

FORAGE SUITABILITY GROUP

Shallow

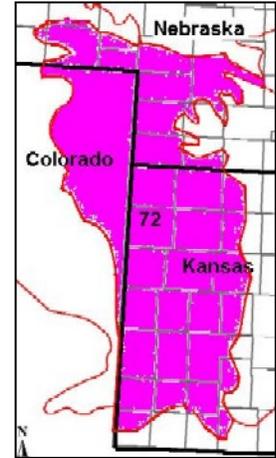
FSG No.: G072XY003KS

Major Land Resource Area: 072X -Central High Tableland

Physiographic Features

These soils are found on thin upland slopes underlain by bedrock.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2600	3900
Slope (percent):	0	15
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Low	Very high



Climatic Features

Average annual precipitation for all climate stations listed below in MLRA 72 is about 19 inches. About 77 percent of that precipitation falls during the months of April through September. On average there are about 24 days during that period that receive greater than .1 inches.

Average annual snowfall ranges from 17 inches at Syracuse, KS, to 37 inches at Lodgepole, NE. Snow cover at depths greater than 1 inch range from a low of 6 days per year at Burlington, CO to a high of 41 days at North Platte, NE.

Average January temperatures are about 28 degree F., and average July temperatures are about 77 degrees. Recorded temperature extremes for the listed climate stations during the years 1961 to 1990 are a low of -34 recorded at three Nebraska and one Kansas locations and a high of 113 recorded at Healy, KS. The MLRA lies in USDA Plant Hardiness Zones 5a, 5b, and 6a.

It is cloudy an average of 143 days a year at Goodland, KS. Average annual wind speeds are about 12.5 MPH with the highest averages occurring during the spring. Average morning relative humidity in June is about 82 percent and average afternoon humidity in June is about 42 percent.

The climate data listed in the tables below represent high and low ranges and averages for the climate stations and dates listed. For additional climate data access the National Water and Climate Center at <http://www.wcc.nrcs.usda.gov>

	From	To
Freeze-free period (28 deg)(days): (9 years in 10 at least)	134	176
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 14	Apr 28
Last Frost in Spring (32 deg): (1 year in 10 later than)	May 24	May 08
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 11	Oct 01

First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	From Sep 16	To Oct 12
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	118	152
Growing Degree Days (40 deg):	4880	6530
Growing Degree Days (50 deg):	2850	4420
Annual Minimum Temperature:	-20	-5
Mean annual precipitation (inches):	15	22

Monthly precipitation (inches) and temperature (F):

2 years in 10:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precip. Less Than	0.11	0.07	0.24	0.41	1.22	1.27	1.03	1.00	0.56	0.14	0.14	0.14
Precip. More Than	0.90	0.97	2.53	2.91	5.47	4.80	4.49	3.13	3.10	2.01	1.43	0.97
Monthly Average:	0.42	0.46	1.29	1.66	3.32	3.07	2.78	2.14	1.64	1.01	0.72	0.45
Temp. Min.	8.6	14.2	23.1	34.0	44.7	54.4	60.6	57.8	46.5	33.6	21.2	11.2
Temp. Max.	45.5	51.3	60.4	70.8	78.7	88.7	93.6	91.2	83.2	73.2	57.7	47.1
Temp. Avg.	27.9	33.2	40.8	51.4	61.0	71.2	77.2	74.8	65.4	53.8	39.7	30.1

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
KS8038	Syracuse, KS	1961	1990
NE6065	North Platte, NE	1961	1990
KS0439	Atwood, KS	1961	1990
KS5127	McDonald, KS	1961	1990
CO4082	Holyoke, CO	1961	1990
NE4110	Imperial, NE	1961	1990
NE4900	Lodgepole, NE	1961	1990
KS3554	Healy, KS	1961	1990
KS3837	Hoxie, KS	1961	1990
KS7397	Sharon Springs, KS	1961	1990
CO1121	Burlington, CO	1961	1990
KS7922	Sublette, KS	1961	1990

Soil Interpretations

This group consists of shallow, well drained soils formed from residuum weathered from sandstone, limestone, or shale.

Drainage Class:	Well drained	To	Well drained
Permeability Class: (0 - 40 inches)	Moderately slow	To	Slow
Frost Action Class:	Low	To	Low

	<u>Minimum</u>	<u>Maximum</u>
Depth:	6	20
Surface Fragments >3" (% Cover):	0	0
Organic Matter (percent): (surface layer)	0.5	3.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	8
Sodium Absorption Ratio: (0 - 12 inches)	0	15
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	7.4	8.4

	<u>Minimum</u>	<u>Maximum</u>
Available Water Capacity (inches): (0 - 60 inches)	1	3
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	13

Soil Series List

Canlon	Epping	Tassel	Twobutte
Canyon	Midway	Travesilla	

Adapted Species List

The following forage species are considered adapted to grow on the soils in this group. Additional information concerning plant characteristics of a number of the listed species as well as individual cultivars of many of those species can be accessed on the web at <http://plants.usda.gov/>

<u>Cool Season Grasses</u>	<u>Plant Symbol</u>	<u>Adaptation</u>
Crested wheatgrass	AGCR	G
Intermediate wheatgrass	THIN6	F
Pubescent wheatgrass	THIN6	F
Western wheatgrass	PASM	G
 <u>Warm Season Grasses</u>		
Little bluestem	SCSC	F
Sideoats grama	BOCU	G
Switchgrass	PAVIV	F
 <u>Legumes</u>		
Cicer milkvetch	ASCI4	F

G - Good adaptation for forage production on this group of soils in this MLRA
F - Fair adaptation but will not produce at its highest potential

Production Estimates

Production estimates listed here should only be used for making general management recommendations. On site production information should always be used for making detailed planning and management recommendations.

The high forage production estimates listed below are based on dense, vigorous stands of climatically adapted, superior performing cultivars. They are properly fertilized for high yields, and pest infestations are kept below economic thresholds. Mechanical harvests are managed to maintain stand life by cutting at appropriate stages of maturity and harvest intervals. If grazed, optimum beginning and ending grazing heights are adhered to. Adequate time is allowed for plant recovery before entering winter dormancy under both uses.

The production estimates listed below represent total annual above ground plant production on an air-dry-matter basis. Estimates of hay and grazing yields can be calculated from these numbers by multiplying them by a harvest efficiency. A 70 percent harvest efficiency is commonly used when converting to hay yields. Pasture harvest efficiency is highly dependent on the grazing management system applied, ranging from 25 to 50 percent.

Forage Crop

Management Intensity		
<u>Low</u>	<u>High</u>	
(lbs/ac)	(lbs/ac)	
Intermediate wheatgrass	900	2600
Little bluestem	500	1700
Sideoats grama	400	1200
Western wheatgrass	900	2100

Forage Growth Curves

Growth curves estimate the seasonal distribution of growth of the various forage crops. They indicate when the forages may be available for grazing or mechanical harvest.

Growth Curve Number: KS0002

Growth Curve Name: Cool-season grass fertilized early

Growth Curve Description: MLRAs 107, 106, 75, irrigated 73, 72

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	40	30	5	5	10	0	0	0

Growth Curve Number: KS0003

Growth Curve Name: Warm-season grass

Growth Curve Description: Statewide

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	0	15	35	30	15	5	0	0	0

Soil Limitations

Available water capacity

- Shallow soils result in low available water capacity limiting species selection and plant growth during periods of moisture deficit.

Water erosion

- The shallowness of these soils results in high runoff potential. Water erosion is a potential problem during establishment, and in thin, open established stands

Livestock trail erosion

- A potential problem in established stands.

Wind erosion

- A potential problem during stand establishment and in heavy use areas on moderately coarse textured soils.

Management Interpretations

Available water capacity

- When establishing new stands select forage species that are highly tolerant to periods of drought and inadequate soil moisture.

Wind and water erosion

- Include sod forming grass species in new seedings on steeper slopes to reduce sheet and rill erosion. Incorporate both wind and water erosion control practices during the establishment period.

Livestock trail erosion

- Locate fences, lanes, water developments, and mineral areas to reduce livestock trailing perpendicular to steeper slopes.

FSG Documentation

Inventory Data References:

Agriculture Handbook 296-Land Resource Regions and Major Land Resource Areas
Natural Resources Conservation Service (NRCS) National Water and Climate Center data
USDA Plant Hardiness Zone maps
National Soil Survey Information System (NASIS) database for soil surveys in Kansas, Nebraska, and Colorado counties in MLRA 72
Kansas, Nebraska, and Colorado NRCS Field Office Technical Guides
NRCS National Range and Pasture Handbook
Various Agricultural Research Service, Cooperative Extension Service, and NRCS research trials for plant adaptation and production.

State Correlation:

This site has been correlated with the following states:

CO
KS
NE

Forage Suitability Group Approval:

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