

# PASTURE AND RANGE

Revised 6/27/2018

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## PURPOSE

To assist the Agriculture Education teacher in stimulating interest in the study of range management and natural resources.

## OBJECTIVES

- Develop ability to identify range plants.
- Develop ability to classify range plants by: life cycle, growth season, origin, and forage value.
- Evaluate range site for condition and habitat.
- Recommend range site management practices.

## COMMON CORE REFERENCES

### **7-8th Grade**

**CCSS.ELA-Literacy.RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

### **9-10th Grade**

**HS-ESS3-2.** Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.\*

### **11-12th Grade**

**HS-ESS2-5.** Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

## EVENT RULES

### 1 *Plant Identification*

25 plants will be staked and numbered for identification. Live plants from the State Master Plant List will be used. Transplanted specimens may be used if they are not wilted. **Prohibited Noxious weeds can only be used as mounts**

### 2 *Scoring*

A scorecard will be used for the identification portion of the Career Development Event. Participants must write in the common name of the plant and check its growth characteristics. Characteristics are:

- A. life span - annual or perennial
- B. growth season - cold season or warm season
- C. origin - native or introduced
- D. resource rating - desirable or undesirable

Ten points per plant will be allowed for this part of the event. Six points for the correct name and one point for each correctly checked plant characteristic. If the plant name is missed, no credit will be given for the characteristics.

### 3 *Time Limit*

Participants will be allowed one minute per plant for the identification portion of the Career Development Event. Participants will move to the next plant, in sequence, when time is called.

4 *Range Practices, Sites, Condition and Habitat*

This part of the Pasture & Range Evaluation Career Development Event is comprised of four sections:

- A. Stage of plant succession
- B. Kind of ecological site
- C. Recommended range management practices
- D. Beef cattle habitat evaluation

Participants will make decisions from evaluating a small area of range (usually 100 ft square). Participants will be advised by the event official what conditions are to be considered. This will be done with a written problem or scenario given to the participants. Total point breakdown is as follows:

Stage of plant succession	25 points
Kind of ecological site	25 points
Range management practice	25 points
Beef cattle habitat score	25 points
TOTAL	100

5 *Recommended Management Practices*

See Guide to Management Practices for Beef Cattle

6 *Forage Utilization*

Utilization plant will always be utilized first to determine stocking rate

- A If the forage utilization is heavy severe: Decrease Stock Rate
- B If the forage utilization is moderate: Continue Present Stock Rate
- C If the forage utilization is light or none: Increase Stock Rate

EXAMPLE: Stated objective is a 25 and the plant is heavily grazed, students will always Decrease Stocking Rate

**EVENT FORMAT**

1 *Site Card*

Forage objective, distance to water, depth of soil, and any special factors to be included in the management scenario.

2 *Soil Texture*

Soil samples will be provided at site card. Sub soil texture will be written on the card.

## **REFERENCES**

The following references may be used.

### **Bulletin 4-H 149 Vol. 2 Judging Rangeland for Livestock and Wildlife Values**

University Mailing Services  
Publishing and Printing East  
Oklahoma State University  
Stillwater, OK  
74078  
(405) 744-8887 am only

Cost will be \$2.00 + postage

### **New Mexico Range Plants**

Cooperative Extension Service Circular 374 (\$2.75 per copy)

# **GUIDE TO MANAGEMENT PRACTICES FOR BEEF CATTLE**

1. **CONTINUE PRESENT MANAGEMENT** – Use when the current management objective is met by the present condition of the site.

2. **BEGIN A PLANNED GRAZING SYSTEM** – Use when forage production and /or forage diversity is the limiting factor.

3. **CHANGE THE KIND OF GRAZING/BROWSING ANIMAL** – Use when grazing accessibility combined with Light/None Utilization and grazing restraint is the limiting factor because of terrain >15% or woody cover.

\*Do not change the type of animal if the Utilization Plant shows Moderate, Heavy, or Severe Use by the current species of livestock and the slope is >15%.

4. **APPLY WOODY PLANT CONTROL** – Use when grazing restraint is the limiting factor because of woody plants.

5. **DECREASE STOCKING RATE FOR BEEF CATTLE** – Use when forage utilization is Heavy or Severe.

6. **INCREASE STOCKING RATE FOR BEEF CATTLE** – Use when forage utilization is Light or None.

7. **CONTINUE PRESENT STOCKING RATE** - Use when forage utilization is Moderate.

8. **DEVELOP WATER FOR BEEF CATTLE** – Use when water is the limiting factor because of distance to water.

9. **PLANT ADAPTED FORAGE SPECIES** – Use when the Similarity Index is 10% or less. This usually occurs on land that has been farmed and not reseeded. Defer grazing until the Desired Plant Community is established. Control competitive plants and invasive species with fire, grazing, or herbicide.

10. **USE PRESCRIBED FIRE** – Can be used for plant control or to enhance palatability of forage.

## Beef Cattle Habitat Evaluation Form

Size of Home Range or Evaluation Area (Acres) \_\_\_\_\_

Pasture: \_\_\_\_\_ Pasture Number: \_\_\_\_\_

Essential Habitat components needed for survival and propagation of the species. For beef cattle, evaluate (A) forage and (B) distribution factors.

### A. FORAGE FACTORS

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Forage of annual and perennial grass, forbs, and woody plants.

- 1 **Forage Condition** - How abundant (composition by weight) are the desirable food producing plants at the end of the growing season?

	<b>Circle Correct Value</b>		
	Site 1	Site 2	Site 3
Site has 76%-100% by weight of desirable forage plants for beef cattle	40	40	40
Site has 51%-75% by weight of desirable forage plants for beef cattle.	30	30	30
Site has 26%-50% by weight of desirable forage plants for beef cattle.	20	20	20
Site has 0%-25% by weight of desirable forage plants for beef cattle.	10	10	10

- 2 **Forage Diversity** - How diverse is the desirable food producing plant community? (Food types = grass, forbs, and woodies)

	<b>Circle Correct Value</b>		
	Site 1	Site 2	Site 3
Food plants represented by all 3 of the major plant types	40	40	40
Food plants represented by 2 of the 3 major plant types	20	20	20
Food plants represented by 1 of the 3 major plant types	10	10	10

- 3 **Forage utilization** - What is the average leaf height of Key (marked) utilization plants?

	Tallgrass	Midgrass	Shortgrass	<b>Circle Correct Value</b>		
				Site 1	Site 2	Site 3
Light or None	>8"	>5"	>4"	30	30	30
Moderate	6-8"	3-5"	2-4"	40	40	40
Heavy	4-6"	2-3"	1-2"	20	20	20
Severe	<4"	<2"	<1"	10	10	10

Lowest score of 3 rated criteria = Limited Factor for Forage Factor

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**B. DISTRIBUTION FACTORS** Physical factors that limit the grazing animal

1	<b>Grazing Accessibility</b> - How accessible are the forage plants to grazing animals?	<b>Circle Correct Value</b>			
		Site 1	Site 2	Site 3	
	Slope less than 5%	40	40	40	
	Slope 5%-10% and smooth	35	35	35	
	Slope 5%-10% and rough (exposed surface rock)	30	30	30	
	Slope 11%-15% and smooth	25	25	25	
	Slope 11%-15% and rough (exposed surface rock)	20	20	20	
	Slope greater than 15% and smooth	15	15	15	
	Slope greater than 15% and rough (exposed surface rock)	10	10	10	
2	<b>Grazing Restraint</b> - How much undesirable woody canopy cover is there?				
		Site 1	Site 2	Site 3	
	Brush canopy cover less than 30%	40	40	40	
	Brush canopy cover 31%-50%	30	30	30	
	Brush canopy cover 51%-80%	20	20	20	
	Brush canopy cover greater than 80%	10	10	10	
3	<b>Water</b> - how far is water from the grazing site?				
		Site 1	Site 2	Site 3	
	Distance less or equal to 1/2 mile	40	40	40	
	Distance greater than 1/2 up to 1 mile	30	30	30	
	Distance greater than 1 up to 1 1/2 miles	20	20	20	
	Distance greater than 1 1/2 up to 2 miles	10	10	10	
	Distance greater than 2 miles or not available in the grazing unit	0	0	0	

**Lowest score of 3 rated criteria = Limiting factor for Distributing Factors**

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**Site 1:** Summary

(A) Forage Components  (B) Distribution Components

**Habitat Rating Based on the Limiting Factor (Lowest value)**

Excellent \_\_\_\_\_ (31 to 40)      Good \_\_\_\_\_ (21 to 30)  
Fair \_\_\_\_\_ (11 to 20)      Poor \_\_\_\_\_ (<11)

**Site 2:** Summary

(A) Forage Components  (B) Distribution Components

**Habitat Rating Based on the Limiting Factor (Lowest value)**

Excellent \_\_\_\_\_ (31 to 40)      Good \_\_\_\_\_ (21 to 30)  
Fair \_\_\_\_\_ (11 to 20)      Poor \_\_\_\_\_ (<11)

**Site 3:** Summary

(A) Forage Components  (B) Distribution Components

**Habitat Rating Based on the Limiting Factor (Lowest value)**

Excellent \_\_\_\_\_ (31 to 40)      Good \_\_\_\_\_ (21 to 30)  
Fair \_\_\_\_\_ (11 to 20)      Poor \_\_\_\_\_ (<11)

GRASSES		PLANT CHARACTERISTICS						RATING For Cattle Food		
Short Grass = S Mid Grass = M Tall Grass = T		Perennial	Annual	Cool Season	Warm Season	Native	Introduced	Desirable	Undesirable	
1	Indian Ricegrass	M	X		X	X		X		<i>Achnatherum hymenoides</i> (Roem. & Schult.) Barkworth
2	Big Bluestem/ Sand Bluestem	M	X		X	X		X		<i>Andropogon gerardii</i> Vitman
3	Threeawn	S	X		X	X			X	<i>Aristida</i>
4	Pine Dropseed	S	X		X	X		X		<i>Blepharoneuron tricholepis</i> (Torr.) Nash
5	Cane Bluestem	M	X		X	X		X		<i>Bothriochloa barbinodis</i> (Lag.) Herter
6	Silver Bluestem	M	X		X	X			X	<i>Bothriochloa saccharoides</i> (Sw.) Rydb.
7	Six Weeks Grama	S		X	X	X			X	<i>Bouteloua barbata</i> Lag
8	Sideoats Grama	M	X		X	X		X		<i>Bouteloua curtipendula</i> (Michx.) Torr.
9	Black Grama	S	X		X	X		X		<i>Bouteloua eriopoda</i> (Torr.) Torr
10	Blue Grama	S	X		X	X		X		<i>Bouteloua gracilis</i> (Willd. ex Kunth) Lag. ex Griffiths
11	Hairy Grama	S	X		X	X		X		<i>Bouteloua hirsuta</i> Lag.
12	Feather Fingergrass	S		X	X	X			X	<i>Chloris virgata</i>
13	Buffalograss	S	X		X	X		X		<i>Bouteloua dactyloides</i> (Nutt.) J.T. Columbus
14	Rescuegrass	M	X		X		X	X		<i>Bromus catharticus</i> Vahl
15	Cheatgrass	M		X	X		X		X	<i>Bromus tectorum</i> L.
16	Bermudagrass	S	X		X		X	X		<i>Cynodon dactylon</i> (L.) Pers
17	Arizona Cottontop	M	X		X	X		X		<i>Digitaria californica</i> (Benth.) Henr.
18	Desert Saltgrass	S	X		X	X			X	<i>Distichlis spicata</i> (L.) Greene
19	Bottlebrush Squirreltail	M	X		X	X		X		<i>Elymus elymoides</i> (Raf.) Swezey
20	Plains Lovegrass	M	X		X	X		X		<i>Eragrostis intermedia</i> Hitchc.
21	Fluffgrass	S	X		X	X			X	<i>Eragrostis intermedia</i> Hitchc.
22	Arizona Fescue	M	X		X	X		X		<i>Festuca arizonica</i> Vasey
23	Needle and Thread	M	X		X	X		X		<i>Hesperostipa comata</i> (Trin. & Rupr.) Barkworth
24	New Mexico Feathergrass	M	X		X	X		X		<i>Hesperostipa neomexicana</i> (Thurb. ex J.M. Coult.) Barkworth
25	Green Sprangletop	M	X		X	X		X		<i>Leptochloa dubia</i> (Kunth) Nees
26	Wolfstail	S	X		X	X		X		<i>Lycurus</i> Kunth
27	Mountain Muhly	M	X		X	X		X		<i>Muhlenbergia montana</i> (Nutt.) Hitchc.
28	Bush Muhly	M	X		X	X		X		<i>Muhlenbergia porteri</i> Scribn. ex Beal
29	Mat Muhly	S	X		X	X		X		<i>Muhlenbergia richardsonis</i> (Trin.) Rydb.
30	Ring Muhly	S	X		X	X			X	<i>Muhlenbergia torreyi</i> (Kunth) Hitchc. ex Bush
31	Galleta/Tobosa	M	X		X	X		X		<i>Pleuraphis jamesii</i> Torr./ <i>Pleuraphis mutica</i>
32	Hall's Panic	S	X		X	X		X		<i>Panicum hallii</i> Vasey
33	Vine Mesquite	S	X		X	X		X		<i>Panicum obtusum</i> Kunth
34	Western Wheatgrass	M	X		X	X		X		<i>Pascopyrum smithii</i> (Rydb.) A. Löve
35	Kentucky Bluegrass	S	X		X		X	X		<i>Poa pratensis</i> L.
36	Little Bluestem	M	X		X	X		X		<i>Schizachyrium scoparium</i> (Michx.) Nash
37	Burrograss	S	X		X	X			X	<i>Scleropogon brevifolius</i> Phil
38	Plains Bristlegrass	M	X		X	X		X		<i>Setaria vulpiseta</i> (Lam.) Roem. & Schult.
39	Johnsongrass	T	X		X		X	X		<i>Sorghum halepense</i> (L.) Pers



GRASSES		PLANT CHARACTERISTICS						RATING For Cattle Food	
Short Grass = S Mid Grass = M Tall Grass = T		Perennial	Annual	Cool Season	Warm Season	Native	Introduced	Desirable	Undesirable
40	Indiangrass	T	X		X	X		X	
41	Alkali Sacaton	M	X		X	X		X	
42	Sand Dropseed	M	X		X	X		X	
43	Spike Dropseed	M	X		X	X		X	
44	Mesa Dropseed	M	X		X	X		X	
45	Giant Sacaton	T	X		X	X		X	
46	Gyp Dropseed	M	X		X	X			X

*Sorghastrum nutans* (L.) Nash

*Sporobolus airoides* (Torr.) Torr.

*Sporobolus cryptandrus* (Torr.) A. Gray

*Sporobolus contractus* Hitchc

*Sporobolus flexuosus* (Thurb. ex Vasey) Rydb.

*Sporobolus wrightii* Munro ex Scribn.

*Sporobolus nealleyi* Vasey

	Forbs	PLANT CHARACTERISTICS						RATING For Cattle Food	
		Perennial	Annual	Cool Season	Warm Season	Native	Introduced	Desirable	Undesirable
50	Russian Knapweed	X			x		X		X
51	Western Ragweed	X			X	X			X
52	Pigweed		X		X	X			X
53	Fringed Sagebrush	X		X		X			X
54	Horsetail Milkweed	X			X	X			X
55	Lamb's Quarters		X		X		X		X
56	Croton		X		X	X			X
57	Tansy Mustard		X	X		X			X
58	Filaree		X	X		X		X	
59	Texas Blueweed	X			X	X			X
60	Pingue	X			X	X			X
61	Kochia		X		X		X		X
62	Sacahuista	X			X	X			X
63	Locoweed	X		X		X			X
64	Scorpion Weed		X		X	X			X
65	Wooly Indianwheat		X		X	X		X	
66	Curly Dock	X			X		X		X
67	Russian Thistle		X		X		X		X
68	Threadleaf Groundsel	X			X	X			X
69	London Rocket		X	X			X		X
70	Silverleaf Nightshade	X			X	X			X
71	Buffalo Bur		X		X	X			X
72	Globemallow	X			X	X		X	
73	Puncture Vine		X		X		X		X
74	Desert Holly	X			X	X			X
75	Wild Buckwheat	X			X	X		X	
76	Wooly Paperflower	X			X	X			X
77	Spectacle Pod		X		X	X			X
78	Pepperweed	X			X	X			X

*Acroptilon repens L.*  
*Ambrosia*  
*Amaranthus L.*  
*Artemisia frigida*  
*Asclepias subverticillata (A. Gray) Vail*  
*Chenopodium album*  
*Croton L.*  
*Descurainia Webb & Bethel.*  
*Erodium spp*  
*Helianthus ciliaris DC.*  
*Hymenoxys richardsonii (Hook.) Cockerell*  
*Kochia scoparia*  
*Nolina microcarpa S. Watson*  
*Oxytropis DC*  
*Phacelia strictiflora*  
*Plantago purshii*  
*Rumex crispus L.*  
*Salsola L.*  
*Senecio flaccidus var. douglasii*  
*Sisymbrium irio L.*  
*Solanum elaeagnifolium Cav.*  
*Solanum rostratum Dunal*  
*Sphaeralcea A. St.-Hil.*  
*Tribulus terrestris L*  
*Acourtia nana (A. Gray) Reveal & King*  
*Eriogonum Spp*  
*Psilotrophe tagetina (Nutt.) Greene*  
*Dimorphocarpa wislizenii*  
*Lepidium latifolium*

	Trees & Shrubs	PLANT CHARACTERISTICS					RATING For Cattle Food			
		Perennial	Annual	Cool Season	Warm Season	Native	Introduced	Desirable		Undesirable
79	Big Sagebrush	X			X	X			X	<i>Artemisia tridentata</i> Nutt
80	Sand Sagebrush	X			X	X			X	<i>Artemisia filifolia</i> Torr
81	Four-wing Saltbush	X			X	X		X		<i>Atriplex canescens</i> (Pursh) Nutt.
82	Shadescale	X			X	X		X		<i>Atriplex confertifolia</i> (Torr. & Frém.) S. Watson
83	True Mountain Mahogany	X			X	X		X		<i>Cercocarpus</i> Kunth
84	Javelinabush	X			X	X			X	<i>Condalia ericoides</i> (A. Gray) M.C. Johnst
85	Cholla	X			X	X			X	<i>Cylindropuntia</i>
86	Feather Dalea	X			X	X			X	<i>Dalea formosa</i>
87	Long-Leaf Mormon Tea	X			X	X			X	<i>Ephedra viridis</i> Coville
88	Torrey Mormon Tea	X			X	X			X	<i>Ephedra torreyana</i>
89	Rubber Rabbitbrush	X			X	X			X	<i>Ericameria nauseosa</i> (Pall. ex Pursh) G.L. Nesom & Baird
90	Apache Plume	X			X	X		X		<i>Fallugia</i> Endl.
91	Barrel Cactus	X			X	X			X	<i>Ferocactus Britton &amp; Rose</i>
92	Ocotillo	X			X	X			X	<i>Fouquieria</i> Kunth
93	Broom Snakeweed	X			X	X			X	<i>Gutierrezia sarothrae</i> (Pursh) Britton & Rusby
94	Tarbush	X			X	X			X	<i>Holocarpa virgata</i> (A. Gray)
95	Juniper	X			X	X			X	<i>Juniperus</i> L.
96	Allthorn	X			X	X			X	<i>Koeberlinia</i> Zucc
97	Range Ratany	X			X	X		X		<i>Krameria parvifolia</i>
98	Winterfat	X			X	X		X		<i>Krascheninnikovia Guldenstaedt</i>
99	Creosotebush	X			X	X			X	<i>Larrea</i> Cav.
100	Algerita	X			X	X			X	<i>Mahonia trifoliolata</i> (Moric.) Fedde
01	Prickly Pear	X			X	X			X	<i>Opuntia</i> Mill.
02	Mariola	X			X	X			X	<i>Parthenium incanum</i>
03	Pinyon Pine	X			X	X			X	<i>Pinus monophylla</i> Torr. & Frém
04	Mesquite	X			X	X			X	<i>Prosopis</i> L.
05	Broom Dalea	X			X	x			X	<i>Psoralea scoparius</i> (A. Gray) Rydb
06	Shinnery Oak	X			X	X			X	<i>Quercus havardii</i>
07	Gambel Oak	X			X	X			X	<i>Quercus gambelii</i> Nutt.
08	Skunkbush Sumac	X			X	X			X	<i>Rhus trilobata</i> Nutt
09	Salt Cedar	X			X		X		X	<i>Tamarix ramosissima</i> Ledeb
010	Yucca	X			X	X		X		<i>Yucca</i> L.
011	littleleaf sumac	X			X	X			X	<i>Rhus microphylla</i> Engelm. ex A. Gray
012	Rayless Goldenrod	X		X		X			X	<i>Bigelovia</i> DC.
013	Desert Willow	X			X	X			X	<i>Chilopsis linearis</i> (cav.) sweet
014	Catclaw Mimosa	X			X	X			X	<i>Mimosa biuncifera</i> benth
015	Whitethorn Acacia	X			X	X			X	<i>acacia constricta</i>
016	Lotebush	X			X	X			X	<i>Ziziphus obtusifolia</i>

