

CONSERVATION PRACTICE SPECIFICATION

GRAZING LAND MECHANICAL TREATMENT (548)

DEFINITION

Modifying physical soil and/or plant conditions with mechanical tools by treatments such as pitting, contour furrowing, and ripping or sub-soiling.

1. PLANS AND SPECIFICATIONS:

A Grazing Land Mechanical Treatment plan shall include the following information on ND-CPA-548 Grazing Land Mechanical Treatment Job Sheet.

- A. Location – Field numbers and map or sketch of areas treated and areas excluded.
- B. Acres to be treated.
- C. Site conditions of area to be treated including: ecological sites, percent slope and aspect, rangeland health assessment, similarity index, foliar cover of undesirable or target species.
- D. Desired vegetation composition and production after treatment.
- E. Method of treatment and type of equipment.
- F. Planned date of practice application.
- G. Spacing, width, depth, number of passes and direction of each treatment.
- H. Estimated percent control of undesirable target vegetation.
- I. Post-treatment management and other required supporting practices.
- J. Other planning considerations and guidance for application and management.
- K. Date and signature of planner and producer.

2. PLANNING CRITERIA:

- A. This practice will not alleviate the negative effects of poor grazing management. Prescribed grazing management is to the long-term success of this practice.
- B. Based upon the data collected in item 1C, determine the extent of both the target and desirable species within the treatment area. In order to apply this practice, the following criterion must be met.
 - a. Clubmoss (*Selaginella densa*) constitutes at least 50% of the soil surface cover as determined by line-point intercept.
 - or**
 - b. The combination of blue grama and upland sedge species (*Carex spp.*) constitutes 60% or more of the total annual production on the treatment area.

and

- c. Desirable rhizomatous native grass species (e.g. western wheatgrass) must be evenly distributed across the treatment area with a frequency of at least 80% occurrence (species occurs in at least 80% of the 1.92 sq. ft. sampling frames).
- C. Apply this practice on deep or moderately deep, fine-to-coarse-loamy textured soils (e.g. loamy, clayey, sandy ecological sites). Practice may also be applicable on claypan ecological sites or claypan/thin claypan ecological site complexes provided cover guidelines in 2B are met. Sites within the treatment area must meet vegetative requirements outlined in 2B above.
- D. Equipment will be a standard chisel plow with straight shanks.
- E. Depth of treatment will be from 2 to 6 inches. Deeper depth (4 to 6 inches) to be used when treating clubmoss, shallower depth (2 to 4 inches) when treating blue grama/sedge situation.
- F. Chisel shank spacing will be 12 to 18-inches. (12 to 14 inch centers preferred).
- G. Two chiseling operations are required, for a total minimum of 50% ground disturbance. First operation will be at a 45 degree angle to the slope, the second operation will follow the contour of the slope.
- H. Chiseling will result in the stimulation of western wheatgrass and other rhizomatous plants, including rhizomatous invasives such as smooth brome grass and Kentucky bluegrass. Therefore, if Kentucky bluegrass, smooth brome grass, annual brome grasses or noxious weeds collectively comprise greater than 10% of the production within the proposed treatment area, treatment will **NOT** be applied. If subsequent control efforts (e.g. 528-Prescribed Grazing, 595-Pest Management, and/or 314-Brush Management) reduce these species below the 10% “threshold,” then treatment may be applied.
- I. Treatments shall be limited to slopes of 10% or less and soils where surface disturbance will not result in unacceptable levels of soil erosion and/or sedimentation.
- J. At the time of treatment, soils will have adequate moisture to promote plant growth. Excessive moisture conditions should be avoided to minimize soil compaction and negative impacts to soil aggregates.
- K. Mechanical treatments shall not interfere with traffic ability, such as emergency fire lanes, travel lanes, stock loafing and trailing areas, etc.
- L. Effects to cultural resources must be considered.
- M. In sage grouse habitat, this practice will not be applied on sites currently supporting big sagebrush.

3. CONSIDERATIONS

- A. Leaving an untreated buffer between the treatment area(s) and neighboring tame grass pasture, tame hayland, road ditches, or other possible seed sources of smooth brome grass or crested wheatgrass may help limit invasion following treatment.
- B. Treatment will result in an extremely rough soil surface. This will limit vehicle travel within the treated area and may affect use by livestock.
- C. All treatments should be planned on the contour when conditions warrant. Not consistent with first treatment in F.
- D. Optimum treatment date is in the spring, prior to the growing season of the desirable plants. Soil conditions should ensure adequate penetration of equipment and impact on the undesirable vegetation can be obtained.
- E. Mechanical treatments will consider wildlife habitat needs and be designed to enhance and/or maintain the integrity of key habitat components such as cover, nesting sites, leks, etc.
- F. Consider hydrological changes that may occur as a result of the chiseling. Reduced overland flow may negatively impact water impoundments, wetlands and streams.
- G. Seeding is not recommended with this treatment.

4. POST TREATMENT MANAGEMENT:

- A. The treated area will have complete protection from grazing by domestic livestock from the date of treatment until dormancy of the key forage species during the first year, and from green-up to flower of the key forage species the following year.

This deferment period may be shortened or otherwise adjusted based upon past/present grazing management and vigor of desirable species.
- B. If the treated area is used for dormant season grazing, care must be taken not to compact the soil, remove too much cover, or damage desired plants, especially during the first two years following treatment.
- C. Clip weeds or apply herbicides, if necessary, to control undesirable vegetation following treatment. Refer to Field Office Technical Guide (FOTG) – Section IV – Conservation Practices – Pest Management - 595.
- D. A prescribed grazing plan will be developed in accordance with the Field Office Technical Guide (FOTG) – Section IV – Conservation Practices – Prescribed Grazing - 528 on all areas that are grazed by domestic livestock following the deferment period after treatment is applied.
- E. Drought following treatment, low vigor plants, or other conditions may require extended recovery periods for the desirable forage species. The cooperator will extend the grazing deferment period whenever the situation warrants.

- F. Compliance with all applicable Federal, State and local laws and regulations, including permits, permissions, or notifications, is required.

5. ADDITIONAL SPECIFICATIONS APPLICABLE TO RENOVATION OF SEEDED PASTURE OR TAME HAYLAND:

- A. Disking or other types of prior approved renovation will only be used on seeded tame pastures or hayland, not on native rangeland.
- B. Suitable equipment includes offset disk or other equipment approved on a case-by-case basis.
- C. Operations will be on the approximate contour.
- D. Two operations may be required for adequate results. If two operations are used, the last operation will be done on the contour.
- E. Depth of treatment will be from 3 to 6 inches.
- F. For additional information, see Part 4 of the Design and Installation Guide in the Field Office Technical Guide (FOTG) – Section IV – Conservation Practices, Pasture and Hay Planting - 512.

6. REFERENCES

Montana State University. 1970. Bulletin 645 - Clubmoss on Montana Rangelands.

Vallentine, John. 1977. Range Developments and Improvements, Brigham Young University.

Montana Sage Grouse Work Group. 2005. Management Plan and Conservation Strategies for Sage Grouse in Montana, Final.

<http://www.fs.fed.us/database/feis/plants/fern/selden/all.html>

Lacey, John, Ron Carlson, Kent Williams. October 1995. Chiseling Rangeland in Montana. *Rangelands* 17(5). .

USDA Natural Resources Conservation Service, Field Office Technical Guide (FOTG), Section IV – Practice Standards and Specifications:

- 512—Pasture and Hay Planting.
- 528—Prescribed Grazing.
- 550—Range Planting,
- 595—Pest Management,
- 645—Upland Wildlife Habitat Management.