

FORAGE SUITABILITY GROUP

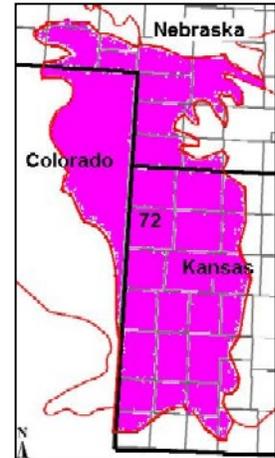
Sand

FSG No.: G072XY300KS

Major Land Resource Area: 072X -Central High Tableland

Physiographic Features

The soils in this group are found on upland slopes, dune and interdune areas, terraces, drainageways, and flood plains.



	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2600	3900
Slope (percent):	0	30
Flooding:		
Frequency:	None	Frequent
Duration:	None	Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Medium

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 mostly of very deep, well to excessively drained, coarse textured soils formed from wind or water deposited materials. Available water capacity is low to moderate and permeability is mostly moderate to rapid.

Drainage Class:	Moderately well drained	To	Excessively drained
Permeability Class: (0 - 40 inches)	Moderately slow	To	Rapid
Frost Action Class:	Low	To	Low

	<u>Minimum</u>	<u>Maximum</u>
Depth:	20	
Surface Fragments >3" (% Cover):	0	0
Organic Matter (percent): (surface layer)	0.0	4.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	4
Sodium Absorption Ratio: (0 - 12 inches)	0	0

	<u>Minimum</u>	<u>Maximum</u>
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.6	8.4
Available Water Capacity (inches): (0 - 60 inches)	2	9
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	15

Mapunit Component List (Some phases of these soils may also occur in other FSGs)

Bankard	Dailey	Happyditch	Scoville
Blueridge	Dix	Inavale	Simeon
Broadwater	Duda	Likes	Terry
Calamus	Dunday	Optima	Valent
Chappell	Dwyer	Overlake	Valentine
Colfer	Eckley	Schamber	

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>Dryland</u>	<u>Irrigated</u>	<u>Note</u>
Creeping foxtail	ALAR	NS	G	
Intermediate wheatgrass	THIN6	F	G	
Meadow brome	BRBI2	NS	G	
Orchardgrass	DAGL	NS	G	
Pubescent wheatgrass	THIN6	F	G	
Smooth brome	BRINI2	NS	G	

Warm Season Grasses

Big bluestem	ANGE	NS	F	
Indiangrass	SONU2	F	F	
Little bluestem	SCSC	F	NS	
Prairie sandreed	CALO	G	NS	
Sand bluestem	ANHA	G	F	
Sand lovegrass	ERTR3	G	F	
Sideoats grama	BOCU	F	NS	
Switchgrass	PAVIV	F	F	

Legumes

Alfalfa	MESA	F	G	
Birdsfoot trefoil	LOCO6	NS	F	North of NE/KS border only
Cicer milkvetch	ASCI4	NS	F	
Red clover	TRPR2	NS	F	North of NE/KS border only

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

NS - Species is not adapted to the site and should not be planted

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

PASTURE AND HAYLAND INTERPRETATIONS

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	<u>Dryland</u>		<u>Irrigated</u>	
	Management Intensity		Management Intensity	
	<u>Low</u> (lbs/ac)	<u>High</u> (lbs/ac)	<u>Low</u> (lbs/ac)	<u>High</u> (lbs/ac)
Alfalfa	1100	8000	4300	20000
Alfalfa/Cool Season Grass	1100	8000	4300	20000
Intermediate wheatgrass	700	2300		
Little bluestem	1100	3400		
Sideoats grama	500	1600		
Smooth brome grass			4300	17100
Western wheatgrass	1100	2300		

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: KS0001

Growth Curve Name: Alfalfa

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

<u>Percent Production by Month</u>											
<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	30	30	20	15	5	0	0	0

Growth Curve Number: KS0002

Growth Curve Name: Cool-season grass fertilized early

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

<u>Percent Production by Month</u>											
<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

<u>Percent Production by Month</u>											
<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

Growth Curve Number: KS0005
Growth Curve Name: Alfalfa
Growth Curve Description: MLRAs 73, 72 dryland

<u>Percent Production by Month</u>											
<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	35	35	20	10	0	0	0	0

Growth Curve Number: KS0006
Growth Curve Name: Cool-season grass fertilized early
Growth Curve Description: MLRAs 73, 72 dryland

<u>Percent Production by Month</u>											
<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	35	0	5	10	0	0	0

Soil Limitations

Available Water Capacity

- Production potential is low to moderate due to the low available water capacity and droughtiness of these soils. Species choices are somewhat limited for pasture and hayland.

Management Interpretations

Available Water Capacity

- When establishing new stands select species that are tolerant of drought and coarse soils.

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:

Original Author: Tim Nordquist
Original Date:

Approval by:

 State Range Management Specialist

 Date

 State Range Management Specialist

 Date