NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATIONS

PRESCRIBED GRAZING
(Acre)
CODE 528

DIFFERENCES BETWEEN RANGE MANAGEMENT AND PASTURE MANAGEMENT

This specification contains criteria for all grazing lands. It is important to understand that the philosophy differs somewhat between the types of grazing land, even though there are overlaps.

Grazed Range, Grazed Forest, and Native Pasture are generally managed for many species of plants for multiple benefits. Grazed Pasture and Cropland are generally the management of a few species for specific objectives.

Grazed Range, Grazed Forest, and Native Pasture are managed through the use of tools such as prescribed fire, chemicals, mechanical methods, and biological agents. The same principles are applied to pastureland and to cropland to an extent, but are generally more intensive. Pasture and Cropland tend to be agronomically dependent monocultures, a limited variety of exotic plants, or managed native single species. Agronomic practices such as fertilizer, pest management, irrigation, routine seeding and renovation are needed to maintain pasture and cropland communities. However, polycultures of introduced plants can also be managed using ecological principles.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

NATURAL RESOURCES CONSERVATION SERVICE

PRESCRIBED GRAZING

Appendix 1

(Acre)

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1. Acceptable Grazing Use (Utilization) On Grazed Range, Native Pasture, Grazed Forestland, and Grazed Wildlifeland and Pastureland.

A. Key grazing areas shall be selected using the following criteria:

- Will be selected for each management unit or group of management units that have similar topography, soils, grazing duration, and season(s) of use. The key grazing area is usually located within a dominant soil type or an ecological/range site.

- Provide a significant amount, but not necessarily the greatest amount of the available forage in the grazing unit and is readily accessible. Small areas immediately adjacent to water troughs, salt, or shade, are not key grazing areas, nor are areas remote from water or with limited accessibility. A management unit may have more than one key grazing area.
- May be sensitive areas such as riparian areas, bottomlands, wetlands, dunes, or other areas where close attention to grazing management is needed for site integrity.
- Will be areas that are preferred by livestock or wildlife and may become overused before other areas in a management unit are grazed properly.
- Key grazing areas will be located and specified for each kind of grazing or browsing animal where their key grazing area is different.
- Areas in a management unit where seeding, brush management, prescribed burning, mowing, etc., have been completed, will become a key grazing area.

Key areas can be Ecological Sites (Range Sites) or a specific location, whichever is more useful. Identify the key areas on the plan map, overlay or SCS-414.

B. Key grazing plants shall be selected using the following criteria:

- Select the highest successional preferred perennial plant(s) comprising approximately 15 percent or more of the composition by weight as the key plant(s).
- If management objectives are to maintain a lower rangeland similarity index for a specific purpose, then the key plant will be the major perennial plant being managed for that purpose.
- Normally, only one plant will be selected as the key plant. However, occasionally it may be desirable to designate different key plants for summer and winter use. More than one key species may be designated for a management unit when different kinds of livestock and wildlife are present.
- On areas where reseeding is to be carried out, the key plant will be selected after stand establishment and at the start of the first grazing season's use.
- The designated key plants upon which degree of use is based will need to be changed as the plant composition.

- For monoculture pastureland, there will only be one key species. If the pastureland is managed as a polyculture, especially if warm and cool season plants are utilized, then there may be multiple key species.

C. Degree of use will be based on the key species on the key area using the following guidance:

- Degree of use of herbaceous plants shall be no more than 50 percent by weight of the current year's growth by the end of the growing season.
- Dormant season utilization is limited to no more than 60 percent by weight of the current year's growth and will leave sufficient plant residues to favorably impact site hydrology.

  Minimum residual herbage (air-dry pounds per acre) during non-growing season to protect the soil from erosion.

Type	Pounds/Ac	Inches Stubble Height (approximately)
Tallgrass	1200 – 1500	12-14
Midgrass	750 – 1100	6-8
Shortgrass	300 – 500	2-3

- During the growing season, use will not exceed 50 percent by weight of the current year's growth of twigs and leaves within reach of the animal. Use of key species during the dormant season will not exceed 65 percent by weight of the current year's growth of available twigs of deciduous species, or twigs and leaves of evergreen species.
- Less than 50 percent use by livestock should be stipulated to promote vegetative cover on eroding or critical sites, on riparian areas or wetlands, or where rapid range recovery is needed. Protection by means of permanent or temporary fencing may be needed.
- Areas of excessive grazing use or concentrated livestock shall not exceed 10 percent of the management unit as long as these areas are not sensitive areas.

D. Animal Unit Equivalents

Refer to Table 6-5, National Range and Pasture Handbook for Animal Unit Equivalents.

Additional 1.00 AU equivalents:

5 Axis, Aoudad, Fallow, Mouflon
9 Blackbuck antelope
7 Sika
2.5 Red Deer
1 Eland

For calculating carrying capacity and Forage/Animal Balance, use 26 lbs. oven-dry weight or 30 lbs. air-dry weight of forage demand for a 1,000 lb. animal unit (AU).

E. Federal Endangered /Threatened Species

When T&E species occur on the management unit, grazing should be planned to not cause harm to a population or the habitat of federally listed or state listed endangered or threatened plants or animals.

2. Degree Of Use On Pastureland

A. See Table I for Grazing Use Heights and Growth Cycles for Pastureland.

- For fertilizing and weed control, refer to Nutrient Management (590) and Pest Management (595) Practice Standards for additional information. For irrigated pastureland, refer to Irrigation Water Management (449) Practice Standard for timing and amounts of water.

- Use the “Minimum Heights for Rotational Use” listed in Table 1 to determine grazing use heights when warm season species are grazed during plant dormancy.

B. When cool season legumes or small grains are over-seeded in a permanent sod, use the following guidance.

- To allow germination of the cool season species from mechanical seeding or natural reseeding, graze, mow or hay grass competition to a height of 3 inches at least 4 to 6 weeks prior to the first frost date.
- To decrease competition with the permanent sod, graze, mow or hay cool season annuals intensively as they begin to approach maturity and the permanent species begin to grow.

NATURAL RESOURCES CONSERVATION SERVICE

PRESCRIBED GRAZING

APPENDIX 2

RESTING OR DEFERRING GRAZING LAND FOR A PRESCRIBED PERIOD

(Acre)

Code 528

1. General

Rest implies non-grazing for a full year or longer while deferment implies non-grazing for less than a year.

All domestic livestock must be excluded when a management unit is being rested or deferred. All exotic animals must be excluded when management of such can be accomplished. In large grazing units where spacing between water points exceed 2.5 miles, deferment requirements can be met by manipulating accessibility to these water points.

Grazing must be excluded for a long enough time during the growing season to adequately meet the objectives. On well established perennial warm and cool season grasses and legumes, deferment periods of 21 to 45 days during the growing season are usually adequate for plants to recover from grazing periods that do not exceed 7 to 10 days in length. The length of rest or deferment periods is governed by the kinds, growth habits, and growth stages of the forage plants concerned and seasonal climatic conditions.

Perennial Warm Season Plants

- To improve vigor and produce seed: From spring green-up until first killing frost.
- For seed production. For short and mid-grasses, defer from spring green-up until seed maturity. For tall-grasses, defer for 90 days prior to average killing frost.

Perennial Cool Season Plants

- To improve vigor and produce seed: From fall green-up until seed maturity.
- For seed production only where vigor is good: From spring growth until seed maturity.

To improve vigor: Either from fall green-up until December 1 or from spring growth until seed maturity.

2. Deferring Grazing On Grazed Range to Improve Similarity Index And On Grazed Forest And Native Pasture To Improve Forage Value Rating.

A. Where the rangeland Similarity Index is 25 percent or less, or the forage value rating is low, use a full growing season deferment initially. Defer during a spring or fall period every 2 years thereafter until the rangeland similarity index is greater than 25 percent or the forage value rating is moderate. Successive deferment periods are needed when the vigor of the plants is very low and the climax plants on rangeland comprise less than 20 percent of the total composition.

B. Rangeland Similarity Indexes of 26 to 60 percent or a forage value rating of moderate will receive a minimum of 90 consecutive days of deferment during the growing season every 3 years.

C. Rangeland similarity indexes of above 61 or a forage value rating of high will receive a minimum of 90 consecutive days of deferment during the growing season every 4 years.

D. A prescribed grazing sequence that provides adequate deferment periods each growing season may be used to accomplish A, B, and C above.

3. Deferred Grazing Following Brush Management

A. Chemical Control

The area will be deferred for the time shown by the approved label of the herbicide used or longer as required by the following:

1. Where the rangeland similarity index is 60 percent or less or the forage value rating is moderate or lower, the area will be deferred from the time of chemical application until frost. If control is done less than 90 days before first killing frost, the area will also receive a 90 day deferment the next year following spring green-up.

2. Where the rangeland similarity index is 61 percent or greater or the forage value rating is high or greater, the area will be deferred for a minimum of 90 consecutive days during the growing season of treatment.

3. When slow acting, soil applied herbicides are used, the area will be deferred from the time of the first visual signs of chemical activity through the remainder of the first growing season. A deferment period during the second growing season will be based on the recovery needs of the plant community. It is highly probable that a deferment period will be needed the second growing season to allow vegetation to respond to reduced competition until a 60% Similarity Index is achieved.

4. Where chemical control is applied less than 90 days prior to average killing frost, the area will receive deferment for the remainder of the growing season and 90 consecutive days from the time of spring green-up.

5. On land where non-native species are dominant and preferred, and are not being intensively managed, (no fertilizer or weed control), and the plant vigor is low but has adequate ground cover to prevent erosion, the area will be deferred for a minimum of 90 consecutive days during the growing season of treatment.

6. A short duration type of grazing system may be used in place of 1, 2, 3, 4, and 5 above to manage the released species for improved vigor and upward trend.

7. Where maintenance type chemical control is used on 10 percent or less brush canopy, a deferment period is desirable but will not be required unless required by the approved label of the herbicide used or required by the Similarity Index criteria listed in A1 & A2.

B. Mechanical Control

1. Rootplowing Without Seeding (buffelgrass only): The area will be deferred the remainder of the growing. If the stand is weak in vigor at the end of the first growing

season, a deferment period during the second growing season will be required as needed to ensure recovery.

2. Other Mechanical Treatment Without Seeding; (treedozing, chaining, clipping, mowing, roller chopping, track loaders etc.)

a. Rangeland similarity index is 60 percent or less or the forage value rating is moderate or lower:
The area will receive a deferment the remainder of the growing season from the time of the start of mechanical control. If control is done less than 90 days before first killing frost, the area will also receive a 90 day deferment the next year following spring green-up.

b. Rangeland similarity index is 61 percent and greater or the forage value rating is high or greater, but the plant vigor is low;
Apply the same treatment as (a) above.

c. Rangeland Similarity Index 61 or greater and the forage value rating is high or great and vigor is good;
The area will be deferred for a minimum of 90 consecutive days during the growing season following treatment. If control is completed done less than 90 before last killing frost, the area will receive a 90 day deferment the next year from the time of spring green-up.

d. Where individual plant treatment techniques are used on 10 percent or less brush canopy, a deferment period is desirable but will not be required unless required by the Similarity Index criteria listed in B2a, b & c.

e. A short duration type of grazing system may be used in place of a, b, and c above to manage the released species for improved vigor and upward trend.

4. Seeded Areas

a. All Grazed Range seeded areas must be rested or deferred until the plants are well established. This will always be the first growing season following seeding and in many instances the second growing season. Further deferment periods during succeeding growing seasons may be necessary to establish or increase the stand. Light grazing may be possible during the first dormant season if plants are sufficiently established (well rooted and numerous mature seedheads) so that they will not be damaged.

b. On Pastureland, defer until plants reach minimum grazing heights as listed in Table 1 in the “Minimum Heights Prior to Grazing Inches”

c. Flash grazing by livestock may be used to control competing annual grasses and forbs at a time when they are vulnerable but not to exceed a two week period. Flash grazing will not be used past July 15, when soils are wet, nor when hoof action will compact the soil or damage seedlings. If there is damage to seedling plants, flash grazing shall cease immediately.

5. Wildlife Benefit

Livestock grazing is a tool to manipulate habitat to benefit wildlife. When the primary goal is to benefit wildlife through grazing, refer to the Upland Wildlife Habitat Management (645) and Zone supplement for habitat requirements for the species of interest. Grazing and

deferment periods shall be designed to result in the desired structure and plant composition for the targeted wildlife. As a general rule, non-intensive grazing systems create more of a mosaic structure from spot grazing than do the short-duration type of systems.

6. Weed Impaired Grazing Land

If herbaceous weeds are a resource concern controlled, concentrated grazing/browsing by the appropriate kind and class of animals can be used for short periods during the time that the weeds are the most vulnerable. These use periods should be followed by a deferment period for recovery of the desired plant community.

7. To Develop A Forage Reserve

Defer for 90 consecutive days in the spring or fall or for a full growing season in semi-arid and arid climates.

8. To Manage Fine Fuel Loads

Defer for 90 consecutive days in the spring or fall to accumulate fuel. In semi-arid and arid climates, rest for a full year to accumulate fuel, and maintain continuity. The Prescribed Burning Standard and Specification (338) has criteria on fuel loads.

To remove excessive or hazardous fuel loads, one-time use of grazing can be done if minimum ground cover (surface litter) is maintained, refer to Appendix 1C. (Refer to Firebreak (394).

9. Following Wildfires, Insect Damage, Severe Drought Or Similar Damage

Rest or defer until the vegetation has made adequate recovery.

10. Following a Prescribed Burn

Grazing management must be designed to accomplish the objective following a prescribed burn. In general, rangeland with a Similarity Index of 60 percent or less or native pasture with a forage value rating of moderate or lower will have a full growing season deferment following the prescribed burn. Rangeland with a Similarity Index of 61 percent or greater and in good vigor or native pasture with a forage value rating of high or better and in good vigor will be deferred a minimum of 90 days following spring green-up after the burn. An exception is where cattle are used to graze pricklypear following a burn. However, the graze period shall not exceed three weeks.

When the objective is to increase palatability for such species as weeping lovegrass, tobosa, little bluestem, bermudagrass, etc., grazing and deferment may be scheduled as needed to accomplish the planned objective. Utilization levels shall not exceed 50% or the proper use heights in Table 1 for pastureland.

11. Grazed Forestland

Exclude livestock from all areas of desirable hardwood reproduction until trees have reached a size that cannot be significantly damaged by browsing animals.

Livestock must be excluded from pine and hardwood plantings for at least three years after planting or seeding or until the apical meristem is above the grazing height of the livestock species. Exclude goats and sheep from pine reproduction until trees are 8 feet tall.

12. Pastureland

Perennial warm season grasses that are at minimum grazing use heights should be deferred 30 to 45 days prior to the first killing frost to replenish carbohydrate reserves to maintain plant vigor and/or to stockpile forage for dormant season use.

Perennial cool season grasses should not be grazed about mid June until September.., unless deferred from grazing at least 45 days during the active growth periods to maintain plant vigor.

13. Annual Cool Season Legumes

To allow clovers the best chance to provide seed for next year, they must be deferred for 2 to 4 weeks toward the end of their production period. General deferral dates for some commonly planted clovers are as follows:

Arrowleaf clover	5/1 - 6/15
Crimson clover	4/1 – 5/15
Ball clover	4/15 – 5/15
Subterranean clover	4/1 – 5/15
Rose clover	5/1 – 6/15
Vetch	5/1 – 6/15
Singletary peas	5/1 –6/15

14. Types of Prescribed Grazing

There are several general types of grazing management methods or strategies. Refer to the National Range and Pasture Handbook, Chapter 5, for examples.

NATURAL RESOURCES CONSERVATION SERVICE

PRESCRIBED GRAZING

Appendix 3

(Acre)

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CRITERIA FOR GRAZED CROPLAND

General

Grazing of cropland comprises two types of situations.

One is using a growing crop, and the other is grazing crop stubble or residue.

Grazing of all crops must be managed so that adequate crop residues remain to meet the soil loss tolerance values using current NRCS measurement criteria.

Forage sorghums

Rotational grazing will provide more grazing days per acre than continuous grazing. Most uniform grazing and least waste are achieved when the plant reaches 20 to 28 inches in height. Best regrowth is obtained if grazing is suspended when 6 to 8 inches in height remain with some succulent plant parts with buds left. A thin culmed sorghum or pearl millet recovers more rapidly and can tolerate closer grazing than do those with thicker culms.

The young plants and leaves of sorghum, sudangrass and Johnsongrass contain the highest concentration of a glycoside called dhurrin, which releases a poisonous substance known as prussic acid or hydrocyanic acid (HCN) upon breakdown. Growth after dry, hot or cold (frost) weather, trampling or other stress results in toxic levels of cyanide or prussic acid. Losses of cattle, horses, sheep and goats can occur when grazing plants in this condition.

Reduce risk from prussic acid poisoning using these management practices:

1. Do not put hungry animals on stressed plants.
2. Delay grazing of sorghum or sorghum-cross plants until at least 15 inches tall.
3. Do not graze below 6-8 inches to maintain vigor.
4. Do not graze when plants are drought stressed and growth is severely reduced.
5. Do not graze wilted plants or plants with young tillers.
6. Do not graze for two weeks after a non-killing frost.
7. Do not graze after a killing frost until plants are dry. (The toxin is usually dissipated within 48 hours).
8. Do not graze at night when frost is likely.
9. Poisoning is less likely to occur if the animals eat some ground grain before being turned in on susceptible pasture.
10. Test forages to remove doubt.
11. Graze in the afternoon when HCN levels are reduced.

Nitrate poisoning can also occur on heavily fertilized sorghums. Nitrate accumulation in plants is worse during cloudy weather or other conditions where nitrate assimilation by the plant slows

down. Rations high in carbohydrates will reduce and sometimes prevent losses from nitrate poisoning. The forage should be tested if problems are suspected.

Small grains

(wheat, triticale, barley, rye)

Initiate grazing on small grains when the plants are about 8 inches in height, fully tillered, and have a well developed coronal root system. This generally occurs 6 to 8 weeks after germination with adequate fertility and moisture conditions.
If the objective of the client is to have fall grazing of small grains, it is essential to plant during the last week in August or the first week in September. October planting dates offer unreliable fall grazing.

Grazing management strategies of winter small grains pasture occur in two different phases: a "fall & winter phase" and a "spring phase". The fall and winter phase is characterized by using accumulated forage, while the spring phase is dependent upon growth that can be described as very rapid over a short period with decreasing forage quality at the end of the grazing period. During the spring phase, the stocking rate and individual animal performance can be greater than in the fall and winter phase.

"Fall and Winter Phase"

The fall and winter phase of grazing generally occurs from November 1 through March 1. This phase of grazing relies on stockpiled forage. Stocking rates should be calculated by determining the amount of forage available at the time grazing is initiated, estimating any additional growth, account for residual ground cover, determine the number of days the forage is to be grazed, and calculate the animal demand.

During the fall and winter phase, rotational grazing with 4 - 6 grazing units will increase forage production over continuous grazing. Strive to remove only 25 to 30 percent of the available forage during any one grazing period. This allows the grazing unit time to recover from animal impact and leaves adequate ground cover to maintain warmer soil temperature and trap moisture.

"Spring Phase"

This phase generally occurs from March 1 through May 15. During this phase, manage for regrowth potential rather than stockpiled forage. Stocking rates should be calculated by determining the amount of forage available, estimating the growth anticipated from residual nitrogen plus the growth expected from a spring topdressing of nitrogen, determine the number of days the forage is to be grazed and calculate the animal demand.

For grazing management on small grains, multiple grazing units are desired over single grazing units.

Considerations for grain production of grazed small grains

If grain harvest is desired, grazing should be terminated when the stems begin to elongate (the first hollow stem can be identified above the crown in larger ungrazed shoots). This is the earliest portion of the jointing stage. For each day the wheat is grazed after the appearance of the first hollow stem, grain yields are significantly reduced.

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TABLE 1 – GRAZING USE HEIGHTS AND GROWTH CYCLES – for Pastureland

Species	Minimum Heights Prior To Grazing Inches	Minimum Use Heights For Season Long Grazing Inches	Minimum Use Heights For Rotational Grazing Inches	Growth Cycles for Forage Recovery[1] Days	
				Fast Growth	Slow Growth
Sod-forming				April-June	July-Sept.
Bermudagrass: Common	6	4	3	14-28	28-42
Bermudagrass: Hybrid	6	4	3	14-28	28-42
Bahiagrass	6	4	3	14-28	28-42
Dallisgrass	6	4	3	14-28	28-42
Short Height – Warm Season				April-June	July-Sept.
Sideoats grama	6	4	4	21-28	28-60
Short Height – Cool Season				Mar.-June	Nov.-Mar
Wheatgrass, Western	6	4	4	21-28	28-60
Mid Height – Warm Season				April-June	July-Sept.
Bluestems: Caucasian, Plains, Ganada, K.R., Old World T-587, B. Dahl	8	6	4	21-28	28-60
Kleingrass	8	6	4	21-28	28-60
Lovegrass: Weeping, Common, Morpa, Ermelo, Wilman	8	6	4	21-28	28-60
Mid Height – Cool Season				Mar.-June	Nov.-Mar.
Tall Fescue	6	6	4	21-28	28-60
Wheatgrass, Tall	8	6	4	21-28	28-60

Texas Wintergrass	6	6	4	21-28	28-60
Wildrye, Virginia and Canada	8	8	6	21-28	28-60
Species	**Minimum Heights Prior To Grazing** Inches	**Minimum Use Heights For Season Long Grazing** Inches	Minimum Use Heights For Rotational Grazing Inches	**Growth Cycles for Forage Recovery**[1] Days	
				Fast Growth	**Slow Growth**
Tall Height				April-June	July-Sept.
Bluestems: Sand & Big, Little	12	8	6	21-28	28-60
Indiangrass: Cheyenne & Lometa	12	8	6	21-28	28-60
Switchgrass: Blackwell & Alamo	12	8	6	21-28	28-60
Eastern gamagrass	12	8	6	21-28	28-60
Johnsongrass	12	8	6	21-28	28-60
Sacaton: Alkali, Common, Saltalk	12	8	6	21-28	28-60
Legumes – Warm Season				April-June	July-Sept.
Alyceclover	12	8	6	21-28	28-60
Lespedeza	8	6	4	21-28	28-60
Bundleflower	6	6	4	21-28	28-60
Sweet Clover	8	6	4	21-28	28-60
Legumes – Cool Season				Mar.-May	Dec.-Feb
Clover: Ball, White, Berseem, Bur, Crimson, and Arrowleaf	6	4	3	14-21	21-42
Vetch	6	4	3	14-21	21-42

[1] Length of recovery period is influenced by the severity of grazing use, growing conditions (moisture and temperature), and growth habit of the forage species.