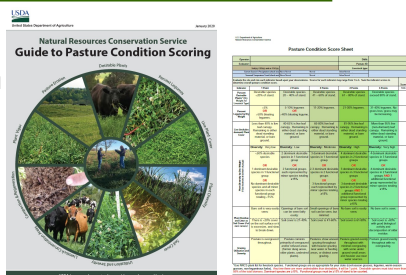


## Pasture Condition Scoring (and other assessment tools)

Susan Parry and James Hyde



## Pasture Assessment Methods:

- Walking the Pasture (Visual observations)
- Grazing Stick (estimate DM and size paddocks)
- Step-Point Worksheet (Data Collection)
- Pasture Condition Scoring (National Protocol and Required Assessment for NRCS)

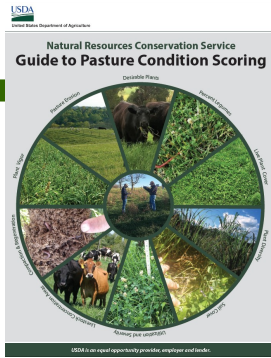
## Walking the Pasture (visual monitoring):

- When you look out onto your fields, you are monitoring the "landscape" view.
- It looks green/nice, but when you start walking through the pasture, what do you see?



## Key Area concept:

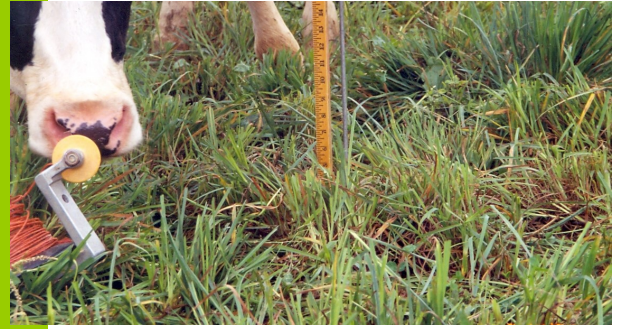
- A relatively small area of pasture or management unit; selected because of location, use, or value as a monitoring point for overall pasture use.
- It's assumed that key areas, if properly selected, will reflect the current grazing management over the entire pasture or management unit.



“You can’t  
manage what  
you don’t  
measure.”

Bob Hendershot

### Using a Grazing Stick to measure and plan pastures:

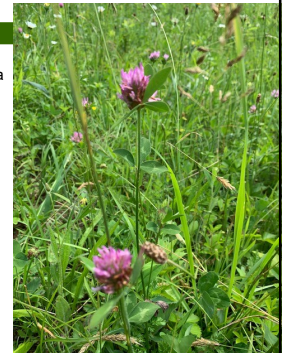


### Using a Grazing Stick to measure and plan pastures:



### Determining Forage Volumes/Yields Pasture Stick Exercise

1. Select a spot in the pasture that has a representation of the forage mix or select 2 or 3 spots and average your results.
2. Identify the forage species present  
*(for this example, it's Orchardgrass and clover)*



### Determining Forage Volumes/Yields Pasture Stick Exercise

- Place the grazing stick on the ground within a typical sward, with the dot grid face up under the forage leaves.
- Count the dots that are visible without moving your head side to side. (In this example, we see 2 dots)



### Determining Forage Volumes/Yields Pasture Stick Exercise

- Look at the chart on the stick and estimate the Dry Matter/Acre/Inch (DMAC/In). In our example, it's 300 lbs/acre/inch for Orchardgrass and clover, which represents avg. yield for that forage mix
- Measure the average height of the standing forage (In this example, it's 7 inches tall)

NUMBER OF DOTS COUNTED FORAGE TYPE	ESTIMATED POUNDS OF DRY MATTER/ACRE/INCH		
	0-1	1-2	3 OR MORE
ORCHARDGRASS & N	300	250	150
ORCHARDGRASS & CLOVER	350	300	200
BLUEGRASS MIX & N	300	250	150
BLUEGRASS & CLOVER	400	350	250
PERENNIAL RYEGRASS & N	400	250	150



### Determining Forage Volumes/Yields Pasture Stick Exercise

- Refer to the grazing stick for grazing residue height and calculate the inches of available forage (In this example, graze to 3 inches, leaves 4 inches of available forage)
- Multiply the available forage inches X DMAC/IN from the chart on the stick and that will give you the pounds of Available Forage per acre (Lbs/acre)

$$4 \text{ inches (Available)} \times 300 \text{ lbs/acre/inch} = 1,200 \text{ lbs/acre}$$

### Pasture Assessment Methods:

- Walking the Pasture (Visual observations)
- Grazing Stick (estimate DM and size paddocks)
- Step-Point Worksheet (Data Collection)
- Pasture Condition Scoring (National Protocol and Required Assessment for NRCS)

## PCS Tools (Bring to the Field):

- ❖ Step-Point Worksheet (shown on right)
- ❖ Pace/Note Animal Concentration Areas (ACAs) while walking pastures
- ❖ Take a shovel or probe with you
- ❖ Using the PCS and tools outlined can help to make your job easier!

NCRCS Pennsylvania		Step Point Worksheet	
Date:	Point Step No.:	Observer:	Notes:
Plant #	Plant Species	Plant #	Plant Species
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	
11		11	
12		12	
13		13	
14		14	
15		15	
16		16	
17		17	
18		18	
19		19	
20		20	
21		21	
22		22	
23		23	
24		24	
Pasture or Live: <input type="checkbox"/> Bare ground: <input type="checkbox"/> Other cover: <input type="checkbox"/>		Dominant grass: <input type="checkbox"/> Intermediate grass: <input type="checkbox"/> Legume: <input type="checkbox"/> Forb: <input type="checkbox"/> Tree/shrub: <input type="checkbox"/> No cover: <input type="checkbox"/>	

USDA United States Department of Agriculture

## Step-Point Method

1. Percent Desirable Plants
2. Percent Legume
3. Live Plant Cover
4. Plant Diversity
5. Plant Residue

Step-Point can provide!

Indicator	1 (Poor)	2 (Fair)	3 (Good)	4 (Very Good)	5 (Excellent)
Plant Residue	Less than 10% of ground cover	10-20% of ground cover	20-30% of ground cover	30-40% of ground cover	40-50% of ground cover
Plant Diversity	Less than 10% of ground cover	10-20% of ground cover	20-30% of ground cover	30-40% of ground cover	40-50% of ground cover
Plant Residue	Less than 10% of ground cover	10-20% of ground cover	20-30% of ground cover	30-40% of ground cover	40-50% of ground cover

Pasture Condition Score Sheet

Operator: \_\_\_\_\_ Date: \_\_\_\_\_

Evaluator: \_\_\_\_\_ Pasture ID: \_\_\_\_\_

Livestock type: \_\_\_\_\_

Current Season's Precipitation (check one): Above Normal  Normal  Below Normal

Seasonal Temperature Trend (check one): Above Normal  Normal  Below Normal

Indicator	1 (Poor)	2 (Fair)	3 (Good)	4 (Very Good)	5 (Excellent)
Plant Residue	Less than 10% of ground cover	10-20% of ground cover	20-30% of ground cover	30-40% of ground cover	40-50% of ground cover
Plant Diversity	Less than 10% of ground cover	10-20% of ground cover	20-30% of ground cover	30-40% of ground cover	40-50% of ground cover
Plant Residue	Less than 10% of ground cover	10-20% of ground cover	20-30% of ground cover	30-40% of ground cover	40-50% of ground cover

- PCS has ten "indicators" of pasture health
- Each indicator has a "rubric" that ranks from 1-5 for each topic

## Percent Desirable Plants (Dry Weight by Livestock Type)

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.
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Use NRCS plant list for livestock species.



## Percent Legume By Dry Weight

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.
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## Percent Legume By Dry Weight

6%                      15%                      27%



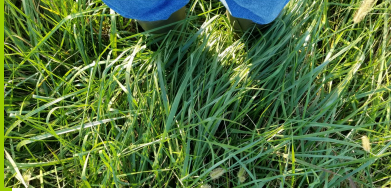
## Live (includes dormant) Plant Cover

Live (includes dormant) Plant Cover	Less than 40% is live leaf canopy. Remaining is either dead standing material, or bare ground.	40-55% is live leaf canopy. Remaining is either dead standing material, or bare ground.	55-60% live leaf canopy. Remaining is either dead standing material, or bare ground.	61-95% 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.
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How good is my solar panel?

## Live (includes dormant) Plant Cover



How good is my solar panel?

- Rate percent of live or dormant green plant material.
- Dead standing material, or bare ground is discounted.



## Plant Diversity (By Dry Weight)

Diversity: Very low	Diversity: Low	Diversity: Moderate	Diversity: High	Diversity: Very high
<50% desirable species	2 dominant desirable species in 1 functional group	3 dominant desirable species in 1 functional group	4 dominant desirable species in 2 functional groups	4 dominant desirable species in 3 functional groups
OR	OR	OR	OR	OR
1 dominant desirable species in 1 functional group	2 functional groups each represented by minor species totaling $\geq 15\%$	2-3 dominant desirable species in 2 functional groups	3 dominant desirable species in 3 functional groups	4 dominant desirable species in 2 functional groups AND 1 additional functional group represented by minor species totaling $\geq 15\%$
OR		OR	OR	
No dominant desirable species and all minor species in each functional group totaling $< 15\%$		3 functional groups each represented by minor species totaling $\geq 15\%$	3 dominant desirable species in 2 functional groups AND 1 additional functional group represented by minor species totaling $\geq 15\%$	

Plant Diversity By Dry Weight (Use Location of Location or Page)



## Plant Diversity (By Dry Weight)

### Dominant Species:

- Dominant species are  $\geq 15\%$

### Functional Groups:

- Cool Season Grasses
- Warm Season Grasses
- Legumes
- Non-leguminous Forbs

- Must make up at least **15%** to be counted as a Functional Group
- Must be **> 50% desirable** species or automatically 1 point
- A functional group can be represented by **minor species totaling  $\geq 15\%$**

\*Example: 12% chicory and 5% plantain

\*Use NRC-3 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 undesirable than desirables, it will be 1 point. Desirable species must total more than 50% of the total biomass. Dominant species are  $\geq 15\%$ . Functional groups must be  $\geq 15\%$  of stand to be counted.

## Plant Residue and Litter as Soil Cover

	Bare soil is very easily seen;	Openings of bare soil can be seen fairly easily;	Small openings of bare soil can be seen, but minimal;	No bare soil is easily seen;	No bare soil is seen;
Plant Residue and Litter as Soil Cover (if not back canopy)	There is <20% cover on the soil surface or it is excessive, and slow to break down.	Soil cover is 21-40%.	Soil cover is 41-60%.	Soil cover is 61-80%.	Soil cover is >80% with good biological activity and decomposition of older residue.

Residue or residual?

What's between the plants?



## Plant Residue and Litter as Soil Cover



**Pull back canopy and look!**



## Grazing Utilization and Severity

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.
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**Uniform Grazing without Overgrazing**

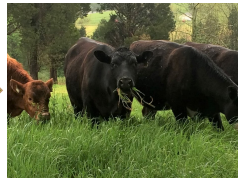


## Grazing Utilization and Severity

1



5



## Livestock Concentration Areas

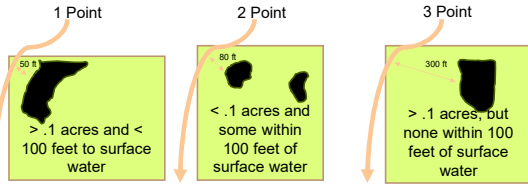
Livestock Concentration Areas (Field = 1 acre, see "Footnote")	Livestock concentration areas are within 100 feet of, or are a direct conveyance to surface water, and cover more than 0.1 acre, including trails.	Livestock concentration areas are within 100 feet of, or are a direct conveyance to surface 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.
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1. Distance to surface water
2. Size of concentrated area

**Pace or measure as needed**



## Livestock Concentration Areas



1. Distance to surface water
2. Size of concentrated area

## Soil Compaction and Soil Regenerative Features

Compaction: Dense or thick platy layer very distinct;	Compaction: Dense or 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;

1. Root and compaction are primary subindicators.
2. Color and soil life secondary.



## Soil Compaction and Soil Regenerative Features

Shovel Required!



## Plant Vigor

Plant Vigor	No plant recovery after grazing/rest. 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.
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1. Recovery/rest
2. Plant color





## Plant Vigor

1



1. Recovery/rest
2. Plant color

5



## Erosion

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 affecting plants.	Wind: Occasional scoured areas, litter windblown.	Wind: Minimal soil exposed, some detached vegetation windblown, minor plant damage.	Wind: No exposed soil.
	Streambank and/or Shoreline: Banks bank 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.

(Rate the most adverse erosion type; circle all that apply)

## TOTAL YOUR PCS SCORE

Overall Pasture Condition Score = **36**

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.

- Comments/Notes:
- Note management issues
  - Invasive species present
  - Toxic weed issues
  - Other noteworthy items that need to be discussed or addressed

## Summary:

### WHY Pasture Condition Scoring (PCS)?

- Assess and rate different pastures in a single growing season **or** rate the same pasture or paddock over several years. It should be done at least annually.
- Rating pastures seasonally to track trends in pasture condition.
  - Pasture indicators may rank very low initially but improve as management changes over time.
- A review of score summaries and specific low scoring indicators should be done with the farmer.

### Contacts:

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