

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
GRAZING LAND MECHANICAL TREATMENT

(Ac.)

CODE 548

DEFINITION

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

PURPOSE

- Fracture compacted soil layers and improve soil permeability.
- Reduction in water runoff and increased infiltration.
- Break up root-bound conditions and thatch to increase plant vigor.
- Renovation and stimulation of plant community for greater productivity and yield.

CONDITIONS WHERE PRACTICE APPLIES

This standard may be applied on pastureland, rangeland, grazed forest, and native pastures where the slopes are less than 10 percent.

CRITERIA

General Criteria Applicable to All Purposes

Areas to be treated shall be relatively free of undesirable or noxious plants that are likely to increase because of surface disturbance.

Assure soil is not too wet prior to treatment.

All work performed under this standard shall comply with state, federal, and local laws and regulations.

This practice will not alleviate the negative effects of poor grazing management. Prescribed grazing management is critical to the long-term success of this practice.

Based upon the data collected in Item C. in the Plans and Specifications section, 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:

- Clubmoss (*Selaginella densa*) constitutes at least 50 percent of the soil surface cover as determined by line-point intercept;

OR

- The combination of blue grama and upland sedge species (*Carex* sp.) constitutes 50 percent or more of the total annual production on the treatment area;

AND

- Desirable rhizomatous native grass species (e.g., western wheatgrass) must be evenly distributed across the treatment area with a frequency of at least 70 percent occurrence (species occurs in at least 70 percent of the 1.92 square foot sampling frames).

Apply this practice on deep or moderately deep, fine- to coarse-loamy textured soils (e.g., Loamy, Clayey, or Sandy ecological sites). Practice may also be applicable on Claypan Ecological Sites (ES) or Claypan/Thin Claypan ES complexes, provided cover guidelines in a, b, and/or c above are met.

Equipment will be a standard chisel plow with straight shanks.

Depth of treatment will be from two to six inches. Deeper depth (four to six inches) will be used when treating clubmoss, while shallower depths (two to four inches) will be used when treating blue grama/sedge dominated plant communities.

Distance between chisels shall be 12 to 18 inch centers (12 to 14 inch centers preferred).

Two chiseling operations are required with a minimum ground disturbance of 50 percent. First pass will be about 45 degrees off of perpendicular to the slope and the second pass will follow the contour of the slope.

Chiseling will result in the stimulation of western wheatgrass and other rhizomatous plants, including rhizomatous invasive species 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 percent of the production within the proposed treatment area, treatment will NOT be applied. If control efforts utilizing conservation practices such as Prescribed Grazing (528) or Herbaceous Weed Control (315) reduce these species below 10 percent by weight, then treatment may be applied.

Treatments shall be limited to slopes of 10 percent or less. Treatments will also be limited to soils where surface disturbances will not result in unacceptable levels of soil erosion and/or sedimentation.

This practice is generally applied in the spring of the year when soil moisture conditions insure adequate penetration of equipment and destruction of existing vegetation. Soils should have adequate moisture to promote plant growth, but should not be excessively wet in order to avoid soil compaction and breakdown of soil aggregates.

Mechanical treatments should not impede trafficability and should generally not cross roads, trails, or natural drainage ways. However, this practice can be used to control unwanted vehicular traffic. Desirable vehicle travel lanes destroyed during practice installation can be reestablished by disking.

Effects to cultural resources must be considered. If the selected mechanical treatment will exceed the depth of prior ground disturbance, this activity could affect buried cultural resources.

The NRCS field support office or state office biologist should be consulted before implementation of this practice to determine the effects on key wildlife habitat. This practice will not be applied where big sagebrush occurs.

To insure uniform utilization by livestock apply this practice to as many acres as possible within a given pasture or paddock.

Criteria Applicable to Renovation of Seeded Pasture or Tame Hayland

Disking or other types of prior approved renovation will only be used on seeded tame pastures or tame hayland, not on native rangeland. Suitable equipment includes offset disk, chisel plow with twisted shanks, one-way plow, or similar equipment. A moldboard plow is not a suitable piece of equipment.

Operations will be on the approximate contour.

Two operations may be required for adequate results. If two operations are used, the last operation will be on the contour.

Depth of treatment will be from four to six inches.

Area may be renovated at any time of the year providing that at least 50 percent of the less desirable vegetation can be destroyed.

Between 50 and 75 percent of the less desirable vegetation should be destroyed by the tillage operations.

CONSIDERATIONS

Leaving an untreated buffer between the treatment area(s) and neighboring tame grass pasture, tame hayland, road ditches, or other possible seed sources of invasive species such as smooth brome grass, Kentucky bluegrass, and/or crested wheatgrass may help limit invasion following treatment.

Treatment will result in an extremely rough soil surface. This will limit vehicle travel within the treated area and may affect use by livestock.

All treatments should be planned on the contour when conditions warrant with the exception of the first treatment as described in the Criteria section for chiseling.

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.

Consider hydrologic changes that may occur. Reduced overland flow may negatively impact water impoundments, wetlands, and streams.

Seeding is not recommended with this treatment.

The value of the expected improvement in forage production should be adequate to justify the cost of mechanical treatment and deferment.

Making positive changes in grazing management in the short term (three-to five years) such as changing season of use or lengthening recovery periods may prevent the need for grazing land mechanical treatment. On tame pasture or hayland, fertilization may counteract "root-bound" conditions (refer to Nutrient Management (590) for further guidance).

Investigate for tile drainage systems, pipelines, and other buried structures prior to work.

PLANS AND SPECIFICATIONS

A grazing land mechanical treatment plan shall include the following information:

- Location – Field numbers and map or sketch of areas treated and areas excluded;
- Acres to be treated;
- 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;
- Desired vegetation composition and production after treatment;
- Method of treatment and type of equipment;
- Planned date of practice application;
- Spacing, width, depth, number of passes and direction of each treatment;
- Estimated percent control of undesirable target vegetation;
- Post-treatment management and other required supporting practices;
- Other planning considerations and guidance for application and management;
- Date and signature of planner and producer.

OPERATION AND MAINTENANCE

The treated area should be deferred from grazing from the date of application until November 1 in the application year and from March 15 to November 1 the following year. If treated areas

are included within a prescribed grazing system which ensures adequate periods of rest and moderate utilization rates to improve plant vigor, then no season-long deferment is required.

If the treated area is used for dormant-season grazing, or as a feeding area, care must be taken not to compact the soil or damage root crowns of desirable grasses, especially during the first two years following treatment. Other areas may need to be used for these purposes.

Clip weeds or apply herbicides, if necessary, to control undesirable vegetation following treatment. Refer to NRCS Conservation Practice Standard (CPS) Herbaceous Weed Control (315).

A prescribed grazing plan will be developed in accordance with the NRCS CPS Prescribed Grazing (528) on all areas that are grazed by domestic livestock following the deferment period after the treatment is applied.

Drought following treatment, low vigor plants, or other conditions may require extended recovery periods for the desirable forage species. The cooperators will be encouraged to extend the grazing deferment period whenever the situation warrants.

REFERENCES

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