United States Department of Agriculture

Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

GRAZING MANAGEMENT

CODE 528

(ac)

DEFINITION

Managing vegetation with grazing and browsing animals to achieve specific ecological, economic, and management objectives.

PURPOSE

Use this practice to accomplish one or more of the following purposes:

- Improve or maintain desirable species composition, structure, productivity, health and/or vigor of plants and plant communities.
- Improve or maintain the quantity, quality, and/or balance of forages to meet the nutritional needs and ensure the health and performance of grazing and browsing animals.
- Reduce or eliminate the transportation of sediment, nutrients, pathogens, or chemicals to surface and groundwater.
- Improve or maintain upland hydrology, riparian dynamics, or watershed function to reduce surface or groundwater depletion and improve naturally available moisture.
- Reduce runoff and compaction and enhance or maintain key soil health components, such as soil organic matter, aggregate stability, habitat for soil organisms, water infiltration, and water holding capacity.
- Prevent or reduce sheet, rill, classic gully, ephemeral gully, bank, or wind erosion.
- Improve or maintain terrestrial or aquatic habitat for wildlife, fish, invertebrates, or other organisms.
- Manage biomass accumulation for the desired fuel load to reduce wildfire risk or to facilitate prescribed burning.
- Reduce plant pest pressure from invasive and/or undesirable plants and other pests as part of an integrated plan.

CONDITIONS WHERE PRACTICE APPLIES

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

CRITERIA

General Criteria Applicable to All Purposes

This practice is intended to address specific resource concerns through adaptive management of vegetation with herbivores.

Conform to all applicable Federal, State, Tribal and local laws.

Manage livestock numbers and grazing periods to adjust the intensity, frequency, timing, duration, and distribution of grazing and browsing animals to meet the planned objectives for plant communities, the animals, and the associated resources. This includes adjusting animal numbers, grazing periods, and movements based on the rate of plant growth, available forage, livestock forage demand, or other desired objectives (e.g., degree of forage utilization, targeted plant height or standing biomass, residual forage mass, or animal performance).

Manage forage harvest in accordance with site production limitations, rate of plant growth, physiological development of plants, and nutritional needs of the animals.

Maintain enough live leaf area for solar energy capture.

Maintain appropriate residual vegetation throughout the year to meet management objectives, build ecosystem resistance and resilience to disturbances, and address resource concerns.

Provide desired plants sufficient recovery time from grazing/browsing to meet planned objectives. Deferment or rest should be planned for critical periods of plant or animal needs.

Manage grazing/browsing animals to improve ecosystem function and maintain planned vegetative cover on sensitive sites such as riparian areas, wetlands, habitats of concern, karst areas, etc.

Provide adequate quantity, quality, and distribution of drinking water for animals during periods of occupancy.

Develop and document contingencies to prepare for episodic disturbances such as drought, flood, wildfire, insect infestation, and extreme weather events.

When conditions are not appropriate for grazing, follow your contingency plan to avoid creating additional resource concerns.

Ensure excess nutrients brought into the system with supplemental/substitutional feeding are managed and/or applied in an environmentally appropriate manner.

Develop and implement a monitoring strategy that supports adaptive management and documents decisions based upon ecological triggers and thresholds to optimize the conservation outcome.

Additional Criteria to Improve or Maintain the Desirable Species Composition, Structure, Productivity, Health, and/or Vigor of Plants and Plant Communities.

Plan the intensity, frequency, timing, and duration of grazing and browsing to manage desirable plant species with consideration to the ecological site potential.

Promote beneficial or desirable plant species by timing grazing to exploit the vulnerabilities of less desirable species.

Address invasive plant pressure to maintain the desirable species composition.

Ensure soil fertility and pH are adequate to support optimal plant health and achieve specific

goals on appropriate land uses.

Additional Criteria to Improve or Maintain the Quantity, Quality, and/or Balance of Forages to Meet the Nutritional Needs and Ensure the Health and Performance of Grazing and Browsing Animals.

Plan grazing or browsing intensity, frequency, timing, duration, and distribution to balance forage quantity and/or quality goals of the producer with the capability of the resource to respond to management.

Manage grazing to improve plant and animal health for optimal plant diversity, diet selection, delivery of nutrients, and to reduce detrimental effects or losses from toxic plant and other hazards.

Provide supplemental feed or minerals to meet the nutritional requirements of the kind and class of grazing and browsing livestock.

Use National Research Council, or similar scientific source recommendations for protein and energy requirements for grazing and browsing livestock.

Additional Criteria to Reduce or Eliminate the Transportation of Sediment, Nutrients, Pathogens, or Chemicals to Surface and/or Groundwater.

Maintain or improve hydrologic function including infiltration, filtering capacity, and soil surface stability to reduce runoff by providing adequate ground cover, plant spacing, and plant density.

Manage intensity, frequency, timing, and duration of grazing, browsing, or feeding to reduce the number, size, and frequency of heavy use areas, maintain vegetative cover, and improve nutrient distribution.

Locate watering facilities, feeding areas and other infrastructure to minimize deposition of animal wastes into concentrated flow areas or waterbodies.

Minimize animal impacts on stream bank or shoreline stability.

Additional Criteria to Improve or Maintain Upland Hydrology, Riparian Dynamics, or Watershed Function to Reduce Surface or Groundwater Depletion and Improve Naturally Available Moisture.

Manage livestock impacts to uplands, riparian and watersheds or other critical or sensitive areas to
improve or maintain plant community structure, composition, and function.

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

- Provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff.
- Maintain plant structure and composition to improve filtering capacity of the vegetation.
- Avoid or minimize grazing when soils are wet or prone to compaction.
- Maintain adequate riparian community structure and function to support desired riparian, wetland, floodplain, and stream species.

Additional Criteria to Reduce Runoff and Compaction and Enhance or Maintain Key Soil Health Components, Such as Soil Organic Matter, Aggregate Stability, Habitat for Soil

Organisms, Water Infiltration, and Water Holding Capacity.

Plan intensity, frequency, timing, and duration of grazing/browsing to accomplish one or more of the following:

- Implement longer rest periods before perennial forage dormant seasons to extend root growth.
- Maximize root growth and production of root exudates to increase soil organic matter and promote healthy soil biology.
- Reduce compaction to improve soil biological activity, water infiltration, and increasing production and vigor of live plant roots.
- Maintain or increase plant diversity to improve soil microbial diversity, aggregate stability, plant available minerals and nutrients, and soil organism habitat.
- Improve or maintain plant cover and residue to support a deep, extensive plant root system, moderate soil temperature, and limit water loss through evaporation.
- Encourage deep rooted perennial plants.
- Avoid or minimize trailing.
- Minimize or separate locations of heavy use areas to improve nutrient distribution.
- Avoid or minimize grazing when soils are wet or prone to compaction. Mitigate or move livestock to designated areas in adverse conditions to protect the integrity of the soil.

Additional Criteria to Prevent or Reduce Sheet, Rill, Classic Gully, Ephemeral Gully, Bank, and Wind Erosion.

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

- Provide adequate ground cover from plant canopy, litter, and trampled plant residue to protect the soil surface from hoof and raindrop impact and reduce detachment and transport of soil particles caused by water and wind action.
- Reduce or mitigate the effects of compaction and trailing by livestock.
- Minimize grazing animal impact on areas that have high soil erosion potential.
- Locate facilitating infrastructure (fence, watering facilities, etc.) in locations away from streambank, shoreline, and concentrated flow areas.

Additional Criteria to Improve or Maintain Terrestrial Habitat for Wildlife and Invertebrates and/or Aquatic Habitat for Fish and Other Organisms.

Identify target species or guild.

Plan the intensity, frequency, timing, and duration of grazing or browsing to develop and maintain plant structure, density, and diversity for the habitat requirements (i.e., connectivity of food, water, cover) the target species or guilds.

Additional Criteria to Manage Biomass Accumulation for the Desired Fuel Load to Reduce Wildfire Risk or to Facilitate Prescribed Burning.

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

- Manage fuel load, continuity, and structure to reduce wildfire behavior and intensity.
- Facilitate desired conditions such as fine fuel management for prescribed burns.

Additional Criteria to Reduce Plant Pest Pressure From Invasive and/or Undesirable Plants and Other Pests as Part of an Integrated Plan.

Plan intensity, frequency, timing, and duration of grazing or browsing to manage undesirable

plant species.

When supplemental or substitutional feeds are provided, avoid introducing noxious, invasive, or undesirable species.

Maintain or improve desired species' competitive ability with grazing strategies such as changing the season or timing of use.

Provide adequate rest to enhance regrowth of desirable species.

Maximize grazing or browsing impact on target species when most palatable to the animal or most damaging to the target species.

Utilize livestock species best suited to graze or browse undesirable plants.

Mitigate short-term negative impact to other resources: Soil, Water, Air, Plants, Animals, Humans and Energy (SWAPA+H+E) and document within the plan.

Utilize NRCS Conservation Practice Standard (CPS) Brush Management (Code 314) or CPS Herbaceous Weed Treatment (Code 315) in conjunction with grazing management to treat invasive species, protect desired plant communities, and promote desirable plant resilience.

CONSIDERATIONS

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

Match stocking rates with carrying capacity to minimize the need for purchasing, harvesting, storing and delivering supplemental feed to provide economic and energy savings.

Limit access or use alternative sites, such as holding areas, when conditions are not appropriate for grazing to prevent creating additional resource concerns.

Use herding or other appropriate technologies when additional guardianship is needed to prevent livestock interaction with toxic plants or predators. Herders should take appropriate precautions to ensure personal safety.

Incorporate new technologies such as virtual fencing to create additional grazing management flexibility.

Use drought and other weather forecasting tools to promote the accuracy of forage production projections.

Refer to agency approved localized weather forecasting projections in the development of the grazing management plan.

Consider parasite life cycles, type(s) of livestock, residual grazing heights and rest/deferment cycles to manage parasites.

Plan biosecurity measures to prevent the transfer of disease-causing organisms, pests. or invasive species being introduced or spread.

Consider innate animal behavior when planning livestock grazing management.

Design and install facilities to minimize negative impacts to other resources, animal stress, spread of diseases and parasites, contact with harmful organisms and toxic plants

Design and install livestock feeding, handling, and watering facilities in a manner to improve and/or maintain animal distribution.

Provide shelter in the form of windbreaks, sheds, shade structures, and other protective features where conditions warrant the protection of livestock from severe weather, intense heat/humidity, and predators.

Minimize grazing infrastructure when effects are negative to fish and wildlife species of concern.

When managing biomass accumulation, consider variability of precipitation, air temperatures, and encroachment of plant species that may fuel wildfires.

Consider the needs of other uses on the same land, such as, but not limited to, agricultural, wildlife and recreational uses.

Incorporate traditional ecological knowledge and indigenous cultural management practices that align with ecological principles and other objectives.

Manage grazing and browsing as necessary to support the success of other conservation practices.

When feeding areas accumulate excess nutrients, consider developing a Comprehensive Nutrient Management Plan or refer to CPS Nutrient Management (Code 590), CPS Waste Storage (Code 313), CPS Heavy Use Area Protection (Code 561), CPS Waste Transfer (Code 634), or CPS Feed Management (Code 592).

Refer to CPS Brush Management (Code 314), CPS Herbaceous Weed Control (Code 315) and CPS Prescribed Burning (Code 338) for additional management options for woody species and herbaceous weeds.

Refer to CPS Silvopasture (Code 381) when establishing or managing trees to provide shade or shelter for livestock.

Refer to CPS Fuel Break (Code 383) and CPS Firebreak (Code 394) for additional criteria and considerations for reducing fuel loads to minimize wildfire risk.

Refer to CPS Prescribed Burning (Code 338) for additional criteria and considerations for planning prescribed burns.

PLANS AND SPECIFICATIONS

Follow plans and specifications that describe the requirements for applying the practice according to the criteria of this standard. At a minimum, the plans and specifications will include:

- Client’s goals and objectives for this practice.
- Map of planned grazing management units that includes identification of existing infrastructure supporting planned grazing e.g., livestock water, fence, gates, etc.
- Inventory of current and planned forage availability by management unit. Include forage attributes such as seasonal production, species, quality, and availability.
- Current and planned livestock and/or wildlife forage demand based on species requirements.
- Feed and forage balance by management unit that aligns animal demand with availability of forage produced or provided, with consideration for livestock distribution, wildlife use, quality, seasonal availability, and hay production.
- A grazing strategy that identifies how livestock will graze the management units and describes the intensity, timing, duration, and frequency of grazing.

- Contingency plan that serves as a guide for adaptive management decisions to minimize or mitigate resource or economic impacts from episodic events: (e.g., drought, soil saturation, flooding, fire, insects, etc.).
- Monitoring protocols and records that assess whether the grazing management is addressing the identified goals and objectives. Record keeping will be maintained and short and/or long-term monitoring conducted to support timely adaptive management decisions.

Provide clients with these plans and specifications through implementation requirements or other guidance documents used for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

Operation

- Document adaptive management decisions to ensure the goals and objectives of the grazing strategy are met.
- Utilize short and long-term monitoring to achieve successful outcomes, goals, and objectives and support timely adaptive management decisions.
- Identify key areas, key plants, or other monitoring indicators to evaluate grazing management decisions.

Maintenance

- Use monitoring data and grazing records on a regular basis to make changes as necessary to ensure that objectives are being met.
- Ensure all existing conservation practices and infrastructure needed to facilitate adequate grazing and browsing distribution as planned by this practice standard are maintained in good working order and operate as intended.

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