

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**PRESCRIBED GRAZING**

(Ac.)

**CODE 528**

**DEFINITION**

Managing the harvest of vegetation with grazing and/or browsing animals.

**PURPOSE**

This practice may be applied as a part of conservation management system to achieve one or more of the following:

Improve or maintain desired species composition and vigor of plant communities.

Improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity.

Improve or maintain surface and/or subsurface water quality and quantity.

Improve or maintain riparian and watershed function.

Reduce accelerated soil erosion, and maintain or improve soil condition.

Improve or maintain the quantity and quality of food and/or cover available for wildlife.

Manage fine fuel loads to achieve desired conditions.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to all lands where grazing and/or browsing animals are managed.

**CRITERIA**

**General Criteria Applicable to All Purposes**

- Removal of herbage will be in accordance with site production limitations, rate of plant growth the physiological needs of forage plants and the nutritional needs of the animals. ([eFOTG, Section II, Forage Suitability Groups](#))

Adequate quantity and quality drinking water will be supplied at all times during period of occupancy.

Adjust intensity, frequency, timing and duration of grazing and/or browsing to meet the desired objectives for the plant communities and the associated resources, including the grazing and/or browsing animal.

Manage kind of animal, animal number, grazing distribution, length of grazing and/or browsing periods and timing of use to provide grazed plants sufficient recovery time to meet planned objectives. The recovery period of non-grazing can be provided for the entire year or during the growing season of key plants. Deferment (non-grazing period less than one year) and/or rest (non-grazing period equal or greater than one year) will be planned for critical periods of plant needs.

Provide deferment or rest from grazing or browsing to ensure the success of prescribed fire, brush management, seeding or other conservation practices that cause stress or damage to key plants.

Manage grazing and/or browsing animals to maintain adequate vegetative cover on sensitive areas (i.e. riparian, wetland, habitats of concern, karst areas).

Locate the area on the farm that has the least impact on sensitive areas and water quality so if needed it can be used for holding stock for extended periods while other pastures recover.

Manage livestock movements based on rate of plant growth, available forage, and allowable utilization target.

Develop contingency plans to deal with expected episodic disturbance events, e.g. insect infestation, drought, wildfire, etc.

**Additional Criteria to Improve or Maintain the Health and Vigor of Plant Communities.**

Duration and intensity of grazing and/or browsing will be based on desired plant health and expected productivity of key forage species to meet management objectives.

Plan periodic deferment from grazing and/or browsing to maintain or restore the desired plant community following episodic events, such as wildfire or severe drought.

Where appropriate, soil test periodically for nutrient status and soil reaction and apply fertilizer and/or soil amendments according to soil test to improve or maintain plant vigor.

See Table 1 – *Maintain Forages in a Vegetative State*; [Prescribed Grazing \(528\) Factsheet](#); and, [Prescribed Grazing \(528\) Technical Note](#) for additional information.

**Additional Criteria to Improve or Maintain Quantity and Quality of Forage for Animal Health and Productivity**

Plan grazing and/or browsing to match forage quantity and quality goals of the producer within the capability of the resource to respond to management.

Enhance diversity of rangeland and pasture plants to optimize delivery of nutrients to the animals by planning intensity, frequency, timing and duration of grazing and/or browsing.

Plan intensity, frequency, timing and duration of grazing and/or browsing reduce animal stress and mortality from toxic and poisonous plants.

Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.

Dietary needs of livestock will be based on the National Research Council's Nutrient Requirements of Domestic Animals or similar scientific sources with appropriate adjustments made for increased energy demand required by browsing or grazing animals foraging for food including travel to and from pasture site.

Maintain 90% or more of livestock at a 5 or better body condition score. (Table 2 – *Description of Body Condition Scoring [BCS] of Beef Cows* and Table 3 – *Effect of Body Condition Score at Calving on Pregnancy Percentage on 90-Day Breeding Season*)

See [Prescribed Grazing \(528\) Technical Note](#) for additional information.

Biosecurity safeguards will be in place to prevent the spread of disease between on-farm or ranch classes of livestock and between livestock farm or ranch units.

Shelter in the form of windbreaks, sheds, shade structures, and other protective features will be used where conditions warrant to protect livestock from severe weather, intense heat/humidity, and predators.

**Additional Criteria to Improve or Maintain Surface and/or Subsurface Water Quality and Quantity.**

Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover.

Plan intensity, frequency, timing and duration of grazing and/or browsing to:

- Minimize deposition or flow of animal wastes into water bodies,
- Minimize animal impacts on stream bank or shoreline stability.
- Provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff.
- Provide adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation.

**Additional Criteria to Improve or Maintain Riparian and Watershed Function.**

Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover and riparian/floodplain plant community structure and functions.

Plan intensity, frequency, timing and duration of grazing and/or browsing to:

- Provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff.
- Provide adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation.
- Maintain adequate riparian community structure and function to sustain associated riparian, wetland, floodplain and stream species.

### **Additional Criteria to Reduce Soil Erosion and Maintain Soil Condition**

Minimize concentrated livestock areas, trailing, and trampling to reduce soil compaction, excess runoff and erosion.

Plan intensity, frequency, timing and duration of grazing and/or browsing to provide adequate ground cover, litter and canopy to maintain or improve infiltration and soil condition.

### **Additional Criteria to Improve or Maintain Food and/or Cover for Fish and Wildlife Species of Concern**

Identify species of concern in the objectives of the prescribed grazing plan.

Plan intensity, frequency, timing and duration of grazing and/or browsing to provide for the development and maintenance of the plant structure, density and diversity needed for the desired fish and wildlife species of concern.

### **Additional Criteria for Management of Fine Fuel Load**

Plan intensity, frequency, timing and duration of grazing and/or browsing to reduce hazardous fuel loads.

Plan intensity, frequency, timing and duration of grazing and/or browsing to manage fuel continuity, load and other conditions to facilitate prescribed burns.

## **CONSIDERATIONS**

Protect soil, water, air, plant and animal resources when locating livestock feeding, supplementing, handling and watering facilities.

Livestock feeding, handling, and watering facilities will be designed and installed in a manner to improve and/or maintain animal distribution. These facilities will also be designed and installed to minimize stress, the spread of disease, parasites, contact with harmful organisms and toxic plants.

Utilization or stubble height target levels are tools that can be used in conjunction with monitoring to help ensure that resource conservation and producer objectives are met.

Where practical and beneficial, start the grazing sequence in a different management unit each growing season.

When weeds are a significant problem prescribed grazing and/or browsing should be implemented in conjunction with other pest management practices to promote plant community resistance to invasive species and protect desired plant communities.

Prescribed grazing should consider the needs of other enterprises utilizing the same land, such as wildlife and recreational uses.

Consider improving carbon sequestration in biomass and soils through management of grazing and/or browsing to produce the desired results.

If nutrients are being applied, Nutrient Management (590) will be applied.

## **PLANS AND SPECIFICATIONS**

The prescribed grazing plan shall conform to all applicable federal, state and local laws. Seek measures to avoid adverse affects to endangered, threatened, and candidate species and their habitats.

Prepare a prescribed grazing plan for all planned management units where grazing and/or browsing will occur according to state standards and specifications.

Prescribed Grazing Plan will include:

- Goals and Objectives clearly stated, including goals and objectives of the producer that address quality of life, form of production and vision of the future resource base.
- Resource Inventory that identifies:
  - Existing resource conditions and concerns
  - Ecological site or forage suitability group
  - Opportunities to enhance resource conditions
  - Location and condition of structural improvements, such as fences, water developments, etc., including seasonal availability and quality of watering sites. ([TN-CPA-52](#), plan map, soils map, and [Tools – Graze Program](#))
- Forage Inventory of the expected forage quality, quantity and species in each management unit(s). ([Tools – Graze Program](#))

- Forage-Animal Balance developed for the grazing plan, which ensures forage produced or available meets forage demand of livestock and/or wildlife. Supplementing 33% or less of the diet as hay is ideal. Exceptions include pastures that are managed at proper grazing heights with animals held back in a holding area such as a loafing barn while pastures regrow. ([Tools – Graze Program](#))
- Grazing Plan developed for livestock that identifies periods of grazing and/or browsing, deferment, rest, and other treatment activities for each management unit. ([Tools – Graze Program](#) and Plan narrative)
- Contingency plan developed that details potential problems (i.e., severe drought, flooding, insects) and serves as a guide for adjusting the grazing prescription to ensure resource management and economic feasibility without resource degradation. ([Tools – Graze Program](#) and Plan narrative)
- Monitoring plan developed with appropriate records to assess in determining whether the grazing strategy is resulting in a positive or upward trend and is meeting objectives. Identify the key areas and key plants that the manager should evaluate in making grazing management decisions. ([Tools – Graze Program](#) and Plan narrative)

## OPERATION AND MAINTENANCE

**Operation.** Prescribed Grazing will be applied on a continual basis throughout the occupation period of planned grazing units.

Adjustments will be made as needed to ensure that the goals and objectives of the prescribed grazing strategy are met.

At any one time, no more than 20% of the total grazing acreage should be grazed lower than the heights listed to terminate grazing. (Table 1 – *Maintain Forages in a Vegetative State*)

Options to protect forage heights include but are not limited to: feeding hay or other supplemental feed, reducing the number of animals “destocking,” leasing additional pasture, fertilizing when moisture is available, or seeding annuals, etc.

**Maintenance.** Monitoring data and grazing records will be used on a regular basis within the prescribed grazing plan to insure that objectives are being met, or to make necessary changes in the prescribed grazing plan to meet objectives.

All facilitating and accelerating practices (e.g. Fence (382), Pest Management (595), Brush Management (314), Pasture Planting (512) (etc.) that are needed to effect adequate grazing and/or browsing distribution as planned by this practice standard will be maintained in good working order and are being operated as intended.

## REFERENCES

- Barnes, R.F., D.A. Miller, and C.J. Nelson. 1995. Forages, The Science of Grassland Agriculture, 5<sup>th</sup> Ed. Iowa State University Press, Ames, IA.
- Bedunah, D. J. and R. E. Sosebee, Editors. 1995. Wildland Plants. Physiological Ecology and Developmental Morphology. Society for Range Management, Denver, CO.
- Heitschmidt, R. K. and J. W. Stuth eds. 1991. Grazing Management an Ecological Perspective. Timber Press
- Hodgson, J. and A.W. Illius. Editors. 1996. Ecology and Management of Grazing Systems. CABI, Wellingford, UK.
- Holechek, J. L., R. D. Pieper and C. H. Herbel. 2000. Range management principles and practices. 5<sup>th</sup> edition. Prentice Hall, NJ.
- Smith, D., R.J. Bula, and R.P. Walgenbach. 1986. Forage Management 5<sup>th</sup> ed. Kendall/Hunt Publ. Co. Dubuque, Iowa.
- USDA-Natural Resources Conservation Service. Electronic Field Office Technical Guide (eFOTG), Section IV. Available at [http://efotg.sc.egov.usda.gov/efotg\\_locator.asp](http://efotg.sc.egov.usda.gov/efotg_locator.asp) X
- United States Department of Agriculture, Natural Resources Conservation Service. 1997. National range and pasture handbook. Washington, DC. Available at <http://directives.nrcs.usda.gov/viewerFS.aspx?hid=18937>
- Vallentine, J.F. 2001. Grazing management. Academic Press, San Diego, CA.
- Voisin, A. 1959. *Grass productivity*. Philosophical Library, New York.

**TABLE 1: MAINTAIN FORAGES IN A VEGETATIVE STATE<sup>1</sup>**

“Maintaining proper forage height is of utmost importance”

Forage Species <sup>4</sup>	Height to begin grazing <sup>2</sup>	Height to terminate grazing (Residual Ht.) <sup>3</sup>	Recovery Time (Days)
tall fescue timothy annual ryegrass crabgrass old world bluestem	8"	(2) 3"	14 - 45
tall fescue (endophyte free) orchardgrass sericea lespedeza	8"	(3) 4"	14 - 45
wheat rye oats	8"	4"	14 - 45
alfalfa	bud stage	2"	24 - 32
millet	12"	6"	14 - 30
sorghum x sudangrass hybrids	18"	(6) 8"	14 - 30
johnsongrass native warm season grasses (NWSG)	22"	(8) 10"	30 - 50
common bermudagrass hybrid bermudagrass	8"	2"	14 - 45
	8"	3"	

<sup>1</sup> Grazing periods generally need to be short 1 to 14 days with 14 to 21 days of recovery during optimum growing season and 21 to 45 days or longer during periods of less than optimum conditions.

<sup>2</sup> Height to begin grazing is important to assure adequate quantity is available and plant recovery is sufficient to maintain a healthy stand. Paddocks may be grazed at the listed lower height realizing that quantity of forage produced and presented to the animal will be reduced also plant vigor will be reduced. The grazing and recovery period needed for forages varies according to growing conditions.

<sup>3</sup> Minimum grazing height listed in ( ) may be used when rotational grazing (days on a particular field is 14 days or less) is practiced and the minimum or higher recovery height to begin grazing is practiced. When determining height to terminate grazing use the average height of 80% or more of the desirable forage.

<sup>4</sup> Alfalfa, bermudagrass, old world bluestem, and sericea should be at least 8" tall prior to the first frost. Johnsongrass and NWSG should be at least 12" tall prior to the first frost. Providing other forages with a recovery period prior to frost is also beneficial to forage vigor.

**Table 2: Description of Body Condition Scoring (BCS) of Beef Cows**  
**(Ninety (90%)Percent of livestock will be a BCS of 5 or higher)**

<u>1</u>	<u>Severely emaciated. Bone structure of shoulder, ribs back, hooks and pins is sharp to the touch and easily visible. Little evidence of fat deposits or muscling.</u>
<u>2</u>	<u>Emaciated. Little evidence of fat deposition but some muscling in the hindquarters. The backbone feels sharp to the touch.</u>
<u>3</u>	<u>Very thin, no fat on ribs or brisket, and some muscle still visible. Backbone easily visible</u>
<u>4</u>	<u>Thin, with ribs easily visible but shoulders and hindquarters still showing fair muscling. Backbone visible.</u>
<u>5</u>	<u>Moderate to thin. Last two or three ribs can not be seen unless animal has been shrunk. Little evidence of fat in brisket, over ribs or around tailhead.</u>
<u>6</u>	<u>Good smooth appearance throughout. Some fat deposits in brisket and over tailhead. Ribs covered and back appears rounded</u>
<u>7</u>	<u>Very good flesh, brisket full. Fat cover is thick and spongy and patchiness is likely. Ribs very smooth.</u>
<u>8</u>	<u>Obese, back very square, brisket distended, heavy fat pockets around tailhead. Square appearance.</u>
<u>9</u>	<u>Rarely observed. Very obese. Animal's mobility may actually be impaired by excessive fat.</u>

**Table 3: Effect of Body Condition Score at Calving on Pregnancy Percentage on 90 day Breeding Season**

<u>Body Condition Score</u>	<u>Pregnancy Percentage</u>
<u>4</u>	<u>50</u>
<u>5</u>	<u>81</u>
<u>6</u>	<u>88</u>
<u>7</u>	<u>90</u>