NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

# PRESCRIBED GRAZING

(Acre)
CODE 528A

## DEFINITION

The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective.

## PURPOSES

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

* Improve or maintain the health and vigor of selected plant(s) and to maintain a stable and desired plant community.

* Provide or maintain food, cover and shelter for animals of concern.

* Improve or maintain animal health and productivity.

* Maintain or improve water quality and quantity.

* Reduce accelerated soil erosion and maintain or improve soil condition for sustainability of the resource.

## CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on all lands where grazing and/or browsing animals are managed including irrigated and nonirrigated pastureland.

## CRITERIA

### General Criteria Applicable For All The Purposes Stated Above.

Removal of herbage will be in accordance with production limitations, plant sensitivities and management goals using Sections I & II of the FOTG and other references as guidance.

Frequency of defoliations and season of grazing will be based on the rate and physiological conditions of plant growth.

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

Maintain enough vegetative cover to prevent accelerated soil erosion due to wind and water.

Application of this practice will manipulate the intensity, frequency, duration, and season of grazing to:

* Insure optimum water infiltration,

* Maintain or improve riparian and upland area vegetation,

* Protect stream banks from erosion,

* Manage for deposition of fecal material away from water bodies, and

* Promote ecological and economical stable plant communities on both upland and bottom land sites which meet landowner objectives.

### Additional Criteria For Improved Animal Health And Productivity.

Movement of animals will be in a manner to improve and/or maintain animal health and performance, and to reduce or prevent spread of disease, parasites, and contact with harmful insects.

Grazing should be applied in accordance with forage quality and quantity criteria that best meets the production requirements for the kind and/or class of animal.

### Additional Criteria For Water Quality.

Duration, intensity, frequency, and season of grazing in or near surface waters will be applied in such a manner

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

that the impacts to vegetative and water quality will be positive.

Duration, intensity, frequency, and season of grazing will be applied to enhance nutrient cycling by better manure distribution and increased rate of decomposition.

**Additional Criteria For Soil Erosion and Condition.**

Duration, intensity, frequency, and season of grazing shall be managed to minimize soil compaction or other detrimental effects.

Duration, intensity, frequency, and season of grazing shall be applied to sustain vegetative cover to minimize soil erosion.

**Types of Grazing Prescriptions:**

Grazing prescriptions should be designed to meet habitat and food requirements of the wildlife. The landowner should identify special habitat such as winter range, fawning, kidding and other special areas.

Deferred Grazing. Discontinuance of grazing by livestock on an area for a specified period of time during the growing season to promote plant reproduction, establishment of new plants, or restoration of vigor by old plants. Deferred grazing is required on all native or naturalized grazing lands following brush management, range seeding, prescribed fire, or wildfires that destroy vegetative cover.

Deferred-Rotation Grazing. Discontinuance of grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor. Two, but usually three or more, separate units are required. Control is usually insured by unit fencing, but may be obtained by herding.

Rest-Rotation Grazing. An intensive system of management whereby grazing is deferred on various parts of the range during succeeding years, allowing the deferred part complete rest for one year. Two or more units are required. Control by fencing is usually necessary on cattle range, but may be obtained by herding on sheep ranges.

Rotational Deferment. A grazing system in which one or more parts of the range are rested during the growing season each year; and rotational use of other segments of the range are not necessarily planned for.

Short duration. High Intensity grazing provides extended periods of rest during periods of slow plant growth and minimal rest periods during rapid growth. Implementation requires multiple grazing areas and close monitoring of the vegetative resources.

Supplemental feed may be necessary to meet the desired nutritional levels for animals of concern. Placement of supplemental feed should be considered to reduce negative impacts to soil, water, air, plant, and animal resources.

Use of natural or artificial shelter will be included as part of this practice when conditions demand.

Animal husbandry requirements which may affect the design of the grazing prescription will be considered.

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

**Pastureland**

Delay grazing newly planted fields until plants are well rooted and in the boot stage.

Clip, harrow, or drag pastures after each grazing to scatter droppings and maintain uniform growth.

Use fertilizers as needed to maintain optimum forage growth and quality. Use soil tests or tissue analysis to determine needs in absence of local experience trials. Make split applications of nitrogen at intervals during the growing season. Use phosphorus and sulfur as needed to maintain legumes.

Minimize soil compaction by not grazing when irrigating or when soil is wet.

Divide area into three or more fields and rotate grazing to permit regrowth and avoid grazing while irrigating. Refer to Table 1.

Daily rotation systems permit very intensive use of irrigated pasture without pasture deterioration when all management factors needed to maintain maximum pasture growth are properly applied. These factors include:

1. Observing the maximum grazing period, not exceeding the minimum grazing height, and use of an adequate regrowth period

2. Provision for keeping livestock off while irrigating or when pasture is wet,

3. Adequate, timely irrigation, and

4. Adequate use of fertilizer.

During periods of maximum growth, excess forage can be removed for hay or ensilage.

Minimum grazing height is the main item that provides erosion control. It also is the minimum needed to protect the growing point to keep the plant productive. A higher grazing height usually is required for maximum production to allow for faster regrowth. Maintaining root reserves is the main item that keeps a pasture productive and alive. This is accomplished by maintaining the minimum grazing height and allowing enough rest time for the leaves to produce enough food to store in the roots.

Overgrazing is on an individual plant by plant basis. Each time the grass plant is grazed, food from the roots is needed for regrowth. If animals are allowed to stay in the same pasture when the new regrowth is tall enough to get the second or additional bites, they will graze this tender regrowth because it is more palatable than the taller coarser plants. If continued, the root reserves can dwindle to the point that the plant dies, the stand thins or the pasture reverts to a short patchy grazed turf, sometimes with some big unpalatable wolf plants.

Rotations are used to limit the grazing period and provide the rest needed to control this problem. Rest period needed varies by species and growth rate but should be gaged by length of time needed to get to the bloom stage after pasture was rotated. Occasionally allowing the plant to seed improves vigor if needed. When a plant puts up seed heads, new leaf growth almost stops. Clipping the seed heads usually starts vigorous regrowth.

**Fertilization**

Nitrogen is the main growth stimulator, is water soluble and is easily leached. Phosphorus enhances palatability and seed production and is used with the rotation to help maintain the legume balance. Sulfur is needed on many of our soils. Fertilizer balance is important and the N to P205 ratio should be about 3:1 for most grass-legume mix pastures. Nitrogen is usually applied in split applications, especially on soils easily leached. Phosphorous is best utilized if applied in the fall.

**Irrigation water management**

Adjust frequency of irrigation that will maintain soil moisture above 50 percent available water capacity during the growing season. When practical, use the established frequency of irrigation during the entire grazing season in combination with livestock rotation to provide proper regrowth interval and avoid grazing wet pastures. Amounts of water applied at each irrigation should be adjusted to match consumptive use. (See local Irrigation Guide). Irrigation frequency and amount of water applied should be increased accordingly when soil and/or irrigation water is high in soluble salts.

**Irrigated pasture fertilization**

Apply minimum of 70 lbs. of $P_2O_5$ per acre per year when desirable legumes are present.

Apply 120 to 150 pounds of Nitrogen (N) per year, divided equally into 4 or 5 applications.

Apply after each grazing period in the rotation cycle.

Time of application: just prior to irrigation, or add to irrigation water.

Apply other plant nutrients if needed. Use animal manures as a source of nitrogen, and supplement with commercial fertilizer to supply annual requirements.

**Dryland pasture fertilization**

Apply a combination of N and $P_2O_5$ in the fall, just prior to first effective rainfall.

The minimum annual rate should be 30 to 40 lbs. of N and 30 to 40 lbs of $P_2O_5$.

The first year fertilizer is applied, these rates should be doubled.

On dryland pastures, fertilization shall be limited to areas where precipitation is 12 or more inches and soils are at least 20 inches in depth. Priority should be given

to the most productive soils. Apply fertilizer when soil moisture is adequate for nutrient uptake.

On dryland perennial pastures, grazing management must permit sufficient late season top growth to restore root reserves for the next season. Withhold grazing until seedlings are well established , may required more than one growing season.

Stocking rates vary with climate, soil, type of grass and/or legume, irrigation water quality and quantity, fertilizer use, and other management practices. Stocking rates for California rotation systems on irrigated pasture vary from 10 to 20 AUM/acre. Observations and experience should be used to determine need for adjustment.

**CONSIDERATIONS**

**Annual Rangeland**

There are some benefits to annual range ecosystems by developing a grazing prescription. The following items are examples.

Take grazing pressure off riparian areas during critical growth periods.

Reduce livestock trailing and grazing pressure around established long term watering developments, lakes and streams.

Reduce livestock browsing impact on key shrubs.

Manipulate key plant communities by regulating grazing pressure at critical phenological stages. Livestock impacts are by grazing and by creating improved seed bed conditions at optimal times to encourage or discourage targeted plant species.

Eroding areas will regain or improve their vegetative cover.

Easier to manage livestock (breeding, spraying, treating, etc.)

Reduce soil compacting during wet periods.

Avoid grazing of areas important to wildlife at critical period, re: waterfowl nesting, fawning.

Avoid grazing areas that have poisonous plants.

Deferred grazing is required on all native or naturalized grazing lands following brush management, range seeding, prescribed fire, or wildfires that destroy vegetative cover.

**Perennial Rangeland**

All livestock must be excluded from the grazing unit for the prescribed period of rest.

The rest period will allow seed set and maturation of the identified key plant species. The rest period will usually be in April, May and June; in higher elevations it may be May, June, and July. The rest period should define critical time periods that affect reproduction and growth of the target species.

Deferred grazing for range improvement should be planned only where enough desirable plants are present in the stand to repopulate the area in a reasonable time. More than one period of deferment may be necessary if adverse growing conditions do not produce the desired results in plant vigor and reproduction.

**Endangered Species Considerations**

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that during critical periods, such as spawning, eggs in gravels and rearing of young may preclude activities in the stream that may directly affect

the stream habitat during those periods. For example, there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

**Water Quantity**

The effects of this practice will vary with range sites, range site conditions, ground cover, and range trend. Areas with low percent ground cover will, with improved vegetation, have increased infiltration and less rapid runoff. The increase in infiltration is expected to increase soil moisture that would increase plant growth and transpiration (T). Soil compaction (bulk density) is diminished through the natural processes associated with increased plant growth. The increased plant growth will increase trapping of snow and give a better distribution of the snow over the land surface.

Care should be taken to avoid livestock trail development that would lead to gully development. Grazing distribution is generally improved, which distributes trampling and manure over a larger area.

**Water Quality**

There should be no detrimental effects on the quality of surface and ground water.

Increased vegetation slows runoff and acts as a sediment filter for sediments and sediment attached substances, uses more nutrients, and reduces raindrop splash.

Improved vegetative density will limit adverse runoff effects on surface or aquifer water quality. As vegetative cover increases, the filtering processes are enhanced, thus trapping more silt and nutrients as well as snow if climatic conditions for snow exist.

Planned grazing prescriptions normally reduce the time livestock spend in each pasture. Compacted layers of the soil tend to diminish because of the absence of the grazing animals. This decrease in bulk density increases infiltration, increases vegetation growth, slows runoff, and improves the nutrient and moisture filtering and trapping ability of the area.

Decreased runoff will reduce the rate of erosion and movement of sediment, dissolved and sediment-attached substances into downstream water courses. No increase in ground-water pollution hazard would be anticipated from the practice.

**Annual Grazing Lands**

All livestock must be excluded from the grazing unit for the prescribed period of rest. On sites depleted of cover to the extent that accelerated soil erosion is a hazard, the rest period will be for that portion of the growing season required to insure adequate RDM (residual dry matter) levels to prevent excessive erosion.

Periodic resting on sites will allow seed set and maturation of the identified key plants. The primary season for rest is late spring while soil moisture is adequate to promote regrowth. In dry regions, the primary rest period will be in early spring. Adequate RDM levels should be specified in the planning documents.

A rest period should be planned when inadequate RDM exists.

**Pasture and Hayland**

Consider use of pastureland, crop residues and hayland after growth in a grazing prescription with rangeland and other grazing resources.

Grazing schedules and irrigation schedules need to be carefully coordinated.

Adequate regrowth needs to occur before grazing the subsequent period.

Fertilizer needs should be assessed on economics and management of the stand.

Special grazing units may be needed for calving, lambing, and breeding.

Close grazing on hayland after growth will be detrimental to the stand. Spring grazing on hayland will reduce hay yields.

**Grazeable Woodland**

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 to tree seedlings.

Provide adequate livestock water.

Recently logged areas should be considered in determining forage potentials. Many of these areas will only provide useable forage before the tree canopy increases. Generally this transitory range forage resource cycle is good for a 10 year period.

Deerbrush (Ceanothus integerrimus) may cause animal sickness if grazed after mid September. It provides excellent browse during the summer months. Some grazeable woodlands receive significant seasonal use, i.e., wintering areas for deer, and should be considered when developing livestock grazing plans.

**Grazed Wildlife Land**

Livestock grazing can be used to control excessive vegetative growth or utilize forage in excess of wildlife needs. Livestock grazing can reduce fuel build-up and reduce risk of wildfire. Livestock grazing is often more acceptable in vegetation management than use of prescribed burning, herbicides or mechanical treatment. Providing an adequate number of pastures will provide flexibility in wildlife management and good control over the degree of grazing use by livestock.

**Planning**

Use Form SCS-ECS-414 to document plan schedule, key grazing areas, and key species and to record utilization by years. Use Form SCS-ECS-416 for browse species.

Form SCS-ECS-005 should be used to determine present spacing of woodland overstory. Appropriate ZIG-ZAG transects should be taken to determine existing tree spacing. Using this information with the woodland information stick, adjustments in the woodland overstory can be determined to accommodate increased forage production (add 1 to 2 feet to the suggested D+ spacing guide for the appropriate timber type).

Other formats may be substituted for SCS-ECS-414,416 and 005 providing information documented is consistent with that required on these respective forms.

On slopes over 30 percent, allowable use will be decreased by 5 to 10 percent for each 10 percent increase in slope. On critical soils such as granitics, adjust the proper use factor as needed to protect the basic soil-vegetative resource.

Resource inventories including wildlife, watershed, and riparian zones, need to be taken in order to develop land use alternatives that will conserve the resource base.

One or more of the following facilitating practices may be needed to obtain the planned objective. See practice standards and specifications in FOTG or appropriate handbook for the following practices:

1. FENCE-382

2. Livestock water distribution and development (NRH Section 803)

3. ANIMAL TRAILS and WALKWAYS-575

4. Location of salt, minerals and supplemental feeding (NRH Section 803)

5. Herding (NRH Section 803)

**PLANS AND SPECIFICATIONS**

A Prescribed Grazing schedule will be prepared for all fields and pastures incorporating any additional feed supplementation for the operating unit or portion of an operating unit being addressed. Grazing schedules will be recorded in a manner that is readily understood and useable by the decision-maker in their daily operations. The manner of documentation will depend upon the size and complexity of the operating unit and the details required for a grazing prescription.

A prescribed grazing schedule will include the following information:

1. Documentation of the expected forage quantity and quality for each management unit(s), i.e., pastures during the grazing season.

2. Documentation of the number of domestic livestock by kinds and class, and the number of grazing/browsing wildlife of concern anticipated within the management unit(s).

3. Documentation of nutritional surpluses and deficiencies from the forage resources for each

kind and class of livestock and grazing/browsing wildlife of concern in the management unit(s).

4. Supplemental feed requirements needed to meet the desired nutritional level for the kind and class of livestock and grazing/browsing wildlife of concern in the management unit(s).

5. Development of a planned grazing schedule for livestock that identifies periods of grazing, resting, and other treatment activities for each management unit(s).

6. A contingency plan that details potential problems, i.e., drought, and a guide for adjusting the grazing prescription to insure resource management and economic feasibility without resource degradation will be developed.

**Woodlands Dominated by Annual Forage Plants**

Adequate residues shall be left on the land for erosion control and sustained forage production.

1. 1000 to 1200 pounds RDM for slopes less than 30 percent and 1200 to 1500 pounds RDM for slopes greater than 30 percent will be adequate.

These RDM levels correspond to an average two inch stubble and 3 inch stubble height respectively. RDM levels can be determined by using the procedure as outlined in the National Range Handbook. The landscape will have a patchy appearance at these levels.

2. Grazing should be delayed when the soil is wet (at or above field capacity) to avoid compaction on soils where compaction can be a problem.

3. Eliminate grazing for a sufficient number of years after timber is harvested to assure adequate reproduction or to prevent damage to planted trees. (See USE EXCLUSION - 472.)

**Woodlands Dominated by Perennial Forage**

At least 50 percent of the key forage species produces mature seed, or

Where the key forage species are browse plants at least 40 percent of the current leader or twig growth will be left at the end of the grazing season. (See Section 1003 NRH)

Eliminate grazing for a sufficient number of years after timber is harvested to assure adequate reproduction or to prevent damage to planted trees.

**OPERATION AND MAINTENANCE**

Operation: The manager will apply Prescribed Grazing on a continuing basis, making adjustments as needed to insure that the concept and objectives of its application are met.

Maintenance: The Prescribed Grazing schedule will specify when evaluations of the current feed and forage supply should be made. If an imbalance is determined the prescription should be adjusted accordingly or other harvesting techniques applied.

Table 1. - Guide for planning proper grazing and irrigation water management.

PASTURELAND (IRRIGATED)

| Grasses | Plant Height for Grazing (in.) Interval Max-imum | Min-imum | Minimum Regrowth Rooting Time (days) | Depth (ft) | Potential Salt Tolerance |
|---|---|---|---|---|---|
| Bermudagrass (improved strains) | 8 | 3 | 15-20 | 3 | High |
| Reed Canary Grass | 12 | 6 | 25-30 | 4 | Medium |
| Tall Fescue | 8 | 4 | 20-25 | 3 | High Medium |
| Creeping Meadow Foxtail | 6 | 3 | 20-25 | 3 | High Medium |
| Hardinggrass | 8 | 3 | 30-35 | 5 | Medium |
| Perla Koleagrass | 8 | 3 | 30-35 | 5 | Medium |
| Intermediate Wheatgrass | 8 | 3 | 30-35 | 4-5 | Medium |
| Tall Wheatgrass | 10 | 6 | 30-35 | 5+ | High |
| Orchardgrass | 8 | 3 | 25-30 | 3 | Low |
| Pubescent Wheatgrass | 6 | 3 | 25-30 | 3 | Medium |
| Annual Grasses | 6 | 3 | 20-25 | 1-2 | Variable |
| Legumes | | | | | |
| Alfalfa | 10 | 4 | 30-35 | 5+ | Low |
| Alsike Clover | 8 | 3 | 25-30 | 2 | Low-Medium |
| Ladino Clover | 8 | 3 | 20-25 | 2 | Low-Medium |
| Trefoil - Birdsfoot | 8 | 3 | 25-30 | 3 | Medium |
| Trefoil - Narrowleaf | 5 | 2 | 25-30 | 3 | Medium |
| Annual Legumes | 4-6 | 2 | 20-25 | 1-2 | Variable |

PASTURELAND (NON-IRRIGATED) - ANNUALS - Follow specification for Annual Range

PASTURELAND (NON-IRRIGATED) - PERENNIALS - After plants are established, use the following as a guide for proper grazing. At the end of the grazing season, about 30 percent of the seed heads should remain.

| Grasses | | Heights to begin Season's Grazing (inches) | Minimum Grazing Height (inches) |
|---|---|---|---|
| Hardinggrass, Perlagrass | | 6-8 | 4 |
| Perennial Veldtgrass | | 8-10 | 6 |
| Wheatgrasses, | Crested | 6 | 3 |
| | Intermediate | 8-10 | 6 |
| | Pubescent | 8-10 | 4 |
| | Siberian | 6 | 3 |
| | Tall | 10-12 | 7 |