

CLAY UPLAND  
KANSAS RANGE SITE DESCRIPTION

1 Location of Site:

Land Resource Area 73  
Rolling Plains and Breaks



2. Climate:

See climate for LRA 73  
(Filed in the front of Section II-E)

3. Topography:

This site generally occurs on nearly level to gently sloping uplands. Frequently parts of this site are on convex slopes.

4. Soils and Hydrological Characteristics:

- a. The deep soils on this site have silty surface layers and clayey subsoils. Permeability is moderately slow to very slow.
- b. The soils that characterize this site are Crete and Mento.
- c. This site is more droughty than the loamy upland site because of a higher runoff due to low permeability and heavy soil textures. The soils on this site are susceptible to wind and water erosion when unprotected.

5. Climax Vegetation:

- a. This site is somewhat droughty and occurs on level to gently sloping uplands. The potential vegetation is a mixed grass prairie. Big bluestem, little bluestem, sideoats grama, blue grama, and western wheatgrass make up 65 to 70 percent of the potential vegetation. As the precipitation increases to the east, so does the big bluestem. The big bluestem is generally replaced by sideoats grama in long dry cycles but under extreme drought conditions, it may be replaced by some of the shorter grasses.

Western ragweed is the dominant forb on this site. Heath aster and slimflower scurfpea may also be quite prevalent in some situations.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 90 Percent</u>		<u>Forbs - 10 Percent</u>	<u>Shrubs and Cacti - T</u>
60	25 big bluestem	5   western ragweed	T   pricklypear
	5 Canada wildrye		
	5 indiangrass	dotted gayfeather	
	15 little bluestem	heath aster	
	15 sideoats grama	5   slimflower scurfpea	
10 switchgrass	upright prairieconeflower		
25	10 blue grama	T   scarlet globemallow	
	5 buffalograss		snow-on-the-mountain
	5 sedges		stenosiphon
	10 western wheatgrass		
5	plains bluegrass		
	red threeawn		
	sand dropseed		
	tall dropseed		

c. Invaders common to this site are bottlebrush squirreltail, Japanese brome, kochia, little barley, prairie threeawn, russianthistle, tansymustard, and tumblegrass.

6. Management Implications:

Most of the soils that make up this site are in cropland, leaving the rangeland as small pockets or fingers into rougher associated sites. Being the more level site in most associations and its high position in the topography, it is a preferred grazing site during the summer months.

Initial overgrazing of this site generally reduces the production of big bluestem while sideoats grama and blue grama increase to become the dominant vegetation. With continued overgrazing blue grama, buffalograss, and western wheatgrass become the prominent species of the site.

Once blue grama, western wheatgrass, and buffalograss dominate this site, the relationship of blue grama and western wheatgrass to buffalograss is determined by grazing pressures and weather cycles. With continued heavy grazing combined with long dry cycles, buffalograss tends to become dominant. With moderate grazing blue grama and western wheatgrass usually dominate. Only destructive grazing will eliminate these grasses from the site.

Once most of the taller species are eliminated from the site through grazing pressure and dry weather cycles, regaining the potential vegetation through management is extremely slow. Where remnant plants of the taller species persist, the site may be returned to its potential through proper stocking and a system of grazing that includes scheduled rest periods during the growing season.

Significant amounts of big bluestem are difficult to maintain on this site without a grazing management plan that includes periodic rest.

7. Wildlife Considerations:

This site is a preferred site of blacktail jackrabbits, blacktail prairie dogs, burrowing owls, and could be important to the antelope if it returns to this area. The prairie dog and jackrabbit prefer this site when it reflects a shortgrass condition. The shorter vegetation permits them to see great distances and therefore avoid danger.

Small birds and rodents prefer this site when it is near its potential. Generally the better the condition, the more small birds and rodents that are present. However, prairie chickens prefer this site as a booming ground when it is in a closely grazed condition.

8. Other Uses and Values:

Most of the large, more level areas of this site have been tilled and are presently in cropland. Properly managed, they produce good crops but are somewhat droughty.

This site is also appealing to many as homesites or other development areas. However, caution is advised as the high clay content of these soils can create foundation problems and severely limit their suitability for septic fields.

9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of principal forage species, time of burning, if fire is used, as well as growing conditions, influence annual herbage production.

<u>Growing Conditions</u>	<u>Total Air Dry Herbage</u>	
	<u>Pounds/Acre</u>	<u>Kilograms/Hectare</u>
Favorable	2,500-3,500	2,800-3,920
Normal	2,000-2,500	2,240-2,800
Unfavorable	1,000-2,000	1,120-2,240

10. Guide to Initial Stocking Rates:

<u>Range Condition</u>	<u>Percent Climax Vegetation</u>	<u>Acres/AU Yearlong</u>	<u>AU Months Per Acre</u>	<u>Hectares/AU Yearlong</u>	<u>AUM's per Hectare</u>
Excellent	76-100	14-18	.8	6-7	2.0
Good	51-75	18-22	.6	7-9	1.5
Fair	26-50	22-40	.5	9-16	1.2
Poor	0-25	40+	.2	16+	0.5

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High  
M = Medium  
L = Low

Wildlife Preferred Uses

C = Cover  
F = Food  
N = Nesting

Plant Species	Animal Species			
	Cattle	Sheep	Pheasant	Deer
big bluestem	H	M	C,N	C
blue grama	H	H	---	---
buffalograss	H	H	---	---
Canada wildrye	H	M	C,F,N	C,F <u>1/</u>
dotted gayfeather	M	M	---	F
heath aster	M	H	C,F	F
Japanese brome	M <u>1/</u>	H <u>1/</u>	F <u>1/</u>	F <u>1/</u>
little bluestem	H	M	C,N	---
red threeawn	L	L	---	---
sand dropseed	M	M	---	---
sedges	M	M	---	F
sideoats grama	H	M	C,F	---
slimflower scurfpea	L	M	F	F
switchgrass	H <u>2/</u>	M	C,F,N	C,F
tall dropseed	M	L	C,N	C
upright prairieconeflower	L	M	F	F
western ragweed	M	M	F	F
western wheatgrass	H	M	C,F,N	F

1/ Has a high preference during lush growth periods

2/ Preferred during first half of growing season

Reference:

Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.

## CLAY UPLAND

### KANSAS RANGE SITE DESCRIPTION

#### 1. Location of Site:

Land Resource Areas 74, 75, 79, and 80A  
Central Kansas Sandstone Hills,  
Central Loess Plains,  
Great Bend Sand Plains, and  
Central Rolling Red Prairies



#### 2. Climate:

See climate for LRA's 74, 75, 79, and 80A  
(Filed in the front of Section II-E)

#### 3. Topography:

This site occurs on nearly level or gently sloping uplands

#### 4. Soils and Hydrological Characteristics:

a. The soils on this site are moderately deep to deep soils having loamy to silty surfaces (7 to 14 inches) over clayey subsoils. These soils are somewhat poorly drained to well drained. Water permeability is slow or very slow. Although these soils can retain large amounts of water, it is tightly held and therefore is not available in adequate amounts for the vegetation during stress periods. This reduces water availability and decreases potential forage production during dry years.

b. The major soils that characterize this site are:

Butler	Goessel	Renfrow
Crete	Irwin	Rosehill
Edalgo	Kirkland	Tabler
Englund	Ladysmith	Waurika

c. On these soils, excessive removal of the vegetation prior to spring growth can permit heavy rains to seal the surface, reducing moisture intake. This condition not only reduces potential forage production but can also create a sheet erosion hazard.

5. Climax Vegetation:

a. The natural potential vegetation on this site is a mixed grass prairie. In this condition big bluestem, little bluestem, indiangrass, and switchgrass produce about 60 to 65 percent of the total vegetation. In its development, the vegetation on this site was influenced by fire, grazing, and drought. The grazing was predominantly by large transient herds of bison and lesser numbers of elk, pronghorned antelope, and deer.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 90 Percent</u>		<u>Forbs - 10 Percent</u>	<u>Shrubs - T</u>	
70	35 big bluestem	5	American licorice	leadplant
	15 little bluestem		catclaw sensitivebriar	
	10 indiangrass		compassplant	
	10 sideoats grama		groundplum milkvetch	
	15 switchgrass		Illinois bundleflower	
15	10 blue grama	5	maximilian sunflower	
	5 tall dropseed		pitcher sage	
	10 western wheatgrass		aromatic aster	
5	buffalograss	5	baldwin ironweed	
	Canada wildrye		blue wildindigo	
	porcupinegrass		dogbane spp.	
	prairie junegrass		dotted gayfeather	
	purple lovegrass		green antelopehorn	
	rosette panicums		Louisiana sagewort	
	sedges		manyflower scurfpea	
			Missouri goldenrod	
			plains larkspur	
			plains wildindigo	
	prairie groundsel			
	slimflower scurfpea			
	stiff goldenrod			
	upright prairieconeflower			
	western ragweed			
	woolly verbena			
	yarrow			

c. Common invaders to this site include annual broomweed, buckbrush, common lespedeza, common ragweed, Japanese brome, Kentucky bluegrass, Korean lespedeza, osageorange, prairie threeawn, and redcedar.

## 6. Management Implications:

This site appears on broad areas scattered throughout central Kansas. Since this site is generally a preferred grazing area by livestock, a high level of management is required to maintain it in its most productive condition.

Overgrazing with cattle results in the reduction of big bluestem, indianguass, little bluestem, compassplant, and other preferred species. Switchgrass is reduced when overgrazing occurs during the first half of the growing season. It responds as an increaser, however, when overgrazing occurs only during the last half of the growing season. Sideoats grama, blue grama, and buffalograss are the major increasers with overgrazing. Slimflower and/or manyflower scurfpea, western ragweed, baldwin ironweed, and heath aster often increase with overgrazing.

Continued heavy use results in tall dropseed, sideoats grama, western wheatgrass, buffalograss, western ragweed, and many less palatable plants becoming the dominant vegetation. Remnants of the preferred grass species will tend to survive in a very reduced (low vigor) condition unless destructive grazing occurs.

Overgrazing with sheep results in the elimination of most forb species. Since sheep prefer forbs, the major grass species decline more slowly but will also be eliminated if overgrazing is continued. Tall dropseed, prairie threeawn, and Japanese brome are the dominant species left under these conditions.

Grazing management that includes proper stocking and timely rest periods can be used to restore or maintain the vegetation on this site.

## 7. Wildlife Considerations:

When maintained in good to excellent condition, this site provides excellent nesting areas for prairie chickens, especially when it is near booming grounds. The variety of forbs and grasses found on this site makes it a preferred feeding area for white-tail deer, quail, and numerous songbirds. Overgrazing reduces the availability of food and cover that attracts these species to this site.

Numerous rodents and other small animals utilize this site making it a preferred hunting area by hawks and owls.

## 8. Other Uses and Values:

Most of the large, more level areas of this site have been tilled and are presently in cropland. Properly managed, they produce good crops but are somewhat droughty.

This site is also appealing to many as homesites or other development areas. However, caution is advised as the high clay content of these soils can create foundation problems and severely limit their suitability for septic fields.

9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of principal forage species, proper burning techniques, if used, as well as growing conditions, influence annual herbage production.

<u>Growing Conditions</u>	<u>Total Air Dry Herbage</u>	
	<u>Pounds/Acre</u>	<u>Kilograms/Hectare</u>
Favorable	4000-6000	4500-6720
Normal	3000-4000	3360-4500
Unfavorable	2000-3000	2250-3360

10. Guide to Initial Stocking Rates:

<u>Range Condition</u>	<u>Percent Climax Vegetation</u>	<u>Acres/AU Yearlong</u>	<u>AU Months Per Acre</u>	<u>Hectares/AU Yearlong</u>	<u>AUM's Per Hectare</u>
Excellent	76-100	9-12	1.0	3.6-5	2.5
Good	51-75	12-20	.8	5-8	2.0
Fair	26-50	20-30	.5	8-12	1.25
Poor	0-25	30+	.3	12+	0.75

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

When maintained in good to excellent condition, an average hay yield of 1 ton per acre can be expected from this site.

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High  
M = Medium  
L = Low

Wildlife Preferred Uses

C = Cover  
F = Food  
N = Nesting

Plant Species	Animal Species			
	Cattle	Sheep	Deer	Pheasant
American licorice	H	H	F	F
big bluestem	H	M	C	C,N
blue grama	H	H	F	---
catclaw sensitivebriar	H	H	F	F
compassplant	H	H	F	F
dotted gayfeather	M	M	---	---
Illinois bundleflower	H	H	F	F
indiangrass	H	M	C	C,N
Japanese brome	M <u>1/</u>	H	F	---
leadplant	H	H	F	F
little bluestem	H	M	C	C,N
maximilian sunflower	H	H	F	F,C
sedges	M	M	F	---
sideoats grama	H	M	---	C
switchgrass	H <u>2/</u>	M	C	C,F,N
tall dropseed	M	L	C	C,N
western ragweed	M	M	---	F
western wheatgrass	H	M <u>1/</u>	F	C,N

1/ Has a high preference during lush growth periods

2/ Preferred during first half of growing season.

Reference:

Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.

CLAY UPLAND  
KANSAS RANGE SITE DESCRIPTION

1 Location of Site:

Land Resource Area 76  
Bluestem Hills (Flint Hills)



2. Climate:

See climate for LRA 76  
(Filed in the front of Section II-E)

3. Topography:

Occurs on nearly level to gently rolling uplands

4. Soils and Hydrological Characteristics:

a. Moderately deep to deep soils having a loam to silty clay surface (7 to 14 inches) over clayey subsoils. These soils vary from being somewhat poorly drained to well drained. Water permeability is slow to very slow. Although these soils can retain large amounts of water, it is tightly held and therefore is not available in adequate amounts for the vegetation during stress periods. This reduces water availability and decreases potential forage production during dry years.

b. The major soils that characterize this site are:

Eram	Ladysmith
Irwin	Wymore

c. On these soils with fine textured surfaces, excessive removal of the vegetation prior to spring growth can permit heavy rains to seal the soil surface, reducing moisture intake. This condition not only reduces potential forage production but can also create a sheet erosion hazard.

5. Climax Vegetation:

a. The natural potential vegetation on this site is a tall grass prairie. In this condition big bluestem, little bluestem, indiagrass, and switchgrass produce about 80 percent of the total vegetation. Tall dropseed is a consistent member of the plant community but only produces about 5 percent of the total in climax. In its development, the vegetation on this site was influenced by fire, grazing, and drought. The grazing was predominantly by large transient herds of bison and lesser amounts of elk and deer.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 90 Percent</u>		<u>Forbs - 10 Percent</u>	<u>Shrubs - T</u>		
80	40 big bluestem	10	leadplant		
	25 little bluestem			American licorice	
	15 indiagrass			catclaw sensitivebriar	
	15 switchgrass			compassplant	
5	eastern gamagrass		groundplum milkvetch		
5	tall dropseed		Illinois bundleflower		
			maximilian sunflower		
5	blue grama		T		
	buffalograss				pitcher sage
	Canada wildrye				roundhead lespedeza
	porcupinegrass	tall gayfeather			
	prairie junegrass	aromatic aster			
	purple lovegrass	baldwin ironweed			
	rosette panicums	blue wildindigo			
	sedges	dogbane			
	sideoats grama	dotted gayfeather			
	western wheatgrass	green antelopehorn			
	Louisiana sagewort				
	Missouri goldenrod				
	plains larkspur				
	plains wildindigo				
	prairie groundsel				
	slimflower scurfpea				
	stiff goldenrod				
	upright prairieconeflower				
	western ragweed				
	wooly verbena				
	yarrow				

c. Common invaders to this site include annual broomweed, buckbrush, common lespedeza, common ragweed, Japanese brome, Kentucky bluegrass, Korean lespedeza, osageorange, prairie threeawn, and red cedar.

6. Management Implications:

This site appears on broad areas scattered throughout the Flint Hills. Since this site is generally a preferred grazing area by livestock, a high level of management is required to maintain it in its most productive condition.

High preference forage species such as eastern gamagrass, maximilian sunflower, and catclaw sensitivebriar are difficult to maintain on this site with continuous season long grazing. With improved grazing management programs these species may regain their position in the plant community.

When fire is eliminated without the use of other methods of brush control, this site may become dominated by undesirable woody species.

Overgrazing with cattle results in the reduction of big bluestem, indiagrass, little bluestem, compassplant, and other preferred species. Switchgrass is reduced when overgrazing occurs during the first half of the growing season. It responds as an increaser, however, when overgrazing occurs only during the last half of the growing season. Tall dropseed is the major increaser with overgrazing. Slimflower scurfpea, western ragweed, baldwin ironweed, and heath aster often increase with overgrazing.

Continued heavy use results in tall dropseed, sideoats grama, western wheatgrass, buffalograss, western ragweed, and many less palatable plants becoming the dominant vegetation. Remnants of the major grass species will tend to survive in a very reduced (low vigor) condition unless destructive grazing occurs.

Overgrazing with sheep results in the elimination of most forb species. The major grass species decline more slowly but will also be eliminated if overgrazing is continued. Tall dropseed, prairie threawn, and Japanese brome are the major species left under these conditions.

Grazing management that includes proper stocking and timely rest can be used to restore the vegetation on this site.

7. Wildlife Considerations:

When maintained in good to excellent condition, this site provides excellent nesting areas for prairie chickens, especially when it is near booming grounds. The variety of forbs and grasses found on this site makes it a preferred feeding area for whitetail deer, quail, and numerous songbirds. Overgrazing reduces the availability of food and cover that attracts these species to this site.

When excess litter buildup occurs on this site, a properly timed spring burn will remove the mulch, making the site more desirable for young birds, especially prairie chickens.

Numerous rodents and other small animals utilize this site making it a preferred hunting area by hawks and owls.

8. Other Uses and Values:

Because this site is relatively flat compared to much of the surrounding area, many individuals have a tendency to overlook this part of the prairie. Many of the early wildflowers are masked by the tall growing grasses. A wide variety of wildflowers are present on this site making it a good site for the collection of wildflowers.

In the fall as the grasses mature they make an excellent display of fall colors. The shades of red and brown found in the bluestems and indiagrass make vivid contrast with the yellow stems and leaves of switchgrass and the whiteness of tall dropseed. This provides a scene appealing to many landscape photographers.

9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of principal forage species, time of burning, if fire is used, as well as growing conditions, influence annual herbage production.

<u>Growing Conditions</u>	<u>Total Air Dry Herbage</u>	
	<u>Pounds/Acre</u>	<u>Kilograms/Hectare</u>
Favorable	4500-6500	5000-7300
Normal	2500-4500	2800-5000
Unfavorable	2000-2500	2250-2800

10. Guide to Initial Stocking Rates:

<u>Range Condition</u>	<u>Percent Climax Vegetation</u>	<u>Acres/AU Yearlong</u>	<u>AU Months Per Acre</u>	<u>Hectares/AU Yearlong</u>	<u>AUM's Per Hectare</u>
Excellent	76-100	9-11	1.2	3.5-5	3.0
Good	51-75	12-14	.9	5-8	2.2
Fair	26-50	15-20	.6	6-8	1.5
Poor	0-25	21-30	.4	8-12	1.0

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

When maintained in good to excellent condition, an average hay yield of 1 to 1.3 tons per acre can be expected from this site.

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High  
M = Medium  
L = Low

Wildlife Preferred Uses

C = Cover  
F = Food  
N = Nesting

Plant Species	Animal Species			
	Cattle	Sheep	Deer	P. Chicken
American licorice	H	H	F	F
big bluestem	H	M	C	C,N
blue grama	H	H	F	---
catclaw sensitivebriar	H	H	F	F
compassplant	H	H	F	F
dotted gayfeather	M	M	---	---
eastern gamagrass	H	H	C,F	C,F,N
Illinois bundleflower	H	H	F	F
indiangrass	H	M	C	C,N
leadplant	H	H	F	F
little bluestem	H	M	C	C,N
maximilian sunflower	H	H	F	F,C
roundhead lespedeza	H	H	F	F
sedges	M	M	F	---
sideoats grama	H	M	---	C
switchgrass	H <u>2/</u>	M	C	C,F,N
tall dropseed	M	L	C	C,N
western ragweed	M	M	---	F

1/ Has a high preference during lush growth periods

2/ Preferred during first half of growing season.

Reference:

Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.

CLAY UPLAND  
KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 106 and 107  
Nebraska and Kansas Loess-Drift Hills  
and Iowa and Missouri Deep Loess Hills



2. Climate:

See climate for LRA's 106 and 107  
(Filed in the front of Section II-E)

3. Topography:

Occurs on nearly level to gently rolling uplands. Slopes vary from 1 to 7 percent.

4. Soils and Hydrological Characteristics:

a. The soils in this site have a silty surface layer and a clayey subsoil. Water permeability is slow. Although these soils can retain large amounts of water, it is tightly held and therefore is not available in adequate amounts for the vegetation during stress periods. This decreases potential forage production during dry years. The soils range from well drained to poorly drained. During wet periods the soils are commonly saturated above the clayey subsoil. Most of the soils are more than 60 inches deep over bedrock and have formed in loess or glacial material. A few soils are moderately deep over limestone.

b. The soils that characterize this site are:

Grundy  
Haig

Pawnee  
Wymore

c. Excessive removal of the vegetation prior to spring growth allows heavy rains to seal the silty surface, reducing moisture intake. This condition reduces potential forage production.

5. Climax Vegetation:

a. The natural potential vegetation on this site is a tall grass prairie. In this condition big bluestem, little bluestem, indiagrass, switchgrass, and eastern gamagrass produce about 75 percent of the total vegetation. Tall dropseed is a consistent member of the plant community but only produces about 5 percent of the total in climax. Leadplant may make up 5 percent or more of the composition on portions of this site but usually is a minor component. In its development, the vegetation on this site was influenced by fire, grazing, and drought. The grazing was predominately by large transient herds of bison and lesser numbers of elk and deer.

b. Guidelines For Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 90 Percent</u>		<u>Forbs - 10 Percent</u>	<u>Shrubs - T</u>
40	big bluestem	American licorice	Arkansas rose
15	little bluestem	buttonsnakeroot eryngo	T leadplant
75	20 indiangrass	catclaw sensitivebriar	ceanothus
15	switchgrass	compassplant	
10	eastern gamagrass	fringeleaf ruellia	
		5 groundplum milkvetch	
5	sideoats grama	Illinois bundleflower	
	tall dropseed	Illinois tickclover	
		maximilian sunflower	
	Florida paspalum	pitcher sage	
5	knotroot bristlegrass	prairie acacia	
	purple lovegrass	roundhead lespedeza	
	rosette panicums	spiderwort	
	sedges		
	Canada wildrye	aromatic aster	
5	porcupinegrass	Atlantic wildindigo	
	prairie junegrass	baldwin ironweed	
	Virginia wildrye	blue wildindigo	
		heath aster	
		5 manyflower scurfpea	
		Missouri goldenrod	
		plains wildindigo	
		slender mountainmint	
		stiff goldenrod	
		5 western ragweed	
		blackeyedsusan	
		dogbane	
		dotted gayfeather	
		green antelopehorn	
		Louisiana sagewort	
		T plains larkspur	
		prairie groundsel	
		tall gayfeather	
		upright prairieconeflower	
		woolly verbena	
		yarrow	

c. Common invaders to this site include annual broomweed, aromatic sumac, blackberry, buckbrush, common lespedeza, common ragweed, Japanese brome, Kentucky bluegrass, Korean lespedeza, lanceleaf ragweed, osageorange, prairie threeawn, purpletop, silver bluestem, splitbeard bluestem, and redcedar.

## 6. Management Implications:

This site is generally on broad flat areas and side slopes in uplands. In a few areas it is on footslopes.

High preference forage species such as eastern gamagrass, maximilian sunflower, compassplant, and prairie acacia are difficult to maintain on this site with continuous season long grazing. With improved grazing management programs these species may regain their position in the plant community.

When fire is eliminated without the use of other methods of brush control, much of this site may become dominated by undesirable woody species.

Overgrazing with cattle results in the reduction of big bluestem, indiagrass, little bluestem, Illinois bundleflower, and other preferred species. Switchgrass is reduced by overgrazing in the first half of the growing season. It responds as an increaser when overgrazing occurs only during the last half of the growing season. Tall dropseed is the major increaser with overgrazing. Manyflower scurfpea, western ragweed, heath aster, and baldwin ironweed often increase with overgrazing.

Continued heavy use results in tall dropseed, manyflower scurfpea western ragweed, baldwin ironweed, and many less palatable plants becoming the dominant vegetation. Remnants of the major grass species tend to survive in a very reduced (low vigor) condition unless destructive grazing occurs.

Overgrazing with sheep results in the elimination of most forb species. The major grass species decline more slowly but will also be eliminated if overgrazing is continued. Tall dropseed, prairie threeawn, Kentucky bluegrass, Japanese brome, and lanceleaf ragweed are the major species left under these conditions.

Grazing management that includes proper stocking and timely rest can be used to restore the vegetation on this site.

## 7. Wildlife Considerations:

When maintained in good to excellent condition, this site provides excellent nesting areas for quail and pheasant. The variety of forbs and grasses on this site makes it a preferred feeding area for white-tail deer, quail, and numerous songbirds. Overgrazing reduces the availability of food and cover that attracts these species to this site.

When excess litter buildup occurs on this site, a properly timed spring burn will remove the mulch, making the site more desirable for young birds, especially quail and prairie chickens.

Numerous rodents and other small animals utilize this site making it a preferred hunting area by hawks and owls.

#### 8. Other Uses and Values:

The larger more level tracts of this site are preferred cropland soils. They are also highly susceptible to development for residential, commercial, and industrial sites.

Tame grasses for improved pasture do well on this site with fertilization. However, production may be quite limited in drought years.

#### 9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of the principal forage species, time of burning, if fire is used, as well as growing conditions, influence annual herbage production.

<u>Growing Conditions</u>	<u>Total Air Dry Herbage</u>	
	<u>Pounds/Acre</u>	<u>Kilograms/Hectare</u>
Favorable	4500-6500	4900-7000
Normal	3500-4500	3800-4900
Unfavorable	2500-3500	2700-3800

#### 10. Guide to Initial Stocking Rates:

<u>Range Condition</u>	<u>Percent Climax Vegetation</u>	<u>Acres/AU Yearlong</u>	<u>AU Months Per Acre</u>	<u>Hectares/AU Yearlong</u>	<u>AUM's per Hectare</u>
Excellent	76-100	9-12	1.2	3.6-5.0	2.9
Good	51-75	12-16	0.9	5.0-6.5	2.2
Fair	26-50	16-25	0.6	6.5-10	1.5
Poor	0-25	25+	0.4	10+	1.0

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

When maintained in good to excellent condition, an average hay yield of 1.2 to 1.5 tons per acre can be expected from this site.

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High  
M = Medium  
L = Low

Wildlife Preferred Uses

C = Cover  
F = Food  
N = Nesting

Plant Species	Animal Species			
	Cattle	Sheep	Deer	Quail
American licorice	H	H	F	F
big bluestem	H	M	C	C,N
Canada wildrye	H	M	F	C,F
catclaw sensitivebriar	H	H	F	F
compassplant	H	H	F	C,F
dotted gayfeather	M	M	---	C
eastern gamagrass	H	H	F	C,F,N
Illinois bundleflower	H	H	F	F
indiangrass	H	M	C	C,N
leadplant	H	H	F	C,F
little bluestem	H	H	C	C,N
maximilian sunflower	H	H	F	C,F
roundhead lespedeza	H	H	F	F
sedges	M	M	F	F
sideoats grama	H	M	---	C
switchgrass	H <u>1/</u>	L	C	C,F,N
tall dropseed	M	L	C	C,N
western ragweed	M	M	---	C,F

1/ Preferred during first half of growing season.

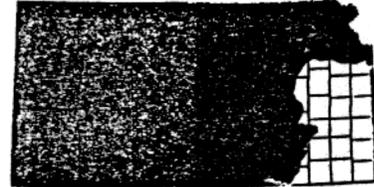
Reference:

Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.

CLAY UPLAND  
KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 112 and 84A  
Cherokee Prairie and Cross Timbers



2. Climate:

See climate for LRA's 84A and 112  
(Filed in the front of Section II-E)

3. Topography:

Occurs on nearly level to gently rolling uplands. Slopes range mostly from 1 to 4 percent and occasionally up to 7 percent.

4. Soils and Hydrological Characteristics:

a. Moderately deep to deep soils having loamy or clayey surface layers (7 to 14 inches) over clayey subsoils. These soils vary from being somewhat poorly drained to well drained. Water permeability is slow to very slow. Although these soils can retain large amounts of water, it is tightly held and therefore is not available in adequate amounts for the vegetation during stress periods. This reduces water availability and decreases potential forage production during dry years.

b. The major soils that characterize this site are:

Eram	Woodson
Parsons	Zarr

c. On these soils with clayey surfaces, excessive removal of the vegetation prior to spring growth can permit heavy rains to seal the soil surface, reducing moisture intake. This condition not only reduces potential forage production but can also create a sheet erosion hazard.

5. Climax Vegetation:

a. The natural potential vegetation of this site is a tall grass prairie. In this state big bluestem, little bluestem, indiagrass switchgrass, and eastern gamagrass produce about 80 percent of the total vegetation. Tall dropseed is a consistent member of the plant community but only produces about 5 percent of the total in climax. In its development, the vegetation on this site was influenced by fire, grazing, and drought. The grazing was predominately by large herds of elk and deer.

b. Guidelines For Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 90 Percent</u>		<u>Forbs - 10 Percent</u>	<u>Shrubs - T</u>
80	40 big bluestem	American licorice	T Arkansas rose leadplant
	20 little bluestem	buttonsnakeroot eryngo	
	15 indiagrass	catclaw sensitivebriar	
	15 switchgrass	compassplant	
	10 eastern gamagrass	fringeleaf ruellia	
5	tall dropseed	groundplum milkvetch	
	Canada wildrye	Illinois bundleflower	
	5 Florida paspalum	Illinois tickclover	
	knotroot bristlegrass	5 maximilian sunflower	
	prairie junegrass	pitcher sage	
	5 purple lovegrass	prairie acacia	
	rosette panicums	roundhead lespedeza	
	sedges	spiderwort	
	sideoats grama	aromatic aster	
	5 Virginia wildrye	Atlantic wildindigo	
		baldwin ironweed	
		5 blue wildindigo	
		heath aster	
	inland ironweed		
	5 Missouri goldenrod		
	plains wildindigo		
	slender mountainmint		
	slimflower scurfpea		
	stiff goldenrod		
	5 western ragweed		
	blackeyedsusan		
	dogbane		
	dotted gayfeather		
	green antelopehorn		
	Louisiana sagewort		
	T plains larkspur		
	prairie groundsel		
	tall gayfeather		
	upright prairieconeflower		
	woolly verbena		
	yarrow		

c Common invaders to this site include annual broomweed, blackberry, broomsedge, buckbrush, common lespedeza, common ragweed, Japanese brome, Kentucky bluegrass, Korean lespedeza, lanceleaf ragweed, osageorange, prairie threeawn, silver bluestem, splitbeard bluestem, and red cedar.

6. Management Implications:

This site generally appears on broad flat areas scattered throughout the Cherokee Prairie and Cross Timbers landscape. Since this site is generally a preferred grazing area by livestock, a high level of management is required to maintain this site in its most productive condition.

High preference forage species such as eastern gamagrass, maximilian sunflower, compassplant, and prairie acacia are difficult to maintain on this site with continuous season long grazing. With improved grazing management programs these species may regain their position in the plant community.

When fire is eliminated without the use of other methods of brush control, much of this site may become dominated by undesirable woody species.

Overgrazing with cattle results in the reduction of big bluestem, indiagrass, little bluestem, Illinois bundleflower, and other preferred species. Switchgrass is reduced by overgrazing in the first half of the growing season. It responds as an increaser when overgrazing occurs only during the last half of the growing season. Tall dropseed is the major increaser with overgrazing. Slimflower scurfpea, western ragweed, heath aster, and baldwin ironweed often increase with overgrazing.

Continued heavy use results in tall dropseed, slimflower scurfpea, western ragweed, baldwin ironweed, and many less palatable plants becoming the dominant vegetation. Remnants of the major grass species tend to survive in a very reduced (low vigor) condition unless destructive grazing occurs.

Overgrazing with sheep results in the elimination of most forb species. The major grass species decline more slowly but will also be eliminated if overgrazing is continued. Tall dropseed, prairie threawn, Japanese brome, and lanceleaf ragweed are the major species left under these conditions.

Grazing management that includes proper stocking and timely rest can be used to restore the vegetation on this site.

7. Wildlife Considerations:

When maintained in good to excellent condition, this site provides excellent nesting areas for prairie chickens, especially when it is near booming grounds. The variety of forbs and grasses on this site makes it a preferred feeding area for whitetail deer, quail, and numerous songbirds. Overgrazing reduces the availability of food and cover that attracts these species to this site.

When excess litter buildup occurs on this site, a properly timed spring burn will remove the mulch, making the site more desirable for young birds, especially prairie chickens.

Numerous rodents and other small animals utilize this site making it a preferred hunting area by hawks and owls.

8. Other Uses and Values:

Because this site is relatively flat compared to much of the surrounding area, many individuals have a tendency to overlook this part of the prairie. Many of the early wildflowers are masked by the tall growing grasses. A wide variety of wildflowers are present making it a good area for the collection of wildflowers.

As the grasses mature, they make an excellent display of fall colors. The shades of red and brown found in the bluestems and indiagrass make vivid contrast with the yellow stems and leaves of switchgrass and the whiteness of tall dropseed. This provides a scene appealing to many landscape photographers.

9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of the principal forage species, time of burning, if fire is used, as well as growing conditions, influence annual herbage production.

<u>Growing Conditions</u>	<u>Total Air Dry Herbage</u>	
	<u>Pounds/Acre</u>	<u>Kilograms/Hectare</u>
Favorable	5000-7000	5600-7850
Normal	3000-5000	3350-5600
Unfavorable	2000-3000	2250-3350

10. Guide to Initial Stocking Rates:

<u>Range Condition</u>	<u>Percent Climax Vegetation</u>	<u>Acres/AU Yearlong</u>	<u>AU Months Per Acre</u>	<u>Hectares/AU Yearlong</u>	<u>AUM's per Hectare</u>
Excellent	76-100	7-10	1.4	2.8-4	0.6
Good	51-75	10-14	1.0	4-5.7	0.4
Fair	26-50	14-20	0.7	5.7-8	0.3
Poor	0-25	20+	0.45	8+	0.2

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

When maintained in good to excellent condition, an average hay yield of 1.2 to 1.5 tons per acre can be expected from this site

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High  
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L = Low

Wildlife Preferred Uses

C = Cover  
F = Food  
N = Nesting

Plant Species	Animal Species			
	Cattle	Sheep	Deer	P. Chicken
American licorice	H	H	F	F
big bluestem	H	M	C	C,N
Canada wildrye	H	M	F	F
catclaw sensitivebriar	H	H	F	F
compassplant	H	H	F	F
dotted gayfeather	M	M	---	---
eastern gamagrass	H	H	F	C,F,N
Illinois bundleflower	H	H	F	F
indiangrass	H	M	C	C,N
leadplant	H	H	F	F,C
little bluestem	H	H	C	C,N
maximilain sunflower	H	H	F	F,C
roundhead lespedeza	H	H	F	F
sedges	M	M	F	---
sideoats grama	H	M	---	---
switchgrass	H <u>2/</u>	L	C	C,F,N
tall dropseed	M	L	C	C,N
western ragweed	M	M	---	F

1/ Has a high preference during lush growth periods

2/ Preferred during first half of growing season.

Reference:

Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.