

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

PRESCRIBED GRAZING

(Ac.)

CODE 528

DEFINITION

Managing the controlled harvest of vegetation with grazing animals.

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 plant communities.
- Improve or maintain quantity and quality of forage for livestock health and productivity.
- Improve or maintain water quality and quantity.
- 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.
- Promote economic stability through grazing land sustainability.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where grazing animals are managed.

CRITERIA

General Criteria Applicable for all Purposes

Removal of herbage will be in accordance with site production limitations, fertility levels, rate of plant growth, and the physiological needs of forage plants. Table 1 provides guidelines for Monocultures. For grazed rangeland, native pasture and grazed forest, percent removal of key species will be the standard.

Appendix 1, 2, 3 and Table 1 provide specific

guidelines.

Planning and application will be in accordance with the carrying capacity, and will prescribe the rest period, intensity, frequency, duration and season of grazing to promote ecologically and economically stable plant communities that meet the land manager's objectives, the grazing animals' needs and the resource needs.

Frequency of defoliations and season of grazing will be based on the rate and physiological condition of plant growth. Climatic conditions, management, soil fertility and competition are among factors determining forage growth rate. During periods of low moisture or periods of plant stress, frequency of defoliations should decrease. During periods of adequate moisture or fast, vigorous plant growth, defoliations can be more frequent.

Flexibility must be used when managing the kind of animal, animal number, grazing distribution, length of grazing periods, and timing of use to provide sufficient deferment from grazing during the growing period. Protect soil, water, air, plant, and animal resources when locating livestock feeding, handling, and watering facilities.

Manage grazing animals to maintain adequate vegetative cover on sensitive areas (i.e. riparian, wetland, habitats of concern, dunes, karst areas, etc.). Continuous grazing will not be planned on management units where sensitive areas occur.

Continuous grazing is acceptable under the following conditions:

Native Grasses

- When all Range Health Attribute Indicators meet or exceed slight to moderate, and
- Concentrations or sacrifice areas do not

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exceed 10 percent of the grazing unit and are not in sensitive areas.

Pastureland

- When Pasture Condition Score exceeds 30, and
- There are no other resource concerns such as streambank, gully, sheet, or rill erosion.

For the purposes of this standard, the term “browsing” may be used synonymously for grazing.

At least one key grazing area with one or more key forage species will be established for each management unit or for a group of management units with similar topography, soils, grazing duration, and season(s) of use.

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

Plant health and productivity will be managed by managing the extent of plant removal by the livestock. Duration, frequency, and intensity of grazing will be based on desired plant health and expected productivity of key forage species to meet management unit objectives.

The average stocking rate over the growing season will not exceed the productive capacity of the forages in the system.

Adjust grazing periods and/or stocking rates to meet the desired objectives for the plant communities and the associated resources, including the grazing animal.

Schedule livestock movements based on rate of plant growth, available forage, and utilization, not calendar dates, when using multi-pasture systems.

Periodic deferment from grazing or a complete rest for a year or more will be applied as needed to maintain or restore the desired plant community following episodic events, such as wildfire or severe drought. Rest or defer areas for a period of time to ensure the success of prescribed fire, brush control, seeding or other conservation practices. See **Appendix 2** for appropriate deferment periods.

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

Plan grazing duration, frequency, and intensity to match forage quantity and quality with goals of the livestock producer and in accordance with production requirements for the kind and class of animal to be grazed.

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

Stock water will be provided for each grazing unit based on the anticipated peak animal demands for the grazing period. Refer to the Oklahoma NRCS Practice Standard and Specification for Watering Facility (614).

Additional Criteria to Improve or Maintain Water Quality and Quantity

Maintain adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation.

Minimize concentrated livestock areas through fencing, water point placement, supplemental feed placement, and shade or cover manipulation to enhance nutrient distribution and improve or maintain ground cover.

Manage for deposition of fecal material away from sensitive water bodies.

Additional Criteria for Soil Erosion and Condition

Maintain adequate ground cover, litter, and canopy to maintain or improve infiltration and soil condition.

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

Provisions should be made for a sacrifice area in the event of extended wet or dry periods. Treatment of these areas may require an extended rest period (refer to Appendix 2), need re-establishment if damage to plants is too severe (refer to the Oklahoma NRCS Practice Standards and Specifications for Range Planting (550) or Pasture and Hay Planting (512)), require actions to break up compaction (refer to the Oklahoma NRCS Practice Standard and Specification for Grazing Land Mechanical

Treatment (548)), and/or may need weed control (refer to the Oklahoma NRCS Practice Standard and Specification for Pest Management (595)).

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

Prescribed grazing is a tool that can be used to maintain or create wildlife habitat. Strategic timing and intensity can diversify plant communities, preserve nesting habitat and improve browse.

In the goals and objectives of the grazing plan, specify the species of concern and the habitat component(s) to be managed.

Manage duration, frequency, and intensity of grazing to produce diverse plant communities with appropriate plant height, structure, and density for the desired wildlife habitat.

Use short-term severe grazing to create areas of low successional plant species that are needed for habitat of upland species. This tool can be combined with prescribed burning (refer to the Oklahoma NRCS Practice Standard and Specification for Prescribed Burning (338)) to accomplish the wildlife objectives. Refer to the Oklahoma NRCS Wildlife Management Guides and the Oklahoma NRCS Practice Standard and Specification for Upland Wildlife Habitat Management (645) for additional guidance on the needed plant community.

Provide deferment from grazing on key habitat areas during critical nesting/fawning periods.

Refer to the Oklahoma NRCS Practice Standards and Specifications for Upland Wildlife Habitat Management (645) and Wetland Wildlife Habitat Management (644) for additional guidance on habitat management.

Additional Criteria to Promote Economic Stability through Grazing Land Sustainability

Evaluate the economics of the forage system and associated infrastructure.

Develop a grazing plan that provides for an adequate quantity and quality of forage for as much of the year as possible to minimize supplemental feed cost.

Develop a contingency plan (supplying supplemental feed, de-stocking, using reserve pastures, etc.) to ensure resource management

and economic feasibility without resource degradation.

Plan grazing to reduce the loss of livestock from toxic and poisonous plants.

CONSIDERATIONS

Duration and intensity of grazing is a function of the stock density. As stock density increases, the intensity of grazing is greater and the duration of grazing will generally be shorter to compensate. The inverse is true for lower stock densities. In rotational and management intensive systems the duration of grazing is directed by the relative growth rate of the forages in the fields that will be grazed next.

Supplemental feed and/or mineral requirements should be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing livestock. Forage and/or fecal testing from reputable laboratories are reliable tools to determine these considerations.

Grazing plans that include rotations between two or more management units provide flexibility in managing duration, frequency, and location of grazing. Management flexibility increases as the number of management units increase.

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

When multiple pastures are used and where practical, start the grazing sequence in a different management unit each growing season.

When weeds are a significant problem, prescribed grazing should be implemented in conjunction with pest management to protect desired plant communities.

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

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

When multiple species are grazed together, the nutritional needs of all species of concern

should be accommodated. Moreover, the management should favor the desired plant community that meets the objectives of the client and the needs of the land.

When the client's objective is to maintain a Native Pasture setting, caution should be given when considering extended rest periods to prevent accelerated re-establishment of woody species unless some type of brush management is planned.

When grazed forest has a canopy of 40 to 50 percent, no appreciable amount of grazing can be expected. Managed thinning of forest stands will extend forage production and improve tree growth.

Full season grazing needs can be met by utilizing a mix of warm season and cool season forages, stockpiling forages, or utilizing annually seeded forage crops.

DIFFERENCES BETWEEN RANGE MANAGEMENT AND PASTURE MANAGEMENT

Range is generally managed for many species of plants for multiple benefits. Pasture is the management of a few species for specific objectives.

Range is managed, maintained and improved through the use of tools such as prescribed fire, chemicals, mechanical means, and biological agents. The same principles are applied to pastureland, but they are generally more intensive than to range. Pasture is generally a monoculture or a limited variety of exotic plants or culturally managed native single species. Cultural practices such as fertilizer, weed control, irrigation, routine seeding and renovation are needed to maintain pasture communities.

PLANS AND SPECIFICATIONS

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

Prepare a prescribed grazing plan for all management units where grazing will occur according to Oklahoma NRCS Practice Standards and Specifications.

Guidelines for developing a prescribed grazing plan include:

1. Goals and Objectives clearly stated.
2. Resource Inventory (i.e. Resource condition, existing structures, facilities, soils).
3. Forage Inventory of the expected forage quality, quantity and species of forage in each management unit(s) during the grazing period.
4. Forage-Animal Balance developed as a sustainable grazing plan for the management unit(s), which insures forage produced or available meets forage demand of livestock and/or wildlife of concern.
5. Grazing Plan developed for livestock that identifies periods of grazing, deferment/rest, and other treatment activities for each management unit.
6. Contingency plan developed that details potential problems (i.e., severe drought, flooding) and serves as a guide for adjusting the grazing prescription to ensure resource management and economic feasibility without resource degradation. These may include reduction in herd size, rotate livestock at a slower than normal pace, or place livestock in reserve pastures.
7. Monitoring plan developed with appropriate records to assess whether the grazing strategy is meeting objectives. Identify the key areas and key plants that the manager should evaluate in making grazing management decisions.

OPERATION AND MAINTENANCE

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

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

Maintenance: All facilitating practices (i.e. Fence, Watering Facilities, Pest Management) that are needed to effect adequate grazing distribution as planned by this practice standard will be maintained in good working order.

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REVIEWERS OF THIS AND PREVIOUS VERSIONS

Oklahoma State University, Dept. of Agronomy.
The Samuel Roberts Noble Foundation Inc.

ARS, Southern Plains Research Station
NRCS Technical Committees
Oklahoma Dept. of Forestry Services
U. S. Forest Service
U. S. Fish and Wildlife Service
Oklahoma Conservation Commission
Oklahoma Department of Agriculture

NATURAL RESOURCES CONSERVATION SERVICE

PRESCRIBED GRAZING

Appendix 1

(Acre)

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Acceptable Grazing Use On Rangeland, Native Pasture, Grazed Forestland, Grazed Wildlifeland And Pastureland

TYPES OF PRESCRIBED GRAZING

There are several general types of grazing management methods. These include:

1. Decision Deferment - no planned sequence, rested when the manager determines need.
2. (IES) Intensive Early Stocking (sometimes called Double Stocking) - begin grazing near green-up and continue until about July 15 with stockers. Twice the numbers may be stocked for the grazing season. Adjustments must be planned for when dry conditions persist.
3. Non-intensive - one, two, or three herds rotated through four pastures or less. Generally, grazing periods are longer than rest periods. However, these can be successfully done with rest periods longer than graze periods as a one-herd system.
4. High Intensity-Low Frequency - one herd, grazing five or more pastures where grazing periods are longer than three weeks and rest periods are more than four months.
5. Management Intensive Grazing - usually one herd of animals grazing 8 or more pastures with grazing periods one week or less, with rest periods no more than 60 days. This is also called short duration, high density, rapid rotation and cell grazing.
6. Season Long - grazing animals from green-up until early fall or frost.
7. Dormant Season - grazing animals during the plants' dormant or non-growth period.
8. Continuous – grazing animals are always in the grazing unit.

See the National Range and Pasture Handbook for examples of various prescribed grazing sequences.

DETERMINING UTILIZATION DEGREE OF USE ON RANGELAND, NATIVE PASTURE, GRAZED FORESTLAND, AND GRAZED WILDLIFELAND

Key grazing areas shall be selected using the following criteria:

- They must be selected for each management unit or group of management units that have similar topography, soils, grazing duration, and season(s) of use.
- They will normally produce or have the potential to produce a significant percentage of the forage in a management unit.
- They will be on 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 the key grazing area, at least for that grazing season.

Key species shall be selected using the following criteria:

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- Select the highest successional preferred plant(s) as the key plant with enough of the key plants to manage. This usually comprises approximately 15 percent or more of the composition by weight.
- 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 as long as the vegetative community is adequate to protect the soil from erosion.
- 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.
- The designated key plants on which degree of use is based will need to be changed as vegetative changes occur in the plant composition.

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

- With less intensive grazing management during the growing season, degree of use on herbaceous plants shall be no more than 50 percent by weight of the current year's growth by the end of the grazing season.
- When grazing is limited to the dormant season, degree of use shall be no more than 60 percent by weight of the current year's growth.
- When a short duration type of prescribed grazing sequence is used which provides appropriate graze/rest periods for the key plants, the degree of use will be in accordance with the objectives specified for the individual situation. Degree of use may vary according to time, stage of growth, physiological condition, and climatic conditions prevalent during the

grazing cycle. The overall degree of use at the end of the grazing season will not exceed 60% of the total yearly production and will leave sufficient plant residues to favorably impact site hydrology.

- Degree of use on browse plants will be determined on the basis of current year's growth within reach of the animals. Degree of use of the key species during the growing season will not exceed 50 percent by weight of the current year's growth of available twigs and leaves. During the dormant season, degree of use of key species 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.
- When the primary use of the land is for wildlife, less than 50 percent use by livestock may be specified to enhance wildlife habitat.
- On eroding or critical sites, on riparian areas or wetlands, or where rapid range recovery is needed, less than 50 percent use by livestock should be specified to promote vegetative cover. 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.
- Use the Oklahoma NRCS Wildlife Management Guides for residual nesting height needs for the species of concern.

Federal Endangered /Threatened Species

When these species occur on the management unit, grazing should be planned to have no effect on the species. Grazing prescriptions that have any effect, either adverse or beneficial require consultation with and concurrence of the U.S. Fish and Wildlife Service. Landowners must request in writing for NRCS to initiate consultation.

DEGREE OF USE ON PASTURELAND

The designated forage plants will not be grazed closer than the minimum grazing

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heights as established in Table 1. Grazing use should not be initiated until the designated forages have reached the minimum heights shown in Table 1. These minimum heights should also be attained prior to the first killing frost in order to maintain the health and vigor of the designated forage plants.

Pastures with multiple forage plants should have degree of use determined based on season of use and desired plant community composition.

Refer to the Oklahoma NRCS Practice Standards and Specifications for Nutrient Management (590) and Pest Management (595) for additional information on fertilizing and weed control. For irrigated pastureland, refer to the Oklahoma NRCS Practice Standard and Specification for Irrigation Water Management (449) for timing and amounts of water.

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

- To allow for 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.

DEGREE OF USE ON 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 Soil Loss Prediction Technology. Refer to the Oklahoma NRCS Practice Standards and Specifications for Nutrient Management (590) and Pest Management (595) for fertilizing and pest management recommendations.

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 dhuririn, which releases a poisonous substance known as prussic acid or hydrocyanic acid (HCN) upon breakdown. Growth after dry, hot or cold 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.

NATURAL RESOURCES CONSERVATION SERVICE

PRESCRIBED GRAZING

Appendix 2

(Acre)

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Resting Or Deferring Grazing Land For Specific Objectives

GENERAL

In 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.

Grazing must be excluded for a long enough period 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. Refer to Table 1 for recovery and rest periods.

The starting date for the rest or deferment periods should coincide with the beginning of a major growth period. Rest or deferment should continue until the plants to be favored have matured a seed crop or have reached a grazeable height. See Table 1 for minimum use heights.

Perennial Warm Season Plants

- To improve poor vigor and produce seed: Full season (April 1 – Nov. 15)
- For seed production where vigor is good: Spring (April 1 – July 30) or Fall (Aug. 1 – Nov. 15)

Perennial Cool Season Plants

- To improve poor vigor: Full season (Sept. 1 – June 1)
- For seed production only where vigor is good: Spring (Feb 15 – June 1)

DEFERRING GRAZING ON RANGELAND TO IMPROVE RANGELAND SIMILARITY INDEX AND 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 plants composing the Historic Plant Community from the Ecological Site Description on rangeland comprise less than 20 percent of the total composition.
- B. Rangeland similarity indexes of 26 to 50 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 51 to 100 percent, or a forage value rating of high will receive a minimum of 90 consecutive days of deferment during the growing season every 4 years.

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

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DEFERRED GRAZING FOLLOWING CONTROL OF PEST PLANTS

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 deferment criteria:

A. Range/Native Plant Community

Brush Priority from Brush Management (314) Standard	Range Health Indicators	Required Deferment
High	Annual production or erosion categories: extreme or extreme to moderate	Time of treatment until frost.
Medium	Same as above	60-90 days
Low	Same as above	30-60 days
High	Annual production or erosion categories: moderate or slight to moderate or none to slight	60-90 days
Medium	Same as above	30-60
Low	Same as above	None

B. Pastureland

Brush Priority from Brush Management (314) Standard	Pasture Condition Score (PCS)	Required Deferment
High	PCS 1 or 2 for cover, vigor, or erosion	60 days
Medium	Same as above	30 days
Low	Same as above	none
High	PCS \geq 3 for cover, vigor, or erosion	30
Medium	Same as above	None
Low	Same as above	None

C. Additional Criteria:

On pastureland, when herbaceous plants are treated, defer from the time of treatment until plants reach minimum grazing heights listed in **Table 1**.

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 physiological 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.

When plants such as broom snakeweed are chemically treated during the October through December period, the treated area will be deferred the next full growing season.

Where chemical control is applied after August 15th, such as basal application, the area will receive a deferment for the remainder of the growing season as well as 90 consecutive days during the spring of the succeeding year.

Mechanical Control

Rootplowing

The area will be deferred the remainder of the growing season starting when the seed is planted. 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 a stand develops in the seeded area.

All Other Mechanical Methods

Apply the same treatment as (B) above under Chemical Treatment for pastureland.

SEEDED AREAS

All seeded or planted areas must be rested or deferred until the plants are well established. Criteria for establishment is contained in the Oklahoma NRCS Practice Standards and Specifications for Range Planting (550) and Pasture and Hay Planting (512).

For rangeland, this will be the first growing season following seeding and in many instances the second growing season. Further deferment

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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 so that they will not be damaged.

For pastureland, graze when plants reach minimum "plant height to start grazing" listed in **Table 1** of this standard, as long as utilization heights and management insure establishment. Longer rest should be given if needed. Flash grazing can be used to control weeds. Old world bluestems planted in wheat can be established by grazing out the wheat, then resting the grass until established.

WILDLIFE BENEFIT

To favor middle and late summer forage plants, defer grazing from spring through late summer.

To favor late winter forage plants, defer grazing from early fall through winter or until the occurrence of spring rains and new growth.

When browse plants and perennial forbs are in low vigor, defer grazing for a full growing season and thereafter as needed.

For ground nesting birds, defer grazing through the fall and winter to leave the previous year's residual grass cover.

When pheasant and waterfowl are important, defer grazing in playa basins during summer and fall to favor seed producing grasses and forbs.

HERBACEOUS INFESTED GRAZING LAND

In controlled situations, concentrated grazing and browsing can be used for short periods during winter and early spring to control herbaceous weeds. A deferment is then needed until the desired recovery of the desired species is achieved. Utilizing other animals such as sheep or goats can also reduce broadleaf plants. Refer to Appendix 3 for use of goats to control pest plants.

TO DEVELOP A FORAGE RESERVE OR BUILD FUEL LOAD

Defer for 90 consecutive days prior to frost or for a full growing season in western portions of the state.

FOLLOWING WILDFIRES, INSECT DAMAGE, SEVERE DROUGHT OR SIMILAR DAMAGE

Rest or defer until the vegetation has made adequate recovery during a period of favorable growing conditions.

FOLLOWING A PRESCRIBED BURN

Grazing management must be designed to accomplish the objective. Refer to guidance found in Part A., Deferred Grazing Following Control of Pest Plants under Chemical Control. The deferment period must be during the growing season of the key plants. 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.

Prescribed Burning and Prescribed Grazing used as companion practices, such as patch burning or rotational burning, is limited to those portions of the state receiving more than 28" of rainfall. To implement patch burning, burn 1/4 to 1/3 of the grazing unit each year. The forage inventory will reflect the entire grazing unit not just the burned area, and the stocking rate will be based on the entire unit. It is assumed that by rotating the burn areas, each portion of the field burned will receive some deferment in following years when other portions are burned.

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.

Exclude goats and sheep from pine plantings until trees are 8 feet tall. Exclude hogs from all plantings or natural reproduction of loblolly and shortleaf pine.

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.

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PASTURELAND

On pastureland that is not being intensively managed, (no fertilizer or weed control), and the plant vigor is low, but has adequate ground cover to prevent erosion, apply the same treatment as (B) above under Chemical Treatment for pastureland. Where the vigor is good, the area will be deferred according to the criteria in Table 1.

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.

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

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

GRAZING RIPARIAN AREAS

Riparian areas should be managed either by controlled access, by developing off-site water points, by herding techniques, or through grazing management that provides enough rest period to allow establishment and/or maintenance of the vegetation. Intensive Early Stocking or rotational grazing can meet this need. Dormant season grazing can meet this need as long as livestock do not break down banks and utilization heights are proper.

The following table provides basic guidelines for deferment based on range health indicators:

Range Health Indicators	Required Deferment
Annual production or erosion categories: moderate or moderate to extreme or extreme	30–60 days
Annual production or erosion categories: slight to moderate or none to slight	15-30 days or at a time when plant height reaches minimum “plant height to start grazing” from Table 1

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NATURAL RESOURCES CONSERVATION SERVICE

PRESCRIBED GRAZING

Appendix 3

(Acre)

Code 528

Plant Control With Goats

GENERAL SPECIFICATIONS

Goats may be used to reduce species such as oaks, Sericea lespedeza, blackberries, sumac, winged elm, greenbrier, kudzu, and other species that goats will eat. Goats may be used as initial treatment, or as a follow-up treatment to chaining, dozing, rollerchopping, prescribed burning, or shredding. Some success has been observed with eastern redcedar control. If the brush is too tall for the goats, they will eat out the understory, leaving no forage for grazing.

The past browsing experience of the goats will influence their choice of forages. If the targeted species is a novel forage, there may be a conditioning period before the goats will consume the desired forage. Goats that have prior experience will more readily begin browsing the targeted plant. Goats will also eat grasses and desirable forbs. Therefore, a rest-period is needed to achieve recovery of the desired plant community.

Record the objectives, which will be for plant reduction or sustainability. The resource inventory shall record the canopy of the targeted species. The forage inventory should reflect the initial forage-animal balance.

CONTINGENCY PLAN

The grazing plans should also contain a contingency plan to adjust the stocking rates. This would include provisions for the goats during the "off season" when deciduous forage is not available.

MONITORING

Develop appropriate records to measure progress toward goals. This could consist of

canopy counts, goat days per acre, or other measures that will provide a trend analysis.

CONSIDERATIONS

The client may not want to eliminate the targeted plant from the pasture, particularly if goats are an economically beneficial enterprise. If the objectives of the goating are to browse at an intensity that will maintain the species for goats, then plan accordingly.

Removal of some woody species may adversely impact wildlife species. If wildlife is a consideration, the objective of goating should be to maintain the needed amount of brush for wildlife.

The following grazing plans are available to be used with goats to manage problem plants:

Plant Reduction

1. Priority Pasture Method

- Knock the target plants down to the goats' browsing level using mechanical, fire or other means if needed.
- Use two or more pastures (five preferred), designating one as the priority pasture. Use high density grazing that will begin when the leaf of the target brush species is one half to two thirds full size in the spring. Use enough goats to achieve 80% defoliation within 7 to 14 days in the priority pasture. A suggested starting stocking rate would be to stock at 1 goat per acre in the priority pasture for each 1-3 percent of canopy cover. Rotate the goats through the remaining pastures to maintain nutrition until the priority pasture plants have regrown to about half to two-thirds full size. This should take about 25-35 days. Pull the goats out of

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the rotation and put them back into the target pasture, again achieving an 80 percent defoliation.

- Repeat this process until the desired level of reduction has been achieved. Depending upon brush species and density, it may take three years to effect a favorable change.
- Once the reduction has been achieved in the priority pasture, then another pasture can be designated as a priority pasture and the process applied accordingly.

2. Thirty (30) days in and 30 Days Out or Two-Pasture Switchback Method

The most effective control occurs when new leaves and twigs are browsed in the initial stage of growth. Stock with enough goats to obtain at least 65 percent defoliation in approximately 30 days. After defoliation, rest the pasture for approximately 30 days. This system is a 30-day in and 30-day out grazing system with goats that results in at least 3 months of rest each growing season. Alternate the starting pasture each year. A minimum of 3 years of goating is generally needed to obtain desired control. Calculate stocking rate the same as the Priority Pasture method.

Sustainability

Some client objectives are to manage woody plants, including sericea lespedeza for sustained use. Grazing strategies are different than for plant reduction. There is little precedence for managing woody plants for sustainability in Oklahoma. Therefore, the following guidelines are to be used along with monitoring for self-evaluation and adjustment:

1. Multi-pasture scenario

Utilize one herd of goats in three or more pastures, five or more being preferred. Introduce the goats in the early spring. Defoliate the key species of plants to about 25% of current growth, and then rotate to the next pasture. Set the rest period so that the woody plants are not defoliated any more than twice per growing season. Select a suggested starting stocking rate of 0.25 goats for each one percent of woody cover unless a forage inventory - animal balance analysis suggests a different amount. Monitor the re-growth and goat performance. If excess use is being observed, adjust stocking rate accordingly.

2. Thirty (30) days in and 30 Days Out or Two-Pasture Switchback Method

Stock with enough goats to obtain about a 20 percent defoliation in approximately 30 days. After defoliation, rest the pasture for approximately 30 days. This system is a 30-day in and 30-day out grazing system with goats resulting in at least 3 months of rest each growing season. Alternate the starting pasture each year. Calculate the stocking rate as in the multi-pasture scenario.

3. One pasture system

Goats are introduced into the pasture only once per growing season for no longer than a 30 day grazing period. Defoliation should be targeted for 50 percent.

TABLE 1. Minimum residual height in inches and approximate recovery period.

Species	Plant Height to start grazing <u>1/</u> (in)	Average height for continuous use (in) <u>1/</u>	Average height for rotational use <u>1/</u> (in)	Approximate recovery or rest period <u>2/</u> (days)
GRASSES – Monocultures <u>3/</u>				
bahiagrass	5	3	2	20-28
bermudagrass	4	3	2	18-28
big bluestem	8	6	4	25-40
bluestems, Introduced, old world, or yellow	4	4	2	25-35
Buffalograss	4	3	2	25 - 35
creeping foxtail	6	4	3	28-32
dallisgrass	5	3	2	15-25
eastern gamagrass	12	10	8	28-45
fescue	6	4	3	21-30
hybrid wheatgrass	6	4	3	28-32
Indiangrass	8	6	4	28-40
Johnsongrass	20	10	5	21-30
'Luna' & 'Manska' pubescent wheatgrass	6	4	3	25
meadow bromegrass	6	4	3	28-32
orchardgrass	6	3	2	20-32
'Paiute' orchardgrass	6	4	3	25
ryegrass	5	3	2	14-25
Russian wildrye	6	4	3	28 - 32
sacaton, alkali	7	6	3	25-35
sand bluestem	8	6	4	25-40
sideoats grama	6	5	3	25-40
smooth bromegrass	6	4	3	25-35
switchgrass	10	6	4	30-45
weeping lovegrass	8	5	4	18-25
western wheatgrass	6	4	3	25-35
wheatgrass, tall	7	5	3	21-30
LEGUMES				
alfalfa	8	4	3	28-35
annual lespedeza	4	3	2	20-30
Sericea lespedeza <u>4/</u>	4 - 8	5	3	20-30
vetch	6	3	3	18-28
vetch, crown	6	4	3	25-35
alsike	4	3	2	25-30
arrowleaf	6	4	3	14-21
bur	4	3	2	18-25
button	4	3	2	18-25
crimson	4	3	2	18-25
Persian	4	3	2	18-25
red	4	3	2	18-25
sweet	8	4	3	21-30

1/ The specified heights are minimum for guidelines in maintaining plant health. However, for optimum growth and animal performance, less utilization is preferred during each grazing event. Use the Minimum Heights for Rotational Use to determine grazing use heights when warm season species are grazed during plant dormancy.

-Continued on next page-

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2/ *The rest period should be keyed to the recovery rate of the managed species. Fast growth indicates shorter recovery periods, while slow growth rates indicate longer recovery periods. Also, irrigation and fertility levels could shorten deferment needs.*

3/ *When managing polycultures of plants, select the predominate desired species and manage accordingly.*

4/ *If the management objective is to reduce Sericea lespedeza with cattle, utilization or grazing heights can be as severe as desired. Generally, for this approach to be effective, cattle should be introduced prior to Sericea reaching 8 inches height. Very high density grazing (upwards of 25,000 pounds per acre of cattle) is recommended. The rest period should coincide with the plant regrowth rate. High-density grazing should be done again prior to Sericea reaching an 8 inch height.*