United States Department of Agriculture
Natural Resources Conservation Service

Grazing Enhancement Activity - Grazing Management

Grazing Management
Grazing management decisions have a significant influence on vegetation, soil, livestock, and wildlife. Grazing management has a greater effect on natural resource benefits than any other component of the management program on pastureland and rangeland. Enhancement activities associated with grazing management can improve water, nutrient, mineral and energy cycling by more intensive management of livestock.

Benefits
Increased management of grazing will enhance plant communities. Improved plant communities will improve soil and water quality, reduce erosion, and enhance wildlife habitat.

Criteria for Grazing Management Enhancement Activity
This enhancement requires the implementation of a prescribed grazing plan that addresses the animal/forage balance, distribution, timing and duration of grazing as well as the implementation or maintenance of 2 or more of the following grazing management activities:

Grazing management activities applicable to pastureland and rangeland:

- Rotation of salt, mineral, and supplemental feeding areas
- Utilize decision support tools to aid in grazing management decision making
- Improve soil quality and plant condition through management of pasture legume species composition
- Utilize grazing management plans to improve wildlife habitat
- Prescribed burning patterns to improve wildlife habitat diversity

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1. Rotation of salt, mineral, and supplemental feeding areas
This enhancement activity requires the rotation of salt, mineral, and supplemental feeding areas to manage livestock distribution, reduce high concentrations of nutrients, and prevent excessive erosion.

Required Elements:

- Salt, mineral and supplemental feed areas will be moved to different locations within each management unit at least once annually.
- Salt, mineral and supplemental feed areas must be relocated a distance of at least 200 feet and away from concentrated flow areas, such as streams.
- Salt, mineral and supplemental feed areas will be located away from watering points, or in strategic locations that otherwise encourage better livestock distribution.
- Locations may need to be varied annually based on observed livestock use patterns and changing pasture conditions.

References:
Tate, K.W., Atwill, E.R., McDougald, N.K, and George, M.R. 2003. Spatial and temporal patterns of cattle feces deposition on rangeland. J. Range Management 56:432-438.

Bailey, D.W., Welling, G.R., Miller, E.T. 2001. Cattle use of foothills rangeland near dehydrated molasses supplement. J. Range Management 54: 338-347.

Bailey, D.W., and Welling, R.G. 1999. Modification of cattle grazing distribution with dehydrated molasses supplement. J. Range Management 52:575-582.

Holechek, J.L., Pieper, R.D., and Herbel, C.H. 2001. Range management: principles and practices. Prentice Hall, Upper Saddle River, New Jersey.

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2. Utilize decision support tools to aid in grazing management decision making

This enhancement activity requires the use of a grazing decision support tool to help analyze the impact of individual or numerous grazing management practices or activities to achieve more consistent or effective results from grazing management plans. These tools may include Nutritional Balance Analyzer (NUTBAL), Grazing Lands Spatial Analysis Tool (GSAT), C-GRAZ, The Grazing Manager (TGM), or other programs.

Required Elements:

- Copy of reports from grazing decision support tool.
- Narrative description of management decisions as a result of the decision support

References:

Andales, A.A., Derner, J.D., Ahuja, L.R., and Hart, R.H. 2006. Strategic and Tactical Prediction of Forage Production in Northern Mixed-Grass Prairie. Rangeland Ecology and Management 59:576-584.

Thurow, T.L., Taylor, Jr., C.A. 1999. Viewpoint: The role of drought in range management. J. Range Management 52:413-419.

Stuth, J.W., Hamilton, W.T., Conner, J.R., and Sheehy, D.P. 1993. Decision support systems in the transfer of grassland technology. In: Proceedings of Seventeenth International Rangeland Congress. Palmerston North, New Zealand.

Andales, A.A., Derner, J.D., Bartling, P.N.S., Ahuja, L.R., Dunn, G.H., Hart, R.H., and Hanson, J.D. 2005. Evaluation of GPFARM for simulation of forage production and cow-cal weights. Rangeland Ecology and Management 58:247-255.

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3. Improve soil quality and plant condition through management of pasture legume species composition

This enhancement activity involves the seeding, interseeding, and/or management of legume species in pastures to improve soil and forage quality, increase plant diversity, and provide an alternate source of nitrogen. The legumes should include adapted, desirable species that provide improvement in soil quality, pasture production, and wildlife habitat. Proper management must be applied to ensure the establishment and persistence of the legume component.

Required Elements:

- Seeding or interseeding and proper management to maintain plant composition.
- If legumes are already present in the pasture, proper management to maintain the presence of a legume component that is at least 20% of total annual dry matter production.

References:

Thomas, R. J. 1992. "The role of the legume in the nitrogen cycle of productive and sustainable pastures." In *Grass and Forage Science*, 47:133-142.

Thomas, R. J. 1995. "Role of legumes in providing N for sustainable tropical pasture systems." In *Plant and Soil*, 174:103-118.

Whitehead, D. C. 1995. *Grassland Nitrogen*. Chap. 3, Legumes: Biological Nitrogen Fixation and Interaction with Grasses. CAB International. Wallingford, UK.

Sheath, G. W. and D. A. Clark. 1996. "Management of grazing systems: Temperate pastures." In: J. Hodgson & A. W. Illius (Eds.) *The Ecology and Management of Grazing Systems*. Pp. 301-323. CAB International, Wallingford, UK.

Fribourg, H. A., R. J. Carlisle, & J. B. McLaren. 1984. "Bermudagrass, tall fescue, and orchardgrass pasture combinations with clover or N fertilization for grazing steers. II. The species composition index and variability in forage growth and consumption, and animal performance." In *Agronomy Journal*, 76:615-619.

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4. Utilize grazing management plans to improve wildlife habitat

The grazing management plan will allow for rest periods to occur in an effort to improve plant health and vigor, provide adequate residue cover to serve as nesting and fawning cover, and increase diversity of herbaceous vegetation structure to benefit a variety of wildlife species.

Required Elements:

- The grazing management plan will document the location, acres to be deferred, and year of the deferment.
- Time grazing to occur outside of the primary nesting or fawning seasons for the targeted wildlife species.

References:

Holloran, M.J., Heath, B.J., Lyon, A.G., Slater, S.J., Kuipers, J.L., and Naderson, S.H. 2005. Greater sage-grouse nesting habitat selection and success in Wyoming. J. Wildlife Management 69:638-649.

Riley, T.Z., Davis, C.A., Ortiz, M., and Wisdom, M.J. 1992. Vegetative characteristics of successful nests of lesser prairie chickens. J. Wildlife Management 56:383-387.

DeLong, A.K., Crawford, J.A., and DeLong Jr., D.C. 1995. Relationships between vegetational structure and predation of artificial sage grouse nests. J. Wildlife Management 59:88-92.

Giesen, K.M. 1994. Movements and nesting habitat of lesser prairie-chicken hens in Colorado. Southwestern Naturalist 39:96-98.

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5. Prescribed burning patterns to improve wildlife habitat diversity

Prescribed burning in mosaic or patchwork patterns will increase the diversity of herbaceous vegetation structure to benefit grassland birds, pollinator insects, and a variety of other wildlife species that require a wide range of vegetation structural types to meet their daily or seasonal requirements. The habitat mosaic created will support more diverse plant and wildlife populations.

Required Elements:

- Field(s) receiving treatment will be identified.
- Burn between 20% and no more than 50% of the field acres in any year
- A grazing management plan is developed that provides adequate plant recovery following prescribed burn and provides the habitat requirements of target wildlife species.

References:

Fuhlendorf, S.D., and D.M. Engle. 2004. Application of the grazing-fire interaction to restore a shifting mosaic on tallgrass prairie. Journal of Applied Ecology 41:604-614.

Fuhlendorf, S.D., and D.M. Engle. 2001. Restoring heterogeneity on rangelands: ecosystem management based on evolutionary grazing patterns. BioScience 51:625-632.

Townsend, Darrell E. 2004. Ecological heterogeneity: Evaluating small mammal communities, soil surface temperature and artificial nest success within grassland ecosystems. Oklahoma State University. PhD Dissertation. 162 p.

Vermeire, L.T., R.B. Mitchell, S.D. Fuhlendorf, and R.L. Gillen. 2004. Patch burning effects on grazing distribution. J. Range Manage. 57:248-252.

Churchwell, R.T. 2005. The influence of patch-burn management on the nesting ecology of grassland birds at the Tallgrass Prairie Preserve, Oklahoma. Oklahoma State University. PhD Dissertation.