

## FORAGE SUITABILITY GROUP

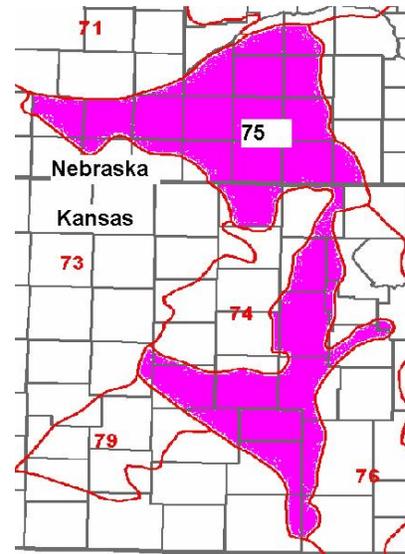
### Limy Upland

**FSG No.:** G075XY400NE  
**Major Land Resource Area:** 75 - Central Loess Plains

#### Physiographic Features

These soils are on uplands and flood plains.

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1640	1970
<b>Slope (percent):</b>	0	20
<b>Flooding:</b>		
<b>Frequency:</b>	None	Frequent
<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>	Low	High



#### Climatic Features

Average annual precipitation for all climate stations listed below in MLRA 75 is about 30 inches. Most of the precipitation received occurs during midspring to midautumn. On average there are about 46 days a year with greater than .1 inches of precipitation.

Average annual snowfall ranges from 5.2 inches at Marion Lake, KS, to 29.4 inches at David City, NE. Snow cover at depths greater than 1 inch range from a low of just 2 days per year at Florence and Marion Lake in Kansas to a high of 44 days per year at Crete and Hebron in Nebraska.

Average daily temperatures in MLRA 75 increase from the north to the south. Average January temperatures range from the low 20s in the northern part of the MLRA to the low 30s in the south. Average July temperatures range from about 77 degrees in the north to about 81 degrees in the south. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -31 at Minden, NE and a high of 112 recorded at several locations in Kansas. The MLRA lies in USDA Plant Hardiness Zones 5a, 5b, and 6a.

Average annual wind speeds are about 12 MPH, with the highest wind speeds occurring during March and April. It is cloudy about 140 days a year. Average morning relative humidity in June is about 83 percent and average afternoon humidity in June is about 55 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)	159	192
<b>Last Killing Freeze in Spring (28 deg):</b> (1 year in 10 later than)	May 02	Apr 16
<b>Last Frost in Spring (32 deg):</b> (1 year in 10 later than)	May 16	Apr 26

<b>First Frost in Fall (32 deg):</b> (1 year in 10 earlier than)	<b>From</b> Sep 16	<b>To</b> Oct 08
<b>First Killing Freeze in Fall (28 deg):</b> (1 year in 10 earlier than)	Oct 02	Oct 20
<b>Length of Growing Season (32 deg)(days):</b> (9 years in 10 at least)	134	172
<b>Growing Degree Days (40 deg):</b>	5576	7337
<b>Growing Degree Days (50 deg):</b>	3406	4686
<b>Annual Minimum Temperature:</b>	-20	-5
<b>Mean annual precipitation (inches):</b>	25	35

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

<b>2 years in 10:</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>Precip. Less Than</b>	0.17	0.18	0.54	0.95	1.63	1.69	1.74	1.07	1.12	0.53	0.22	0.21
<b>Precip. More Than</b>	1.43	1.76	4.11	4.58	6.18	8.64	5.15	5.18	6.11	4.88	3.21	1.96
<b>Monthly Average:</b>	0.64	0.86	2.27	2.67	4.29	4.58	3.38	3.40	3.44	2.36	1.46	0.98
<b>Temp. Min.</b>	10.4	15.3	26.0	38.5	49.8	59.6	64.9	62.1	52.6	40.5	27.5	14.9
<b>Temp. Max.</b>	43.6	49.7	60.7	71.7	79.2	88.1	93.9	92.6	83.9	73.6	58.3	46.6
<b>Temp. Avg.</b>	23.3	28.3	38.1	49.1	58.2	67.2	72.2	69.9	61.6	51.1	37.9	26.8

<b><u>Climate Station</u></b>	<b><u>Location</u></b>	<b><u>From</u></b>	<b><u>To</u></b>
NE2020	Crete, NE	1961	1990
NE2205	David City, NE	1961	1990
NE3660	Hastings, NE	1961	1990
NE3735	Hebron, NE	1961	1990
NE5565	Minden, NE	1961	1990
KS0010	Abilene, KS	1961	1990
KS0682	Belleville, KS	1961	1990
KS2773	Florence, KS	1961	1990
KS3594	Herington, KS	1961	1990
KS5039	Marion Lake, KS	1966	1990
KS7796	Sterling, KS	1961	1990
KS8964	Winfield, KS	1961	1990

**Soil Interpretations**

This group consists of well drained, moderately fine to medium textured soils formed from alluvium and limestone. Permeability is moderate, and available water capacity is moderate to high.

<b>Drainage Class:</b>	Well drained	To	Well drained
<b>Permeability Class:</b> (0 - 40 inches)	Slow	To	Moderate
<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)	1.0	3.0
<b>Electrical Conductivity (mmhos/cm):</b> (0 - 24 inches)	0	0
<b>Sodium Absorption Ratio:</b> (0 - 12 inches)	0	0

	<u>Minimum</u>	<u>Maximum</u>
<b>Soil Reaction (1:1) Water (pH):</b> (0 - 12 inches)	7.4	8.4
<b>Available Water Capacity (inches):</b> (0 - 60 inches)	5	13
<b>Calcium Carbonate Equivalent (percent):</b> (0 - 12 inches)	8	33

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

### **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 at <http://plants.usda.gov/>

<u>Cool Season Grasses</u>	<u>Symbol</u>		<u>Warm Season</u>	<u>Symbol</u>	
Intermediate	THIN6	F	Little bluestem	SCSC	F
Pubescent wheatgrass	THIN6	G	Sideoats grama	BOCU	G
Tall fescue	LOAR10	F	Switchgrass	PAVIV	F
Tall wheatgrass	THPO7	F	<u>Legumes</u>		
Western wheatgrass	PASM	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

### **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.

<b>Forage Crop</b>	<b>Management Intensity</b>	
	<u>High</u> (lbs/ac)	<u>Low</u> (lbs/ac)
Alfalfa	12900	5100
Alfalfa/Cool Season Grass	12900	3100
Big bluestem	10300	2600
Eastern gamagrass	10300	2600
Smooth bromegrass	9100	3400
Switchgrass	9100	2600
Tall fescue	8300	3100

### **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:** NE0601

**Growth Curve Name:** Alfalfa

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

<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	25	25	20	15	5	0	0	0

**Growth Curve Number:** NE0602

**Growth Curve Name:** Cool-season grass

**Growth Curve Description:** Cool-season grass fertilized early - MLRAs 107, 106, 75, irrigated 73, 72

<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	5	10	35	30	5	5	10	0	0	0

**Growth Curve Number:** NE0603

**Growth Curve Name:** Warm-season grass

**Growth Curve Description:** Warm-season grass - statewide

<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	5	15	30	30	15	5	0	0	0

**Growth Curve Number:** NE0604

**Growth Curve Name:** Eastern gamagrass

**Growth Curve Description:** Eastern gamagrass - statewide

<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	35	40	15	0	0	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**

G075XY100NE

#### **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 Nebraska and Kansas counties in MLRA 75  
Nebraska and Kansas 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: 8/29/01

Approval by: David Kraft

Approval Date: