New Mexico FFA

Pasture & Range

Career Development Event

PASTURE AND RANGE

Reviewed 7/27/2023

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 recommendation.

A	If the forage utilization is heavey severe:	Decrease Stock Rate
B	If the forage utilization is moderate:	Contiune 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 accessibilty 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 Utilzation 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

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?

	Circle Correct Value		
	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)

	Circle Correct Value		
	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	Circle Correct Value 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			

B. DISTRIBUTION FACTORS Physical factors that limit the grazing animal

1 **Grazing Accessibility** - How accessible are the forage plants to grazing animals?

	Circle Correct Value		
	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 **Grazing Restraint** - How much undesireable 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 **Water** - 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 avalible in the grazing unit	0	0	0

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

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

	GRASSES Short Grass = S Mid Grass = M Tall Grass = T		PLANT CHARACTERISTICS						RATING For Cattle Food		
			Perennial	Annual	Cool Season	Warm Season	Native	Introduced	Desirable	Undesirable	
40	Indiangrass	T	X			X	X		X		*Sorghastrum nutans (L.) Nash*
41	Alkali Sacaton	M	X			X	X		X		*Sporobolus airoides (Torr.) Torr.*
42	Sand Dropseed	M	X			X	X		X		*Sporobolus cryptandrus (Torr.) A. Gray*
43	Spike Dropseed	M	X			X	X		X		*Sporobolus contractus hitchc*
44	Mesa Dropseed	M	X			X	X		X		*Sporobolus flexuosus (Thurb. ex Vasey) Rydb.*
45	Giant Sacaton	T	X			X	X		X		*Sporobolus wrightii Munro ex Scribn.*
46	Gyp Dropseed	M	X			X	X			X	*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	*Acroptilon repens L.*
51	Western Ragweed	X			X	X			X	*Ambrosia*
52	Pigweed		X		X	X			X	*Amaranthus L.*
53	Fringed Sagebrush	X		X		X			X	*Artemisia frigida*
54	Horsetail Milkweed	X			X	X			X	*Asclepias subverticillata (A. Gray) Vail*
55	Lamb's Quarters		X		X		X		X	*Chenopodium album*
56	Croton		X		X	X			X	*Croton L.*
57	Tansy Mustard		X	X		X			X	*Descurainia Webb & Bethel.*
58	Filaree		X	X		X		X		*Erodium spp*
59	Texas Blueweed	X			X	X			X	*Helianthus ciliaris DC.*
60	Pingue	X			X	X			X	*Hymenoxys richardsonii (Hook.) Cockerell*
61	Kochia		X		X		X		X	*Kochia scoparia*
62	Sacahuista	X			X	X			X	*Nolina microcarpa S. Watson*
63	Locoweed	X		X		X			X	*Oxytropis DC*
64	Scorpion Weed		X		X	X			X	*Phacelia strictiflora*
65	Wooly Indianwheat		X		X	X		X		*Plantago purshii*
66	Curly Dock	X			X		X		X	*Rumex crispus L.*
67	Russian Thistle		X		X		X		X	*Salsola L.*
68	Threadleaf Groundsel	X			X	X			X	*Senicio flaccidus var. douglasii*
69	London Rocket		X	X			X		X	*Sisymbrium irio L.*
70	Silverleaf Nightshade	X			X	X			X	*Solanum elaeagnifolium Cav.*
71	Buffalo Bur		X		X	X			X	*Solanum rostratum Dunal*
72	Globemallow	X			X	X		X		*Sphaeralcea A. St.-Hil.*
73	Puncture Vine		X		X		X		X	*Tribulus terrestris L*
74	Desert Holly	X			X	X			X	*Acourtia nana (A. Gray) Reveal & King*
75	Wild Buckwheat	X			X	X		X		*Eriogonum Spp*
76	Wooly Paperflower	X			X	X			X	*Psilotrophe tagetina (Nutt.) Greene*
77	Spectacle Pod		X		X	X			X	*Dimorphocarpa wislizenii*
78	Pepperweed	X			X	X			X	*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	*Artemisia tridentata Nutt*
80	Sand Sagebrush	X			X	X			X	*Artemisia filifolia Torr*
81	Four-wing Saltbush	X			X	X		X		*Atriplex canescens (Pursh) Nutt.*
82	Shadescale	X			X	X		X		*Atriplex confertifolia (Torr. & Frém.) S. Watson*
83	True Mountain Mahogany	X			X	X		X		*Cercocarpus Kunth*
84	Javelinabush	X			X	X			X	*Condalia ericoides (A. Gray) M.C. Johnst*
85	Cholla	X			X	X			X	*Cylindropuntia*
86	Feather Dalea	X			X	X			X	*Dalea formosa*
87	Long-Leaf Mormon Tea	X			X	X			X	*Ephedra viridis Coville*
88	Torrey Mormon Tea	X			X	X			X	*Ephedra torreyana*
89	Rubber Rabbitbrush	X			X	X			X	*Ericameria nauseosa (Pall. ex Pursh) G.L. Nesom & Baird*
90	Apache Plume	X			X	X		X		*Fallugia Endl.*
91	Barrel Cactus	X			X	X			X	*Ferocactus Britton & Rose*
92	Ocotillo	X			X	X			X	*Fouquieria Kunth*
93	Broom Snakeweed	X			X	X			X	*Gutierrezia sarothrae (Pursh) Britton & Rusby*
94	Tarbush	X			X	X			X	*Holocarpha virgata (A. Gray)*
95	Juniper	X			X	X			X	*Juniperus L.*
96	Allthorn	X			X	X			X	*Koeberlinia Zucc*
97	Range Ratany	X			X	X		X		*Krameria parvifolia*
98	Winterfat	X			X	X		X		*Krascheninnikovia Guldenstaedt*
99	Creosotebush	X			X	X			X	*Larrea Cav.*
100	Algerita	X			X	X			X	*Mahonia trifoliolata (Moric.) Fedde*
01	Prickly Pear	X			X	X			X	*Opuntia Mill.*
02	Mariola	X			X	X			X	*Parthenium incanum*
03	Pinyon Pine	X			X	X			X	*Pinus monophylla Torr. & Frém*
04	Mesquite	X			X	X			X	*Prosopis L.*
05	Broom Dalea	X			X	x			X	*Psorothamnus scoparius (A. Gray) Rydb*
06	Shinnery Oak	X			X	X			X	*Quercus havardii*
07	Gambel Oak	X			X	X			X	*Quercus gambelii Nutt.*
08	Skunkbush Sumac	X			X	X			X	*Rhus trilobata Nutt*
09	Salt Cedar	X			X		X		X	*Tamarix ramosissima Ledeb*
010	Yucca	X			X	X		X		*Yucca L.*
011	littleleaf sumac	X			X	X			X	*Rhus microphylla Engelm. ex A. Gray*
012	Rayless Goldenrod	X		X		X			X	*Bigelowia DC.*
013	Desert Willow	X			X	X			X	*Chilopsis linearis (cav.) sweet*
014	Catclaw Mimosa	X			X	X			X	*Mimosa biuncifera benth*
015	Whitethorn Acacia	X			X	X			X	*acacia constricta*
016	Lotebush	X			X	X			X	*Ziziphus obtusifolia*

INSTRUCTIONS:

Print the plant ID number from the key in the appropriate blank. Place an "X" in the appropriate column(s) describing characteristics and ecological factors.

	PLANT NAME	PLANT CHARACTERISTICS							RATING For Cattle Food	
		Perennial	Annual	Cool Season	Warm Season	Native	Introduced	Invader	Desirable	Undesirable
1										
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