



CONSERVATION ENHANCEMENT ACTIVITY

E528S

Soil Health Improvements on Pasture

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN ADDRESSED: Soil

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Use of soil health assessment to evaluate impact of planned grazing in addressing organic matter depletion, soil organism habitat and aggregate instability. Laboratory soil health tests will be completed in year 1 and year 4 of the contract. Planned modifications to the pasture forages and/or management system will be made to the benchmark grazing system to address concerns from the assessments. During sample collection, Pasture Condition Score (PCS) or Determining Indicators of Pasture Health (DIPH) assessment will be completed for the sample area.

Criteria

- Utilizing the benchmark PCS or DIPH, the participant will plan improvements to at least one of the indicators. The benchmark PCS or DIPH will be less than one year old.
- A primary assessment will be completed in Year 1 that includes completing the PCS or DIPH and sampling soil that will be analyzed by a soil health testing laboratory. Follow guidance from Technical Note No. 450-03 to select indicators (soil organic carbon, aggregation, bioavailable nitrogen, respiration, and/or active carbon) and for sampling procedure. Record weather factors and most recent grazing event on the PCS or DIPH. Soil sample collection and PCS or DIPH will be completed on the same day and in the same location.

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- During Year 4, a follow-up assessment will be completed using the same methods that were utilized in year 1. The assessment will be in the same season, comparable conditions and key area as completed in year 1.

Documentation and Implementation Requirements

Participant will:

- Prior to implementation:
 - Provide NRCS with the benchmark grazing information.
 - Develop a prescribed grazing plan.
 - Select the laboratory soil health test and provider based on your soil health objectives.
- During implementation:
 - Complete PCS or DIPH or work with someone qualified to complete the pasture assessment when soil samples are collected.
 - Collect soil samples and georeferenced sampling locations in years 1 and 4 of the contract and send them to a reputable soil testing lab that completes soil health testing. Year 1 and year 4 soil samples will be tested by the same laboratory.
 - Make changes to the grazing management plan based on results of PCS or DIPH and soil health test to benefit organic matter depletion, soil organism habitat and/or aggregate instability.
- After implementation provide the following items for review by NRCS:
 - PCS or DIPH score sheets with all field notes and locations.
 - Both Soil Health Assessment results to NRCS.
 - Changes made to the grazing management plan for the year.

NRCS will:

- As needed, provide any technical assistance to participant as requested.
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (CPS 528) as it relates to implementing this enhancement.
- Prior to implementation, and as requested from the participant, develop a Prescribed Grazing plan for each year of this enhancement.



- During implementation, assist the producer with locating the key area for the PCS or DIPH and soil samples to be collected.
- During implementation, as requested work with the producer to complete PCS or DIPH and collect the soil samples.
- After implementation, review all PCS or DIPH and all soil health laboratory testing results.
- After implementation, verify implementation of changes made to the grazing management plan to address organic matter depletion, soil organism habitat and/or aggregate instability and other identified indicators from the PCS or DIPH by reviewing grazing herd in and out records or implementation of additional activities.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date

ALABAMA – E528S Supplement- Soil Health Improvements on Pasture

Requirements:

1. A primary assessment will be completed in Year 1 that includes completing the PCS or DIPH and sampling soil that will be analyzed by a soil health testing laboratory using the “Haney” test or equivalent. One sample should be taken every 20 acres based on past management and soil map units. Typical cost per sample is around \$50. Follow guidance from the selected laboratory for the sampling procedure. Samples must be taken in years 1 and 4. The assessment will be completed in the same season under comparable conditions and the same key area as completed in year 1. Planned modifications/improvements to the pasture management system will be made to the benchmark grazing system to address concerns from the assessments.
2. Written conservation plan that includes producer goals, objectives and resource concerns. Plan map will show and label all fences, feeding/watering areas, and sensitive areas. Livestock should be restricted from sensitive areas.
3. Average annual livestock dry matter needs will be balanced with available forage without deficiency for the yearly summary. The Forage/Animal Balance Worksheet will be completed to document.
4. Livestock will be rotated between at least 3 pastures in a particular functional-group (e.g. warm season pastures or cool season pastures) to facilitate prescribed grazing. Fences and water sources should be in place so that trails do not occur and concentrated livestock areas are minimized. Starting and ending grazing periods will meet the guidelines in the table below. Pastures will be sized and stocked to facilitate meeting the requirements for grazing heights and resting periods. It is anticipated that with a three-pasture rotation that each pasture would rest about 66 percent of the grazing cycle. Additional pastures are preferred and will enable more forage rest.
5. A contingency plan will be developed denoting the use of sacrifice areas for pasture management during drought or other weather-related events. These areas will be labeled on the conservation plan map.
6. A monitoring site will be selected in each forage type or forage mixture to be evaluated with the Pasture Condition Scoring (PCS) tool **quarterly** (typically, March or April, June or July, September or October, December or January). Sites should be reflective of average conditions of the pasture and labeled on the plan map. Photographs are required at the time of monitoring. The PCS should note whether forages are being actively grazed or in a rest period.
7. Perform a routine soil test in the years that a soil health (Haney) test is not utilized for each field with different soils and/or management and apply lime and fertilizer according to soil test results. If manure or by-products are applied, follow Phosphorus Index and Nitrogen Leaching Index limitations according to the Nutrient Management Standard (590).
8. Maintain grazing records to include pasture or field number, acres, forage type, animal type and number, forage height in and out-with dates. Records should be submitted quarterly along with the Pasture Condition Score.

Grazing will be managed according to the Prescribed Grazing (528) Standard.

The days of rest needed for plant recovery and regrowth range from 7 to 45 days, depending on the forage species (see below table). Stocking rates and growing conditions can also affect the forage growth. Grazing systems should be designed to meet the rest requirements of a specific forage as well as the needs of the livestock. For example, by using four pastures with 14 days of grazing per pasture, the grazing cycle is 56 days and each pasture rests 75% of the time or 42 days.

FORAGE GUIDELINES FOR PRESCRIBED GRAZING SYSTEMS

Common Forages	Begin Grazing (in)	End Grazing (in)	Usual days of Rest
Alfalfa grazing types	10	4	35 - 40
Bahiagrass	6	2	10 - 20
Bermudagrass common	5	2	7 - 10
Bermudagrass hybrid	6	3	7 - 10
Big Bluestem	18	10	30 - 45
Dallisgrass	6	3	7 - 15
Eastern Gamagrass	15	8	30 - 45
Tall Fescue	6	3	15 - 30
Indiangrass	12	6	30 - 40
Orchardgrass	8	3	15 - 30
Switchgrass	18	10	30 - 45

Describe changes made to the grazing management plan based on results of PCS or DIPH and soil health test to benefit organic matter depletion, soil organism habitat and/or aggregate instability:

Year 2	
Year 3	
Year 4	
Year 5	

Grazing Management Records

Keeping accurate records is a continual and critical process in effective pasture and livestock management.

Pasture ID		Pasture acres		Forage type			
Soil test date		Lime/ Fertilizer rate		Lime/ Fertilizer type		Date applied	
Livestock		Date in	Forage height	Date out	Forage height	Notes (fertilizer applied)	
Type	Number						

Pasture ID		Pasture acres		Forage type			
Soil test date		Lime/ Fertilizer rate		Lime/ Fertilizer type		Date applied	
Livestock		Date in	Forage height	Date out	Forage height	Notes (fertilizer applied)	
Type	Number						

Pasture Condition Score Sheet

Operator:		Date:	
Evaluator:		Pasture ID:	
Soil(s), ESD(s) and or FSG(s):		Livestock type:	
Current Season's Precipitation (check one)	Above Normal ◦ Normal ◦	Below Normal ◦	
Seasonal Temperature Trend (check one)	Above Normal ◦ Normal ◦	Below Normal ◦	

Evaluate the site and rate each indicator based upon your observations. Scores for each indicator may range from 1 to 5. Sum the indicator scores to determine overall pasture condition score.

Indicator	1 Point	2 Points	3 Points	4 Points	5 Points	Score	
Percent Desirable Plants* (Dry Weight; for Livestock Type)	Desirable species <20% of stand.	Desirable species 20 – 40% of stand.	Desirable species 41 – 60% of stand.	Desirable species 61 – 80% of stand.	Desirable species exceed 80% of stand.		
Percent Legume by Dry Weight	<5% OR >50% bloating legumes.	5-10% legumes OR >40% bloating legume.	11-20% legumes.	21-30% legumes.	31-40% legumes. No grass loss; grass may be increasing.		
Live (includes dormant) Plant Cover	Less than 40% is live leaf canopy. Remaining is either dead standing material, or bare ground.	40-65% is live leaf canopy. Remaining is either dead standing material, or bare ground.	66-80% live leaf canopy. Remaining is either dead standing material, or bare ground.	81-95% live leaf canopy. Remaining is either dead standing material, or bare ground.	More than 95% live (non-dormant) leaf canopy. Remaining is either dead standing material, or bare ground.		
Plant Diversity by Dry Weight <small>(*See footnote at bottom of page)</small>	Diversity: Very low <50% desirable species OR 1 dominant desirable species in 1 functional group OR No dominant desirable species and all minor species in each functional group totaling <15%	Diversity: Low 2 dominant desirable species in 1 functional group OR 2 functional groups each represented by minor species totaling ≥15%	Diversity: Moderate 3 dominant desirable species in 1 functional group OR 2-3 dominant desirable species in 2 functional groups OR 3 functional groups each represented by minor species totaling ≥15%	Diversity: High 4 dominant desirable species in 2 functional groups OR 3 dominant desirable species in 3 functional groups OR 3 dominant desirable species in 2 functional groups AND 1 additional functional group represented by minor species totaling ≥15%	Diversity: Very high 4 dominant desirable species in 3 functional groups OR 4 dominant desirable species in 2 functional groups AND 1 additional functional group represented by minor species totaling ≥15%		
	Plant Residue and Litter as Soil Cover (<i>Pull back canopy</i>)	Bare soil is very easily seen; There is <20% cover on the soil surface or it is excessive, and slow to break down.	Openings of bare soil can be seen fairly easily; Soil cover is 21-40%.	Small openings of bare soil can be seen, but minimal; Soil cover is 41-60%.	No bare soil is easily seen; Soil cover is 61-80%.	No bare soil is seen; Soil cover is >80% with good biological activity and decomposition of older residue.	
	Grazing Utilization and Severity	Pasture is overgrazed throughout.	Pasture consists primarily of overgrazed and/or refused areas (former dung areas, older plants, undesired plants).	Pastures show uneven grazing throughout with heavier grazing near water or feeding areas, or distinct zone grazing.	Pasture grazed evenly throughout with minimal overgrazing with some under grazed small areas and heavier use near water sources.	Pasture grazed evenly throughout with no overgrazing.	

*Use NRCS plant list for livestock species. Functional groups are as appropriate for your state (cool-season grasses, legumes, warm-season grasses, non-leguminous forbs). **Any time there are more undesirables than desirables, it will be 1 point. Desirable species must total more than 50% of the total biomass. Dominant species are ≥15%. Functional groups must be ≥15% of stand to be counted.**

Indicator	1 Point	2 Points	3 Points	4 Points	5 Points	Points
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Livestock Concentration Areas (If field <1 acre, see ** footnote)	Livestock concentration areas are within 100 feet of, or are a direct conveyance to surface water, and cover more than 0.1 acre, including trails.	Livestock concentration areas are within 100 feet of, or are a direct conveyance to surface water, and cover less than 0.1 acre, including trails.	Livestock concentration areas are farther than 100 feet from and are not a direct conveyance to surface water, and cover more than 0.1 acre, including trails.	Livestock concentration areas are farther than 100 feet and are not a direct conveyance to surface water, and cover less than 0.1 acre, including trails.	Livestock concentration areas, including trails, not present.
Soil Compaction and Soil Regenerative Features (**See footnote at bottom of page)	Compaction: Dense or thick platy layer very distinct;	Compaction: Dense or moderate platy layer noticeable;	Compaction: Thin dense or platy layer still present;	Compaction: Minor dense or platy layer; good aggregates common (crumbly soil);	Compaction: No dense or platy layers; crumbly soil throughout;
	Roots: Dominantly horizontal; most shallow/sparse;	Roots: Numerous horizontal; moderate amount shallow/sparse;	Roots: Some horizontal with increasing downward;	Roots: Few horizontal, more downward through the soil profile;	Roots: Abundant growth primarily downward through the soil profile;
	Color: Surface horizon same as subsoil;		Color: Surface horizon moderately darker than subsoil;		Color: Surface horizon dramatically darker than subsoil;
	Soil Life: Few or no signs.	Soil Life: Signs scattered in surface layer.	Soil Life: Signs scattered throughout.	Soil Life: Signs numerous throughout.	Soil Life: Signs abundant throughout.
Plant Vigor	No plant recovery after grazing/harvest. Pale, yellow or brown, or severe stunting of desirable forage.	Some recovery. Yellowish green forage, or moderately or slight stunting of desirable forage.	Adequate recovery of desirable forage. Yellowish and dark green areas due to manure and urine patches.	Good recovery of desirable forage. Light green and dark green forage present.	Rapid recovery of desirable forage. All healthy green forage.
Erosion (Circle all that apply, the overall indicator score will be the lowest rating indicated)	Sheet and Rill: Plant density is insufficient to stop runoff, with poor infiltration. Erosion easily visible throughout pasture;	Sheet and Rill: Plant density slows runoff. Erosion present and easily seen on steeper terrain;	Sheet and Rill: Plant density good and runoff moderate. If present, erosion concentrated on heavily used areas;	Sheet and Rill: Plant density high, runoff low, good infiltration. May have evidence of past erosion if present;	Sheet and Rill: Plant density high, no runoff, good infiltration. No evidence of present or past erosion;
	Wind: Severe scoured areas and deposition throughout;	Wind: Scoured areas common, deposition effecting plants;	Wind: Occasional scoured areas, litter windrolled;	Wind: Minimal soil exposed, some detached vegetation windrolled, minor plant damage;	Wind: No exposed soil;
	Streambank and/or Shoreline: Banks bare, major sloughing, no bank vegetation;	Streambank and/or Shoreline: More than half the bank vegetation trampled; sloughing.	Streambank and/or Shoreline: Less than half the bank vegetation trampled; eroding at crossing/entrances.	Streambank and/or Shoreline: Eroding at crossings, entrances; all the bank vegetation is intact and banks are stable.	Streambank and/or Shoreline: Vegetation intact and stable, hardened crossings and alternative water sources used;
	Gully: Very large mass movement, caving sides.	Gully: Advancing upslope, increasing fingering extensions.	Gully: Not all active but extensions present.	Gully: Stable with vegetative cover.	Gully: None, drainage ways vegetative.

** If field size is less than 1 ac. Use 10% of field size in place of 0.1 acre. ***Use a shovel. Root and Compaction subindicators are primary and should be considered first. Soil color and soil life are secondary subindicators which can be considered where applicable.

Overall Pasture Condition Score	Individual Indicator Score	Management Change Suggested
45 to 50	5	No changes in management needed at this time.
35 to 45	4	Minor changes would enhance, do most beneficial first.
25 to 35	3	Improvements would benefit productivity and/or environment.
15 to 25	2	Needs immediate management changes, high return likely.
10 to 15	1	Major effort required in time, management and expense.

Overall Pasture Condition Score =

Comments/Notes: