

Natural Resources Conservation Service Guide to Pasture Condition Scoring



**Using the USDA-NRCS Pasture
Condition Scoring System To
Evaluate Prairie Grazing Systems**

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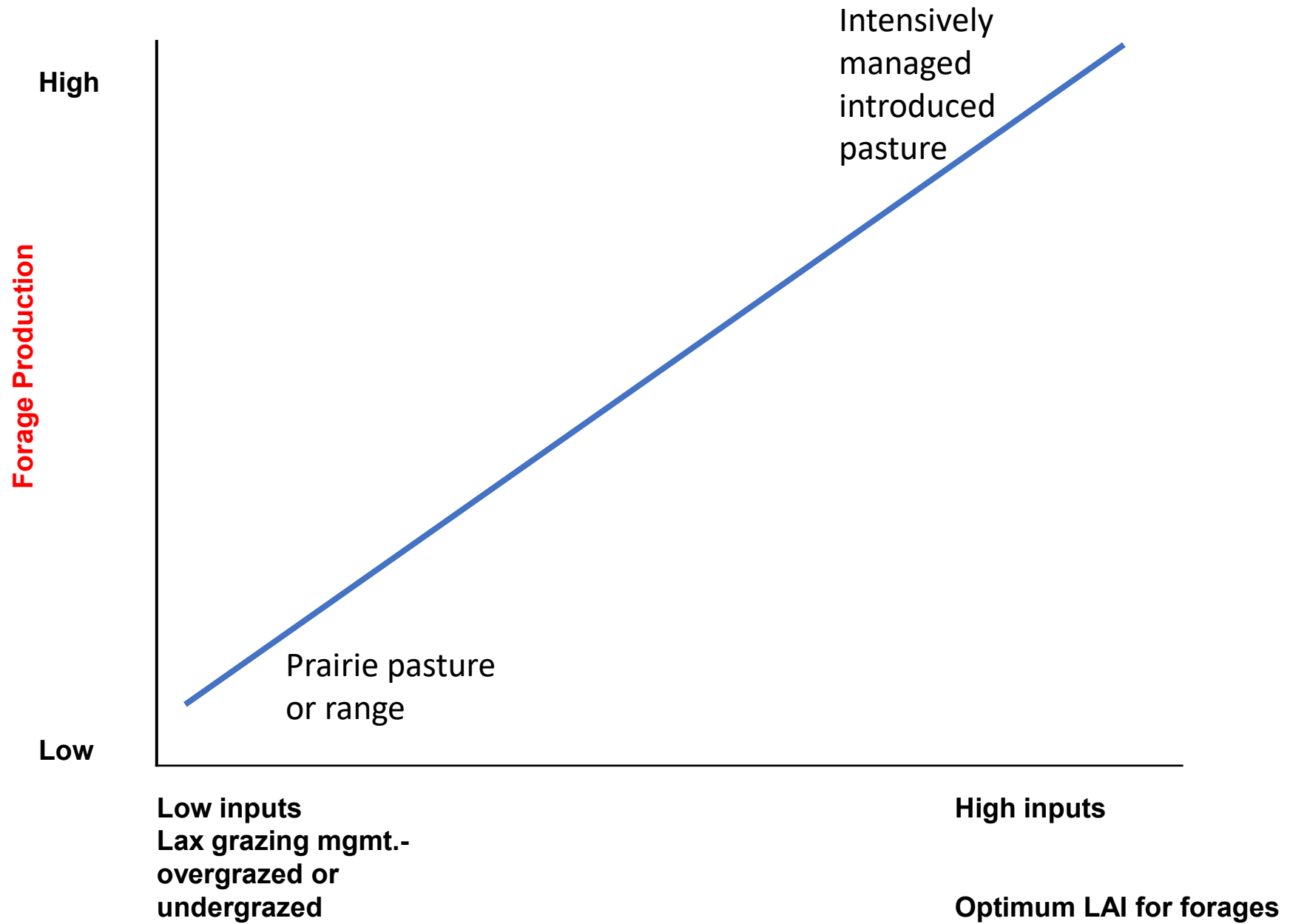
Natural Resources Conservation Service Guide to Pasture Condition Scoring



- Pasture condition scoring (PCS) is a systematic way to assess how well a pasture is being managed and the resources protected.
- A pasture rated with a high score is well-managed with **forage productivity** being sustained or enhanced.
- PCS is typically used to evaluate introduced-forage pastures.
- Today's focus: Adapting the PCS for prairie pastures.

Characteristics of an intensively managed highly productive livestock pasture:

- **Forage Species** - Dominance of productive, “improved” species
- **Soil Fertility**- High
- **Soil pH** - Amended to be in optimal zone for forage species
- **Stubble Height** – Grazing managed to maintain optimum Leaf Area Index (LAI) for photosynthesis on target forage plant species
- **Regrowth Periods** – Rotational grazing system followed, including rest periods.
- **Soil** - Protected from compaction & erosion



Characteristics of an intensively managed introduced livestock pasture:

High percentage of productive, adapted **“improved”** forage species, especially grasses and legumes

High soil levels of plant nutrients (nitrogen, phosphorus, potassium and sulfur)

Soil pH amended to be in optimal zone for **introduced** forage species

Characteristics of a prairie pasture managed with livestock grazing:

Diversity of forage functional groups, comprising palatable species

Moderate soil levels of plant nutrients (nitrogen, phosphorus, potassium and sulfur)

Soil pH amended to be in optimal zone for **target** species

- Nitrogen fertilizer makes non-native grasses more competitive and thus reduces plant species diversity
 - Reduce this competitive advantage with
 - Reduction of fertilizer rates or split applications
 - Seasonal close grazing or mowing

Characteristics of an intensively managed introduced livestock pasture	Characteristics of a prairie pasture managed with livestock grazing*
Grazing managed to maintain optimum Leaf Area Index for photosynthesis on target forage plant species (“stubble height”)	Use variable seasonal vegetation stubble height targets • Intensive grazing • Lax grazing* • Close grazing • Deferral periods

* If poisonous plants or species of concern are present, the grazing system may need to be adjusted to minimize livestock consumption

Springtime Deferral Period for Prairie Vegetation:

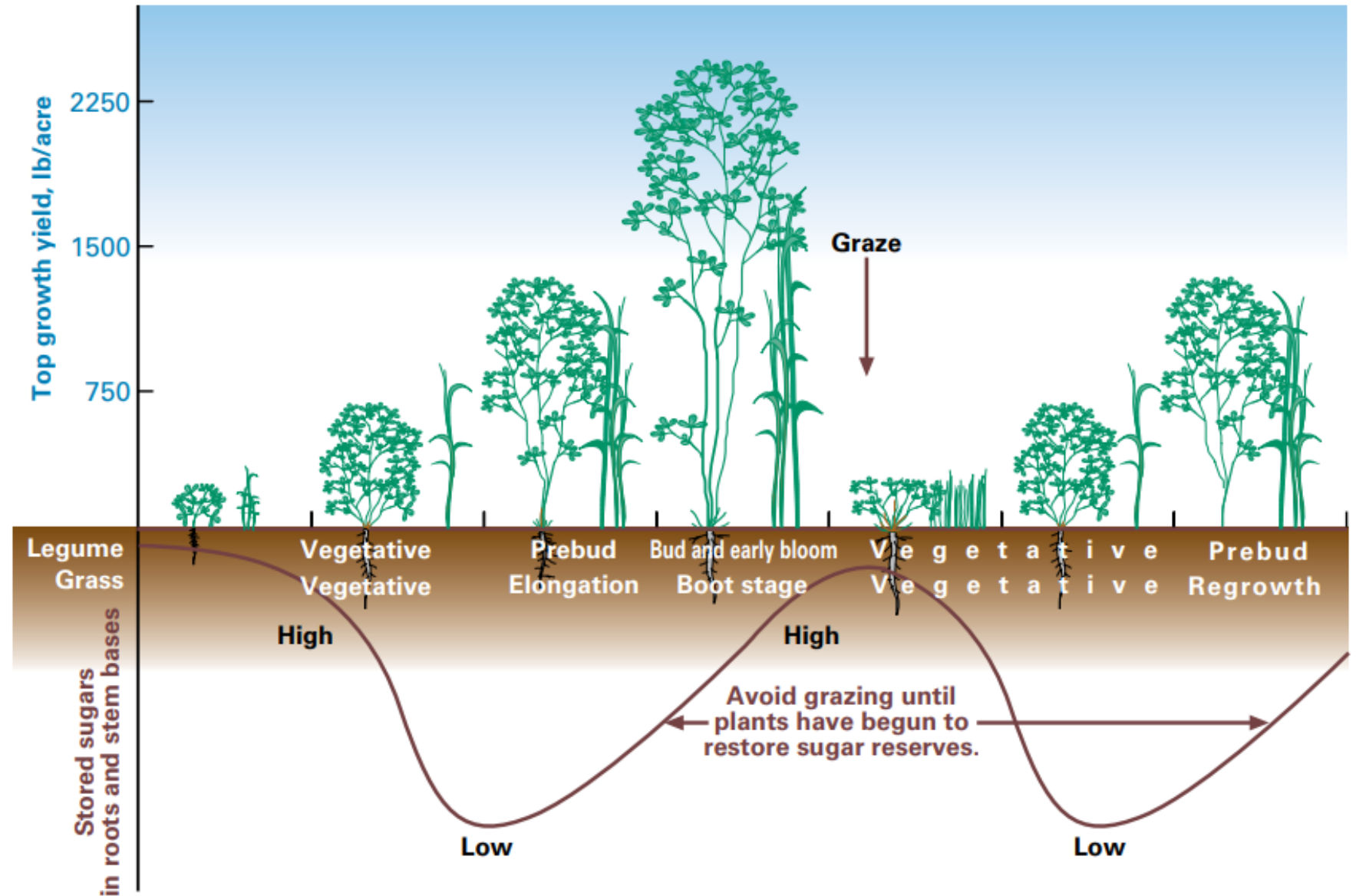
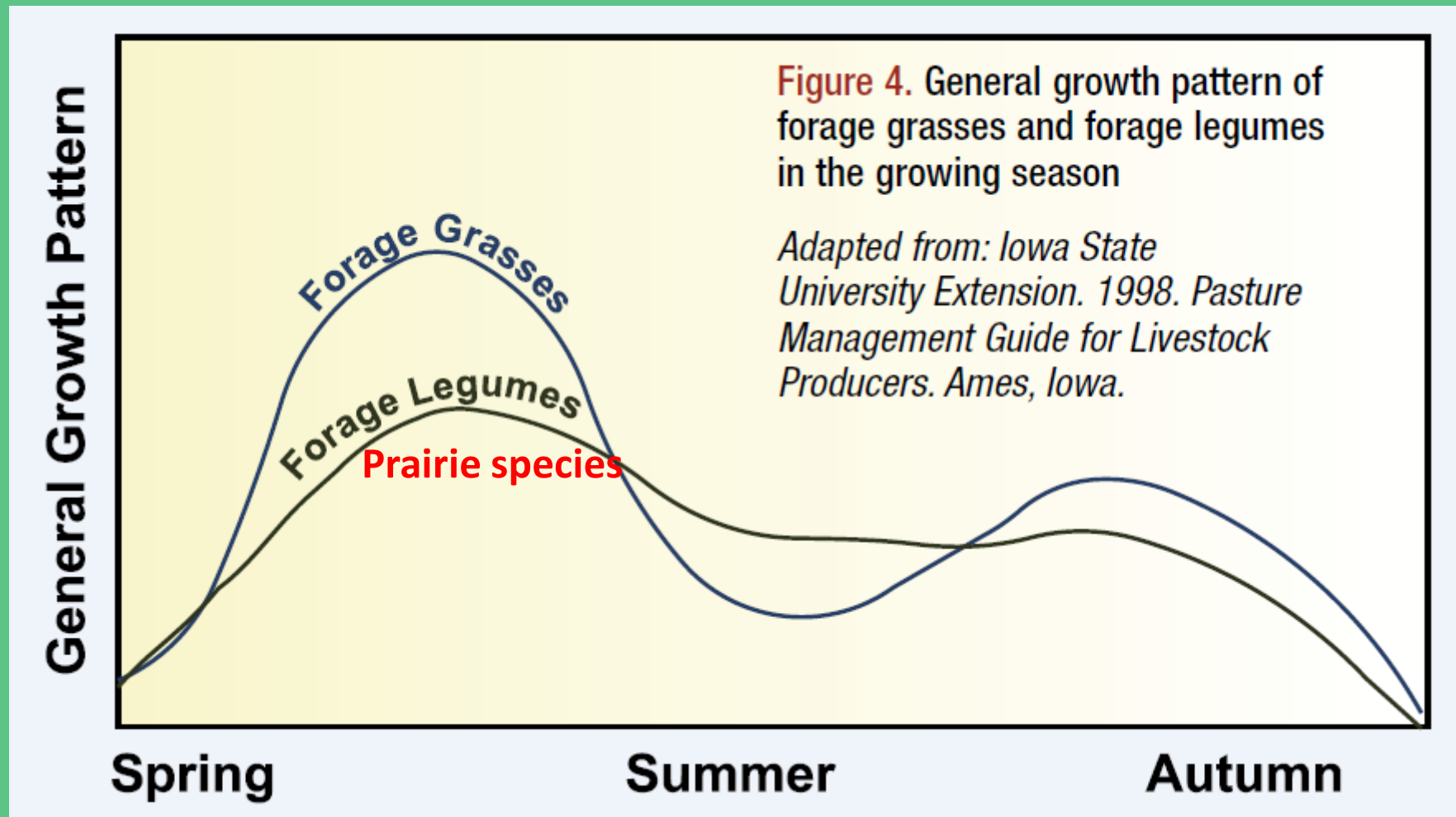


Figure 1.8. Pasture plants use and store sugars as they grow. Mature plants will regain their vigor as they grow and store excess sugars. Grazing new leafy growth too soon, before plants have begun to restore sugar reserves, should be avoided.

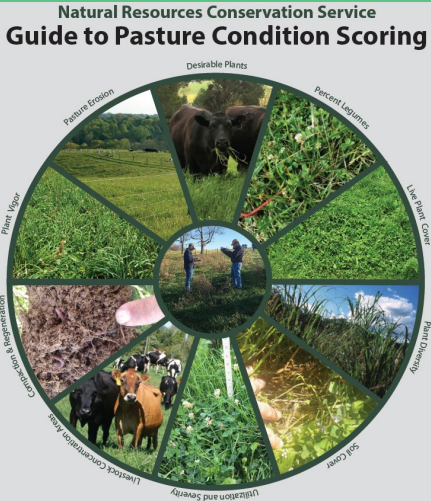
Why “close graze” before the springtime deferral?



Natural Resources Conservation Service Guide to Pasture Condition Scoring



- Uses a points score:
 - 5 Points = Highest score for each Indicator
- High Scores = Higher Level of Forage Production
- Prairie Pasture Production Goal = More moderate scores for some indicators to encourage species diversity



Target Indicator Levels for Prairies:

Moderate (3-4)	High (5)
- Percent Desirable Plants - Grazing Utilization and Severity - Plant Vigor	- Plant Diversity - Percent Legume - Live Plant Cover (includes dormant) - Plant Residue and Litter as Soil Cover - Livestock Concentration Areas - Soil Compaction (wet soils!) and Soil Regenerative Features - Erosion - Sheet and Rill - Streambank, Shoreline - Wind - Gullies

Definition:

A **functional group** includes plant species that have similar management requirements, biological contributions, and attributes

Western WA Functional Groups for Introduced Pastures	Examples
Cool-season bunchgrasses	Orchardgrass & Tall Fescue
Cool-season sod formers	Bentgrass
Cool-season legumes	White clover
Grazable forbs	Dandelion & Plantain

Pasture Condition Score Sheet

Operator:					Date:	
Evaluator:					Pasture ID:	
Soil(s), ESD(s) and or F&G(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.						Score
Indicator	1 Point	2 Points	3 Points	4 Points	5 Points	Points
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 dominant) 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-dominant) leaf canopy. Remaining is either dead standing material, or bare ground.	
Plant Diversity by Dry Weight (*See footnote at bottom of page)	Diversity: Very low	Diversity: Low	Diversity: Moderate	Diversity: High	Diversity: Very high	
	<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%	2 dominant desirable species in 1 functional group OR 2 functional groups each represented by minor species totaling ≥15%	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%	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%	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 (Pull back canopy)	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;	
	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.	
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
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 affecting 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.

Percent Desirable Plants*	Desirable species <20% of stand.	Desirable species 20– 40% of stand.	Desirable species 40–60% of stand.	Desirable species 60–80% of stand.	Desirable species exceed 80% of stand.
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- Desirable = Livestock-preferred **forages**
 - Adapted to site
 - Readily consumed
 - Persistent through much of growing season
 - High tonnage and quality (with amendments)
- Undesirable = Not preferred by livestock
 - Typically eaten last, while preferred plants overgrazed



Use Efficiency 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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- More functional groups = More diversity
- Dominant species = At least 15% of the pasture biomass by dry weight



Desirable Species for INTRODUCED Livestock Forage

Introduced Cool-Season Functional Groups for Livestock Forage - Western WA

Bunchgrasses

Tall Fescue
Orchardgrass
Annual Ryegrass
Perennial Ryegrass
Timothy
Perennial brome
Tall oatgrass
Fine-leaved Fescue
Meadow Foxtail
Meadow Fescue
Elymus spp.

Sod Grasses

Bentgrass
Perennial Bluegrass
Reed Canarygrass

Legumes

Alfalfa
Birdsfoot Trefoil
Big Trefoil
New Zealand White Clover
White Dutch Clover
Red Clover
Alsike Clover
Sainfoin
Springbank Clover
Strawberry Clover

Grazable Forbs

Chicory
Forage Plantain
Small Burnet
other herbal ley species

- **Diversity measured with different functional groups depending on goals**
 - Introduced Pastures = Sodformers Functional Group
 - Prairies = Prairie Plants Functional Group (replace sodformers)
 - In development

Common Name	Scientific Name
Roemer's Fescue	Festuca roemerii
Seashore bentgrass	Agrostis pallens
Perennial brome (native)	Bromus spp.
California Oatgrass	Danthonia californica
Poverty Oatgrass	Danthonia spicata
Western Panicgrass	Dichanthelium acuminatum
Few-flowered Panicgrass	Dichanthelium oligosanthes
Blue Wildrye	Elymus glaucus
Slender Wheatgrass	Elymus trachycaulus
Mannagrass	Glyceria spp.
Meadow Barley	Hordeum brachyantherum
Prairie Junegrass	Koeleria macrantha
Large-flowered agoseris	Agoseris grandiflora
Camas	Camassia spp.
Balsamroot	Balsamorhiza spp.
Narrow-leaved Mule's Ears	Wyethia angustifolia
Clovers (native)	Trifolium spp.
Deervetch	Lotus spp.
Fireweed	Chamerion angustifolium
Willowherb	Epilobium spp.

Desirable Species for PRAIRIE Livestock Forage

Cool-Season Functional Groups for Livestock Forage - Western WA

Bunchgrasses

Tall Fescue
Orchardgrass
Annual Ryegrass
Perennial Ryegrass
Timothy
Perennial brome
Tall oatgrass
Fine-leaved Fescue
Meadow Foxtail
Meadow Fescue
Elymus spp.

Prairie Plants

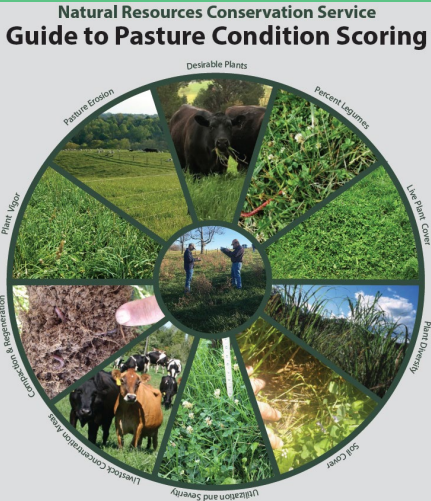
Camas
Harebell, Common
Sedge, Long-stolon
Sedge, Slough
Chickweed
Thistle, Edible
Small-flowered blue-eyed Mary
California oatgrass
Nuttall's larkspur
Hairgrass, Tufted
Hairgrass, Slender
Shooting star
Wildrye, Blue

Legumes

Alfalfa
Birdsfoot Trefoil
Big Trefoil
New Zealand White Clover
White Dutch Clover
Red Clover
Alsike Clover
Sainfoin
Springbank Clover
Strawberry Clover

Grazable Forbs

Chicory
Forage Plantain
Small Burnet
other herbal ley species



Target Indicator Levels for Prairies:

Moderate (3-4)	High (5)
• Percent Desirable Plants • Grazing Utilization and Severity • Plant Vigor	• Plant Diversity • Percent Legume • Live Plant Cover (includes dormant) • Plant Residue and Litter as Soil Cover • Livestock Concentration Areas • Soil Compaction (wet soils!) and Soil Regenerative Features • Erosion • Sheet and Rill • Streambank, Shoreline • Wind • Gullies



Where to find the NRCS Pasture Condition Score Sheet in Washington & Oregon:

- WA-NRCS FOTG Section 1
 - Pasture Technical References
 - Pasture Technical Note 104
- OR–NRCS FOTG Section 3
- <https://efotg.sc.egov.usda.gov/#/>

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