

FORAGE SUITABILITY GROUP Subirrigated

FSG No.: G106XY700NE

Major Land Resource Area: 106X -Nebraska and Kansas Loess-Drift Hills

Physiographic Features

The soils in this group are mostly found on flood plains.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1000	1650
Slope (percent):	0	2
Flooding:		
Frequency:	None	Frequent
Duration:	None	Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Low

Climatic Features

Annual precipitation varies widely from year to year in MLRA 106. Average annual precipitation for all climate stations listed below is about 34 inches. About 71 percent of that occurs during the months of April through September. On average there are about 35 days with greater than .1 inches of precipitation during the same time frame. Annual precipitation and temperature increase from the north to the south in the MLRA.

Average annual snowfall ranges from 16 inches at Wamego, KS to 37 inches at Wahoo, NE. Snow cover at depths greater than 1 inch range from 10 days at Holton, KS to 42 days at Auburn, NE.

Average July temperatures are about 79 degrees F., and average January temperatures are about 25 degrees F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -31 at Waho, NE, and a high of 110 recorded at Auburn and Pawnee City in Nebraska and also at Centralia and Holton in Kansas. The MLRA lies mostly in USDA Plant Hardiness Zones 5a and 5b.

At Topeka, KS, the average annual wind speeds are about 9.7 MPH. The highest wind speeds occur during February through May. It is cloudy about 154 days a year. Average morning relative humidity in June is about 87 percent and average afternoon humidity is 62 percent.

At Lincoln, NE, the average annual wind speeds are about 10.1 MPH. The highest wind speeds occur during March and April. It is cloudy about 149 days a year. Average morning relative humidity in June is about 83 percent and average afternoon humidity is 58 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>.

PASTURE AND HAYLAND INTERPRETATIONS

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	From	To
Freeze-free period (28 deg)(days): (9 years in 10 at least)	162	201
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	Apr 29	Apr 15
Last Frost in Spring (32 deg): (1 year in 10 later than)	May 10	Apr 22
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 20	Oct 15
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Oct 01	Oct 26
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	140	183
Growing Degree Days (40 deg):	5742	6961
Growing Degree Days (50 deg):	3881	4376
Annual Minimum Temperature:	-20	-10
Mean annual precipitation (inches):	30	39

Monthly precipitation (inches) and temperature (F):

2 years in 10:	<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>
Precip. Less Than	0.25	0.24	0.85	1.36	2.58	1.84	1.69	1.79	1.52	0.83	0.49	0.35
Precip. More Than	1.99	1.61	3.94	4.95	6.62	8.42	6.02	5.71	6.87	5.10	3.62	2.69
Monthly Average:	0.81	0.92	2.38	3.03	4.47	5.00	3.74	4.06	4.18	2.81	1.72	1.19
Temp. Min.	10.8	15.7	27.1	39.6	50.7	60.4	65.5	62.4	52.8	40.3	28.3	15.8
Temp. Max.	39.2	44.7	56.8	68.9	77.4	85.7	91.3	89.4	81.3	70.9	55.5	42.3
Temp. Avg.	25.4	30.7	42.1	54.6	64.5	73.6	78.6	76.1	67.6	56.4	42.2	29.4

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
KS1408	Centralia, KS	1961	1990
KS3759	Holton, KS	1961	1990
KS4559	Lawrence, KS	1961	1990
KS8563	Wamego, KS	1961	1990
NE0435	Auburn, NE	1961	1990
NE6570	Pawnee City, NE	1961	1990
NE8395	Syracuse, NE	1961	1990
NE8905	Wahoo, NE	1961	1990

Soil Interpretations

This group consists mostly of somewhat poorly drained, moderately fine to moderately coarse textured soils formed from alluvium and sediments. Permeability is mostly moderately slow to moderately rapid, and available water capacity is low to high. This group has a beneficial watertable within 18 to 48 inches of the surface during a portion of the growing season.

Drainage Class:	Poorly drained	To	Moderately well drained
Permeability Class: (0 - 40 inches)	Slow	To	Moderately rapid
Frost Action Class:	Moderate	To	High

	<u>Minimum</u>	<u>Maximum</u>
Depth:	72	0
Surface Fragments >3" (% Cover):	0	0
Organic Matter (percent): (surface layer)	1.0	6.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	4
Sodium Absorption Ratio: (0 - 12 inches)	0	9
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.1	8.4
Available Water Capacity (inches): (0 - 60 inches)	4	12
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	15

Soil Series List

Ackmore	Lamo	Lockton
Alda	Nishna	Leshara
Filbert	Platte	
Gibbon	Wann	

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>Symbol</u>		<u>Warm Season Grasses</u>		
Canada wildrye	ELCA4	F	Big bluestem	ANGE	G
Creeping foxtail	ALAR	F	Eastern gamagrass	TRDA3	G
Intermediate wheatgrass	THIN6	F	Indiangrass	SONU2	G
Meadow bromegrass	BRBI2	F	Switchgrass	PAVIV	G
Orchardgrass	DAGL	F			
Pubescent wheatgrass	THIN6	F	<u>Legumes</u>		
Reed canarygrass	PHAR3	G	Alfalfa	MESA	F
Smooth bromegrass	BRINI2	G	Alsike clover	TRHY	G
Tall fescue	LOAR10	G	Birdsfoot trefoil	LOCO6	G
Tall wheatgrass	THPO7	F	Cicer milkvetch	ASCI4	F
Timothy	PHPR3	F	Illinois bundleflower	DEIL	F
Virginia wildrye	ELVI3	F	Red clover	TRPR2	G

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	
	Low (lbs/ac)	High (lbs/ac)
Alfalfa	4300	10000
Alfalfa/Cool Season Grass	4300	8600
Big bluestem	3400	14300
Eastern gamagrass	3400	15700
Smooth brome grass	3400	12900
Switchgrass	3400	12900
Tall fescue	3400	11400

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: NE0602
Growth Curve Name: Cool-season grass
Growth Curve Description: Cool-season grass fertilized early - 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	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

<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	5	15	30	30	15	5	0	0	0

Growth Curve Number: NE0604
Growth Curve Name: Eastern gamagrass
Growth Curve Description: Eastern gamagrass - 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	10	35	40	15	0	0	0	0	0

Growth Curve Number: NE0601
Growth Curve Name: Alfalfa
Growth Curve Description: Alfalfa - 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	25	25	20	15	5	0	0	0

Soil Limitations

Water Table

- Forage species like alfalfa that are less tolerant of high watertables for extended periods of time may suffer stand loss during wet years when watertables stay abnormally high.

Flooding

- Flooding is a potential hazard to many of these soils.

Management Interpretations

Watertable and Flooding

- When establishing new stands select species that are tolerant of high water tables or occasional flooding, and that are also capable of utilizing the additional moisture inherent to these soils.

FSG Documentation

Similar FSGs:

FSG ID

G106XY500NE

FSG Narrative

Loamy Lowland soils are found in the same landscape positions, but they do not have the elevated water tables.

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 106
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: 3/6/01

Approval by:

State Range Management Specialist

Date

State Range Management Specialist

Date