

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

PRESCRIBED GRAZING

(Ac.)

CODE 528

DEFINITION

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

water will be supplied at all times during period of occupancy by managed livestock. Year round water availability is recommended for wildlife benefits.

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.

Adequate water facilities including storage, and recharge must be provided. Water budget for livestock and wildlife will be developed. Storage facilities (tank and troughs) at watering locations should be of adequate size to provide enough water in a 2-hour period for all animals grazing a given pasture. Guidelines as outlined in FOTG practice standard for Watering Facility (614) will be used in planning water budgets.

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.

Grazing prescription will be designed to meet habitat requirements of plant and wildlife species of concern. Examples would include those plant and animal species listed as threatened and endangered by state and Federal agencies, and/or species of local and state economic and social importance.

CONDITIONS WHERE PRACTICE APPLIES

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

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.

CRITERIA

General Criteria Applicable to All Purposes

Removal of herbage and/or browse 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.

Adequate quantity and quality drinking

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, playa areas).

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.

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

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.

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 to 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.

Shelter in the form of windbreaks, sheds, shade structures, and other protective features will be used where conditions warrant protecting 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.

Additional Criteria For Pasture And Or Hayland Used For Grazing

Fertilize to meet the needs of the plant and to meet the production objectives of the operator. Refer to Nutrient Management Standard (590) for further guidance.

Irrigation frequency and amount will be adjusted when soil and/or irrigation water is high in soluble salts depending on the specific situation.

Establish rate, duration, and frequency of irrigation on irrigated pastures that will be required to maintain soil moisture above 50 percent available water holding capacity.

Guidance will be provided so that the operator develops a balanced supply of growing forage during the period when it is needed.

Harvesting, either by grazing or cutting, will be controlled so enough residue and/or growing crop remains throughout the year to control water erosion and soil blowing. Harvesting during the dormant period will be limited so the above requirements are met. For maintenance of soil tilth the wind and water equations, in combination with the "Soil Conditioning Rating Indices for Major Crops in New Mexico" (Attachment 1, of Conservation Crop Rotation Standard will be used as the basis for residue amounts specified.

Clipping heights will not be less than the grazing heights for the production level desired, as shown in the Tables 1 & 2.

Allow pastures to grow to "minimum height at beginning of grazing season" as shown in Table 1 & 2 before beginning grazing. Remove livestock when grass is grazed to

height shown for the production level desired as shown in the above table.

Plan grazing systems so that irrigation water is applied as soon as feasible after livestock are removed from the pasture or grazing unit. Some systems may require more than one irrigation on a pasture before grazing again.

Match the period of rotation to the periods of irrigation and to required regrowth periods of the species in the pasture or grazing unit.

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

Additional Criteria for pastures where Brush Management is applied.

Prescribed Grazing Prescription will include the following deferment periods:

1. Deferment will be for the remainder of the growing season from the time of application and/or control. If application and/or control is done after August 15, the area will also receive a 90-day spring growing season rest the next year.
2. A high intensity (Short Duration or Cell) grazing system can be used in place of deferment criteria in this standard. The released forage species are to be managed for improved vigor and an upward range trend.
3. Chemical Control:
 - a. The area will be deferred for the time shown on approved label of the herbicide used, or longer as required by this standard or the Brush Management Standard.
 - b. Where chemical is applied by individual plant treatment after July 1, the area will be deferred the remainder of the growing season and deferred again 90 consecutive days during the growing season the next year.
 - c. 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. Deferment during the second growing season will be based on the physiological needs of the plant community. It is highly possible that deferment will be

needed the second growing season to allow desirable vegetation to respond to reduced competition from target vegetation.

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 plans 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.

Animal self medication; Grazing animals will select appropriate diverse or novel foods for self medication when available. Plan the grazing system to diversify forage and browse species.

Manage calving and lambing dates to optimize gestating animal nutrition in the last trimester of pregnancy and the first 2 or 3 months post partum.

Considerations for Managing pasture and/or hayland USED FOR GRAZING.

On new seedings, the best way to establish future grazing height is to take the 1st crop for hay. Cut at the desired grazing height. In many species, this will form a "stubble barrier" and will help prevent overgrazing.

Considerations For Grazed Forest

The intensity of grazing needs to be adjusted to allow for wildlife habitat, watershed protection, and timber production, with special emphasis being placed on protecting seeding and sapling stands.

Grazing by livestock can reduce danger of fire in young plantations. Grazing by livestock can be used as an alternative to fire and herbicide to control competition in favor of tree seedlings.

Rest plantations from grazing for a sufficient time period after timber is harvested to assure adequate reproduction or to prevent damage to planted trees.

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.
- Resource Inventory that identifies:
 - existing resource conditions and concerns
 - ecological site or forage suitability group
 - identifies 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.
- Forage Inventory of the expected forage quality, quantity and species in each management unit(s).
- Forage-Animal Balance developed for the grazing plan, which ensures forage produced or available meets forage demand of livestock and/or wildlife.
- Grazing Plan developed for livestock that identifies periods of grazing and/or browsing, deferment, rest, and other treatment activities for each management unit.
- 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.
- Monitoring plan developed with appropriate records to assist 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.

Organic producers: If this practice has the potential to effect land managed under the USDA standards for Organic production, then treatment alternatives must be included that meet standards for the National Organic Program (NOP):

<http://www.ams.usda.gov/AMSV1.0/nop>

Ultimately each Cooperator is responsible for selecting and implementing an alternative that meets management objectives, including adherence to NOP standards or other guidelines that may apply.

OPERATION AND MAINTENANCE

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

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

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.

Table 1 and 2 indicate grazing heights and regrowth intervals by species. Information in these tables is to be used for developing a plan for proper grazing and management.

Table 1
Minimum Grazing Heights in Inches

Species	At Start of Grazing Period ^{1/}	For Erosion Control or Maintenance ^{2/}	For Average Production ^{3/}	For High Production ^{4/}	Regrowth Interval ^{5/} (Days)
Alkali Sacaton	6	3	3	6	25-30
Blue panic	12	6	6	10	25-30
Bermudagrass	4	2	2	4	20-30
Bluestem, big	10	5	6	10	25-35
Bluestem, cane	8	4	4	8	25-30
Bluestem, sand	10	5	6	10	25-35
Bluestem, yellow	6	2	3	6	20-25
Bromegrass, smooth	5	3	4	6	25-30
Fescue, tall	5	2	4	6	20-25
Foxtail, creeping meadow	5	2	2	5	20-25
Indiangrass	10	5	8	10	25-35
Kliengrass	8	5	8	10	25-30
Lovegrass, Lehman's	4	2	3	5	25-30
Lovegrass, sand	7	4	5	8	25-30
Lovegrass, weeping	8	3	4	6	28-35
Orchardgrass	5	2	5	6	21-26
Reed canarygrass	6	3	6	10	25-30
Ryegrass, perennial	4	2	2	4	20-25
Sideoats grama	5	2	4	6	25-30
Small grain 6/	8	2	3	6	25-30
Sudans 6/	20	4	12	20	25-30
Switchgrass	10	5	8	10	25-35
Timothy	5	2	2	4	20-30
Vine-mesquite	4	2	2	4	25-30
Wheatgrass, crested	4	2	2	4	21-26
Wheatgrass, intermediate	6	4	4	6	25-30
Wheatgrass, pubescent	6	3	4	6	25-30

Wheatgrass, Siberian	4	2	2	4	21-26
Wheatgrass, tall	8	4	6	8	25-30
Wheatgrass, western	5	2	4	6	21-26
Wildrye, Russian	4	2	2	5	21-26

- 1/ These heights reflect the minimum at which grazing should commence at the start of the growing season or a new planting. Grazing earlier will result in limiting root growth which will weaken the plant and slow growth during the remainder of the season. For high production, these heights should be at least two inches above the heights shown in the High Production column. The same is true of Reed canarygrass, sideoats grama, and western wheatgrass under average production.
- 2/ These heights will allow adequate growth for maintenance of the plants and erosion control but in many species will provide very low forage production.
- 3/ These heights indicate the level at which the plant should be able to produce adequate forage under normal or "average" conditions. For some species, this is also the minimum for erosion control or maintenance.
- 4/ These heights reflect the level at which maximum forage production will be obtained when other sound management principles are followed.
- 5/ This assumes that adequate water is available, and soil fertilizing is not limiting.
- 6/ Although this is an annual plant and is not considered pasture under NRCS criteria, it is included in this table for guidance since so many operations contain this type of "pasture" on a regular basis.
- 7/ Leaf area, after grazing, should be adequate so plants can continue to manufacture food for new growth. The criteria in the above tables concerning height to be maintained will generally be adequate to provide enough photosynthetic surface for this purpose. If these heights are inadequate, criteria for local use will be altered to provide adequate leaf area. Table 2

PASTURE (IRRIGATED OR DRYLAND) Legumes

The following table indicates grazing heights and regrowth intervals by species. Information in this table is to be used for developing a plan for proper grazing and management.

Minimum Grazing Heights in Inches

Species	At Start of Regrowth Interval Period ^{1/}	For Erosion Control or Maintenance ^{2/}	For Average Production ^{3/}	For High Production ^{4/}	(Days) ^{5/}
Alfalfa	6	3	3	4	28-35
Clover, alsike	4	2	2	3	25-30
Clover, strawberry	4	3	3	4	25-30
Clover, sweet	Do not graze the first year				
(1st year)					
(2nd year)	8	3	4	8	-
Clover, white	4	2	2	4	15-25
Sainfoin	14	2	6	10	32-40
Milkvetch, cicer	6	3	3	4	30-35
Trefoil, birdsfoot	4	2	2	3	25-30
Vetch ^{6/}	6	3	3	6	-

- ^{1/} These heights reflect the minimum at which grazing should commence at the start of the growing season or a new planting. Grazing earlier will result in limiting root growth which will weaken the plant and slow growth during the remainder of the season. For high production, these heights should be at least two inches above the heights shown in the High Production column. The same is true of strawberry clover under average production.
- ^{2/} These heights will allow adequate growth for maintenance of the plants and erosion control but in many species will provide very low forage production.
- ^{3/} These heights indicate the level at which the plant should be able to produce adequate forage under normal or "average" conditions. For some species, this is also the minimum for erosion control or maintenance.
- ^{4/} These heights reflect the level at which maximum forage production will be obtained when other sound management principles are followed.
- ^{5/} This assumes that adequate water is available, and soil fertilizing is not limiting.
- ^{6/} Although this is an annual plant and is not considered pasture under NRCS criteria, it is included in this table for guidance since so many operations contain this type of "pasture" on a regular basis.
- ^{7/} Leaf area, after grazing, should be adequate so plants can continue to manufacture food for new growth. The criteria in the above tables concerning height to be maintained will generally be adequate to provide enough photosynthetic surface for this purpose. If these heights are inadequate, criteria for local use will be altered to provide adequate leaf area.

REFERENCES

Barnes, R.F., D.A. Miller, and C.J. Nelson. 1995. Forages, The Science of Grassland Agriculture, 5th 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. 5th edition. Prentice Hall, NJ.

Smith, D., R.J. Bula, and R.P. Walgenbach. 1986. Forage Management 5th ed. Kendall/Hunt Publ. Co. Dubuque, Iowa.

United States Department of Agriculture, Natural Resources Conservation Service. 1997. National Range and Pasture Handbook. Washington, DC.

Vallentine, J.F. 2001. Grazing Management. Academic Press, San Diego, CA.

Voisin, A. 1959. *Grass productivity*. Philosophical Library, New York.