

## FORAGE SUITABILITY GROUP

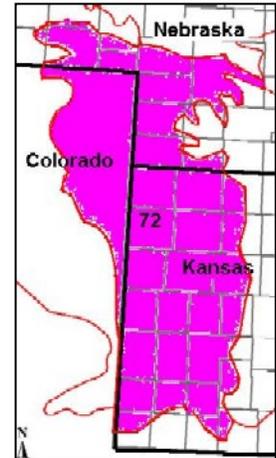
### Loamy, coarse

**FSG No.:** G072XY120KS

**Major Land Resource Area:** 072X -Central High Tableland

#### Physiographic Features

These soils are predominately found on upland slopes, tablelands, and stream terraces. They are also found on fans, and fan and erosion remnants.



	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	2600	3900
<b>Slope (percent):</b>		30
<b>Flooding:</b>		
<b>Frequency:</b>	None	Occasional
<b>Duration:</b>	None	Brief
<b>Ponding:</b>		
<b>Depth (inches):</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Negligible	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. Precipitation is less than needed for optimum forage production and is the single largest factor limiting production from this group on non-irrigated lands.

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>

	<b>From</b>	<b>To</b>
<b>Freeze-free period (28 deg)(days):</b> (9 years in 10 at least)	134	176
<b>Last Killing Freeze in Spring (28 deg):</b> (1 year in 10 later than)	May 14	Apr 28
<b>Last Frost in Spring (32 deg):</b> (1 year in 10 later than)	May 24	May 08

	<b>From</b>	<b>To</b>
<b>First Frost in Fall (32 deg):</b> (1 year in 10 earlier than)	Sep 11	Oct 01
<b>First Killing Freeze in Fall (28 deg):</b> (1 year in 10 earlier than)	Sep 16	Oct 12
<b>Length of Growing Season (32 deg)(days):</b> (9 years in 10 at least)	118	152
<b>Growing Degree Days (40 deg):</b>	4880	6530
<b>Growing Degree Days (50 deg):</b>	2850	4420
<b>Annual Minimum Temperature:</b>	-20	-5
<b>Mean annual precipitation (inches):</b>	15	22

**Monthly precipitation (inches) and temperature (F):**

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

<b><u>Climate Station</u></b>	<b><u>Location</u></b>	<b><u>From</u></b>	<b><u>To</u></b>
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 well to somewhat excessively drained, medium to moderately coarse textured soils. Permeability is slow to moderately rapid, and available water capacity is moderate.

<b>Drainage Class:</b>	Well drained	To	Somewhat excessively drained
<b>Permeability Class:</b> (0 - 40 inches)	Slow	To	Moderately rapid
<b>Frost Action Class:</b>	Low	To	High

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

	<u>Minimum</u>	<u>Maximum</u>
<b>Sodium Absorption Ratio:</b> (0 - 12 inches)	0	9
<b>Soil Reaction (1:1) Water (pH):</b> (0 - 12 inches)	5.6	8.4
<b>Available Water Capacity (inches):</b> (0 - 60 inches)	5	10
<b>Calcium Carbonate Equivalent (percent):</b> (0 - 12 inches)	0	15

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

Alice	Blanche	Haxtun	Paoli
Altvan	Bushman	Hersh	Sarben
Anselmo	Cass	Jayem	Vetal
Ashollow	Chappell	Manter	Vona
Bayard	Glenberg	Otero	

**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	
Crested wheatgrass	AGCR	G	NS	
Intermediate wheatgrass	THIN6	G	G	
Meadow brome	BRBI2	NS	G	
Orchardgrass	DAGL	NS	G	
Pubescent wheatgrass	THIN6	G	G	
Russian wildrye	PSJU3	F	NS	
Smooth brome	BRINI2	NS	G	
Tall fescue	LOAR10	NS	F	
Tall wheatgrass	THPO7	F	F	
Western wheatgrass	PASM	G	NS	
<b><u>Warm Season Grasses</u></b>				
Big bluestem	ANGE	F	F	
Indiangrass	SONU2	NS	F	
Little bluestem	SCSC	G	NS	
Sideoats grama	BOCU	G	NS	
Switchgrass	PAVIV	F	F	
<b><u>Legumes</u></b>				
Alfalfa	MESA	G	G	
Birdsfoot trefoil	LOCO6	NS	F	North of NE/KS border only
Cicer milkvetch	ASCI4	F	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 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	1100	3400		
Little bluestem	700	2300		
Sideoats grama	500	1600		
Smooth bromegrass			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

<b><u>Percent Production by Month</u></b>											
<b><u>Jan</u></b>	<b><u>Feb</u></b>	<b><u>Mar</u></b>	<b><u>Apr</u></b>	<b><u>May</u></b>	<b><u>Jun</u></b>	<b><u>Jul</u></b>	<b><u>Aug</u></b>	<b><u>Sep</u></b>	<b><u>Oct</u></b>	<b><u>Nov</u></b>	<b><u>Dec</u></b>
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

<b><u>Percent Production by Month</u></b>											
<b><u>Jan</u></b>	<b><u>Feb</u></b>	<b><u>Mar</u></b>	<b><u>Apr</u></b>	<b><u>May</u></b>	<b><u>Jun</u></b>	<b><u>Jul</u></b>	<b><u>Aug</u></b>	<b><u>Sep</u></b>	<b><u>Oct</u></b>	<b><u>Nov</u></b>	<b><u>Dec</u></b>
0	0	0	10	40	35	0	5	10	0	0	0

### **Soil Limitations**

Available water capacity

- Moderate available water capacity limits plant growth during periods of moisture deficit.

Water erosion

- 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 on moderately coarse textured soils, and in heavy use areas.

### **Management Interpretations**

Available water capacity

- When establishing new stands select forage species that are 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**

#### **Similar FSGs:**

##### **FSG ID**

G072XY100KS

##### **FSG Narrative**

Loamy soils have greater available water capacity and greater production potential.

**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