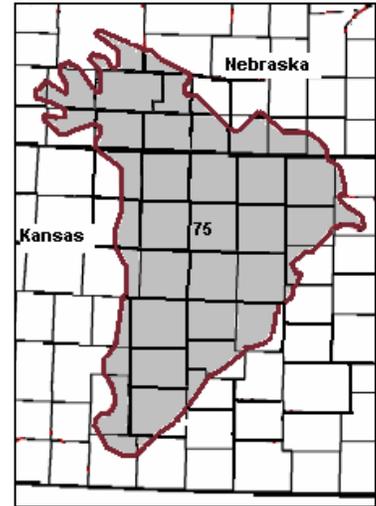


FORAGE SUITABILITY GROUP

Limy Upland

FSG No.: G073XY400KS
Major Land Resource Area: 073X - Rolling Plains and Breaks



Physiographic Features

Most of these soils are found on upland slopes and tablelands. A few are found on alluvial fans and footslopes.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1600	3000
Slope (percent):	0	31
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 73 is about 24 inches. About 75 percent of that precipitation falls during the months of April through September. On average there are about 28 days during that period that receive greater than .1 inches.

Average annual snowfall ranges from 12 inches at Ness City, KS, to 28 inches at Culbertson, NE. Snow cover at depths greater than 1 inch range from a low of 5 days per year at Ness City to a high of 38 days at Culbertson.

Average January temperatures are about 26 degree F., and average July temperatures are about 79 degrees. Recorded temperature extremes for the listed climate stations during the years 1961 to 1990 are a low of -35 at Medicine Creek Dam in Nebraska and a high of 114 at Ness City, KS. The MLRA lies in USDA Plant Hardiness Zones 5a, 5b, and 6a.

It is cloudy an average of 124 days a year at Dodge City, KS, and 141 days at North Platte, NE. Average annual wind speeds are about 14 MPH at Dodge City and 10 at North Platte. At Dodge City in June average morning relative humidity is about 80 percent and average afternoon relative humidity is about 52 percent. At North Platte they are 84 percent and 57 percent respectively.

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)	143	196
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 10	Apr 15
Last Frost in Spring (32 deg): (1 year in 10 later than)	May 21	Apr 29
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 13	Oct 07
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 24	Oct 20

	From	To
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	122	170
Growing Degree Days (40 deg):	5276	6985
Growing Degree Days (50 deg):	3183	4392
Annual Minimum Temperature:	-20	-5
Mean annual precipitation (inches):	21	28

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	0.12	0.37	0.99	1.77	1.48	1.58	1.54	0.80	0.50	0.21	0.20
Precip. More Than	0.80	1.27	3.10	3.51	5.56	5.22	5.44	5.14	5.37	3.13	1.81	1.16
Monthly Average:	0.45	0.59	1.78	2.14	3.63	3.59	3.22	2.90	2.49	1.57	0.96	0.60
Temp. Min.	9.9	15.3	23.2	33.9	44.9	55.1	61.2	58.6	48.0	34.1	22.2	13.0
Temp. Max.	41.8	48.0	57.9	69.6	78.4	88.6	94.3	91.9	82.8	72.5	56.1	44.4
Temp. Avg.	25.9	31.1	40.9	52.7	62.5	72.8	78.7	76.1	66.6	54.8	40.5	29.5

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
KS0693	Beliot, KS	1961	1990
KS2164	Dodge City, KS	1961	1990
KS3100	Glen Elder Lake, KS	1961	1990
KS3218	Great Bend, KS	1961	1990
KS3527	Hays, KS	1961	1990
KS4357	Kirwin, KS	1961	1990
KS4857	Lovel Lake, KS	1961	1990
KS4982	Mankato, KS	1961	1990
KS5692	Ness City, KS	1961	1990
KS6374	Phillipsburg, KS	1961	1990
KS6435	Plainville, KS	1961	1990
KS8648	Webster Dam, KS	1961	1990
NE2065	Culbertson, NE	1961	1990
NE3035	Franklin, NE	1961	1990
NE5388	Medicine Creek Dam, NE	1961	1990

Soil Interpretations

These are moderately deep to very deep, well drained, medium to moderately fine textured soils with elevated calcium carbonate levels near the soil surface. Permeability ranges from slow to moderate, and available water capacities range from low to high.

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

	<u>Minimum</u>	<u>Maximum</u>
Depth:	20	
Surface Fragments >3" (% Cover):	0	3
Organic Matter (percent): (surface layer)	0.5	4.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	4
Sodium Absorption Ratio:	0	9

(0 - 12 inches)		
	<u>Minimum</u>	<u>Maximum</u>
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	6.6	8.4
Available Water Capacity (inches): (0 - 60 inches)	3	13
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	15	48

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

Armo	Corinth	Mansic	Wakeen
Brownell	Eltree	Manvel	
Campus	Kim	Penden	
Coly	Kipson	Sulco	

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	F
Intermediate	THIN6	F
Pubescent wheatgrass	THIN6	F
Tall wheatgrass	THPO7	F
Western wheatgrass	PASM	G

Warm Season Grasses

Big bluestem	ANGE	F
Little bluestem	SCSC	F
Sideoats grama	BOCU	G
Switchgrass	PAVIV	F

Legumes

Alfalfa	MESA	F
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

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 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> (lbs/ac)	<u>High</u> (lbs/ac)
Alfalfa	2600	10300
Alfalfa/Cool Season Grass	1800	9000
Big bluestem	2100	6400
Intermediate wheatgrass	1800	9000
Smooth brome grass	1800	7700
Switchgrass	2100	5900
Western wheatgrass	2100	3900

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: 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

Lime

- The primary limitation to the soils in this group is the high lime content close to the soil surface. This reduces species choices and yield potential.

Management Interpretations

Lime

- When establishing new stands select forage species that are tolerant to the high lime levels inherent to these soils.

Slope

- Safe equipment operation is needed on steeper slopes.

Water erosion

- Include sod forming grass species in new seedings on steeper slopes to reduce sheet and rill erosion. Incorporate erosion control practices during the establishment period. Locate fences, lanes, water developments, and mineral areas to reduce livestock trailing perpendicular to steeper slopes.

FSG Documentation

Similar FSGs:

FSG ID

G073XY100KS

FSG Narrative

Loamy soils do not have as high a lime content near the surface and are more productive.

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 and Nebraska counties in MLRA 73

Kansas and Nebraska NRCS Field Office Technical Guide

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:

KS

NE

Forage Suitability Group Approval:

Original Author: Tim Nordquist

Original Date: 6/29/2002

Approval by: David Kraft

Approval Date: