

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
SOUTH DAKOTA SUPPLEMENTS ITALICIZED**

GRAZING LAND MECHANICAL TREATMENT

(ac.)
CODE 548

DEFINITION

Modifying physical soil and/or plant conditions with mechanical *implements* by treatments such as; *renovation*, contour furrowing, and *deep* ripping, or *deep ripping/furrowing in combination*.

PURPOSE

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

Fracture compacted soil layers and improve soil permeability *and aeration*.

Reduce erosion and sediment production.

Improve soil, plant, and water relations.

Reduce water runoff, and increase infiltration.

Break up sod bound conditions and thatch to *increase surface roughness and to increase plant vigor*.

Renovate and stimulate plant community for greater productivity and yield.

CONDITIONS WHERE PRACTICE APPLIES

On native grazing land where *an increase in desirable* perennial plants *can be achieved*;

where soil and slope are suitable for each method and type of equipment used;

where grazing is managed to allow plants to respond to this treatment.

Mechanical treatments may not be desirable on areas to be used for *some forms of* recreation.

CRITERIA

General Criteria Applicable For All The Purposes State Above

Mechanical treatments shall be designed and applied in a manner to accomplish the desired objectives and address the natural resource concerns. These treatments shall be limited to soils and slopes where surface disturbances will not result in unacceptable levels of soil erosion and/or sedimentation.

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

Desirable forage species shall be of sufficient quantity and have a distribution pattern that allows the plants to take advantage of the improved moisture and to spread into disturbed areas.

Adequate *post treatment deferment is required* to ensure desired plant responses from this treatment.

Generally, 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.

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.

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

Mechanical treatments should not be considered on watersheds where run-off water is captured in a reservoir.

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

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.

Apply this practice on fine and medium textured soils having few or no stones in the upper profile or on soil with a claypan present.

Contour furrowing, deep ripping, and deep ripping/furrowing in combination should not be applied on slopes over 20 percent. Renovation should not be applied on slopes over 10 percent.

CONTOUR FURROWING

1. Practice will be applied on the approximate contour.
2. Minimum depth of furrows will be three inches.
3. Minimum width of furrows will be six inches.
4. Spacing of the furrows should be based on the size of the furrow cross section (furrow depth x width):
 - a. Furrows having 12 to 16 square inch cross-sections will be spaced no further than 2 feet apart.
 - b. Furrows having 17 to 25 square inch cross-sections will be spaced no further than 3.5 feet apart.
 - c. Furrows having 26 to 48 square inch cross-sections will be spaced no further than 5 feet apart.
5. Spacing between furrows is correct if the sod removed from the furrows covers the majority of the area between the furrows.

RENOVATION

1. 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.
2. Two operations with the equipment listed above may be required.
3. Area may be renovated at any time of the year providing that at least 50 percent of

the less desirable vegetation can be destroyed.

4. Between 50 and 75 percent of the less desirable vegetation should be destroyed by the tillage operations.
5. Depth of tillage should be a minimum of four inches.
6. Operations should be on the approximate contour where practical.

DEEP RIPPING

1. Equipment used will be a construction ripper or agricultural type subsoiler capable of penetrating the soil to a depth of at least 16 to 20 inches.
2. Spacing between the ripping should three to four feet.
3. Treatments will be on the approximate contour.

DEEP RIPPING/FURROWING IN COMBINATION

1. Equipment used will have V-shaped rippers or modified rippers with wings that will create a furrow at least 6 inches wide and that will penetrate the soil 12 to 16 inches.
2. Minimum depth of the furrow must be at least three inches.
3. Minimum width of the furrow must be at least six inches.
4. Spacing between the furrows/ripping should be three to four feet.
5. Spacing between furrow is correct if the sod removed from the furrows covers the majority of the area between the furrows.
6. Treatment will be on the approximate contour.

CONSIDERATIONS

Range Planting and Pasture and Hay Planting may be used in conjunction with Grazing Land Mechanical Treatment.

Mechanical treatment may not be desirable on areas to be used for recreation due to enhanced surface roughness of the site.

All treatments should be planned on the contour.

This practice will not alleviate the negative effects of poor grazing management unless a prescribed grazing plan is initiated at the time of practice installation.

PLANS AND SPECIFICATIONS

Specifications for installation of Grazing Land Mechanical Treatment shall be prepared for each site or planning unit according to the criteria. Specifications shall be recorded using state developed specification sheets, job sheets, narrative statements in conservation plans, or other acceptable documents.

OPERATION AND MAINTENANCE

Implementation of a prescribed grazing plan *is essential. Without a prescribed grazing plan the desired effect of this practice will not be achieved, the practice may need to be repeated, and the designed effects may be more difficult to achieve.*