should be done with a full drum of water unless on a sandy soil site. On sandy soils the drum should be emptied or pulled over frozen ground to minimize disturbance to native grasses and forbs. Roller-choppers may be used with snow cover up to one foot in depth and as long as snow and/or mud do not accumulate between the chopper blades. If using multiple drum units, set offset for desired level of brush removal.

- c. Biological
  - i. Controls for some shrub species are available, but availability in Colorado is not fully known at this time. One identified biological control is the tussock moth for old stands of big sagebrush. Check the identified references for ongoing research and other possible biological controls.
  - ii. Biological control uses organisms to control weeds. Since we are dealing with living things, a variety of circumstances come into play that impact the success of the establishment of the bio-control and ultimately the control of the weed you are targeting. For example, an organism that works well on the plains may not work in the mountains. Although there has been some success on some weeds, bio-control agents are not available for all species.
- d. Chemical
  - i. Application of spray must be applied by helicopter, fixed-wing aircraft, or ground equipment.
    - 1. Aerial Application – Flights must (1) be low enough to obtain proper distribution and coverage, and (2) be made when wind velocities are generally less than five miles per hour. For many products, air temperature must be above 60° F and the plants actively growing. If the soils are dry, the plants may be in a semi-dormant state and will not accept the herbicide.
    - 2. Completion of and printed documentation of Windows Pesticide Screening Tool (WinPST) is required to identify impacts to livestock, wildlife, water and humans.

#### **CAUTION**

Cooperators using chemical herbicides should be cautioned as follows:

If herbicides are handled or applied improperly, or if unused portions are not disposed of safely, they may injure humans, domestic animals, desirable plants, and fish or other wildlife and may contaminate nearby crops, other vegetation, and water. Herbicides should not be used over or directly adjacent to ponds, lakes, or streams. Cooperators should be aware of and adhere to provisions of local, county, state, and federal laws and regulations concerning the use of agricultural chemicals. Read label directions on the container before using any chemical. Information on commercial labels is based on extensive research. It is dangerous to ignore approved label directions. Labels often change without notice, so be sure the label you have is up to date. Some chemicals can not be mixed and should be checked for compatibility before doing so.

#### **REVEGETATION**

Grass seedlings for revegetation of areas with inadequate understory will follow the Range Planting (550) Standard. Species selected for the seeding mix will be limited to native grasses typically found on the eco-site/range description with specific requirements shown on the CO-ECS-5 Grass Seeding Planned and Applied form. Variations on grass species for revegetation due to site conditions may be approved on a case by case basis by local NRCS specialists. Livestock will be excluded from seeded areas until 12 months after it is determined that the stand is established.

#### **REFERENCES:**

[Colorado Weed Management Association](#) provides information on weed identification, growth, and control methods.

[Colorado Department of Agriculture, Noxious Weed Management Program](#) identifies the noxious weeds for the State of Colorado and provides fact sheets on weed management and control methods.

[Colorado Department of Agriculture, Biological Pest Control Program, State Insectary](#) provides information on insects cleared for use in the State of Colorado that suppress and/or control weeds.