

FORAGE SUITABILITY GROUP Subirrigated

FSG No.: G071XY700NE

Major Land Resource Area: 071X -Central Nebraska Loess Hills

Physiographic Features

The soils of the subirrigated group are found on flood plains, stream terraces, and in interdunal swales and valleys.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1640	2600
Slope (percent):	0	3
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 is about 25 inches. About 76 percent of the precipitation received in MLRA 71 falls during the months of April through September. On average there are about 30 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 14 inches at Greeley, NE, to 36 inches at Loup City, NE. Snow cover at depths greater than 1 inch range from a just 2 days per year at Greeley to a high of 49 days per year at Central City, NE.

Average January temperatures for the listed climate stations during the years 1961 to 1990 are about 23 degree F., and average July temperatures are about 76 degrees. Recorded temperature extremes are a low of -36 at Broken Bow, NE, and a high of 106 at North Platte, NE, which lies just west of the MLRA. The MLRA lies in USDA Plant Hardiness Zones 4b and 5a.

It is cloudy an average of 140 days per year at Grand Island, and 141 days a year at North Platte. Average annual wind speeds are about 11.8 MPH at Grand Island and 10.1 at North Platte. Highest average wind speeds occur during the spring. At Grand Island average morning relative humidity in June is about 82 percent and average afternoon humidity in June is about 55 percent. At North Platte they are 84 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)	129	174
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 18	Apr 27
Last Frost in Spring (32 deg): (1 year in 10 later than)	May 28	May 08
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 10	Sep 26
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 14	Oct 09
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	113	145
Growing Degree Days (40 deg):	5020	5830
Growing Degree Days (50 deg):	2920	3590
Annual Minimum Temperature:	-25	-15
Mean annual precipitation (inches):	22	26

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	0.18	0.09	0.51	0.66	1.86	2.14	1.81	1.32	0.65	0.36	0.13	0.18
Precip. More Than	0.81	1.13	3.39	3.98	5.38	5.84	4.37	3.90	3.74	2.44	1.92	1.18
Monthly Average:	0.43	0.32	1.75	2.40	3.67	3.99	3.30	2.83	2.50	1.46	0.96	0.65
Temp. Min.	9.2	14.6	22.9	33.8	45.2	54.8	60.8	58.4	47.9	35.2	22.2	12.2
Temp. Max.	36.8	42.6	51.8	64.6	73.9	84.4	89.3	87.2	77.6	66.8	50.1	39.1
Temp. Avg.	22.5	27.9	37.4	50.2	60.5	70.3	75.5	73.1	63.5	52.1	37.1	25.5

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
NE1200	Broken Bow, NE	1961	1990
NE6040	North Loup, NE	1961	1990
NE3425	Greely, NE	1961	1990
NE4985	Loup City, NE	1961	1990
NE3365	Gothengurg, NE	1961	1990
NE1560	Central City, NE	1961	1990
NE4335	Kearny, NE	1961	1990

Soil Interpretations

The subirrigated group predominately consists of very deep, somewhat poorly drained, coarse to moderately fine textured soils. They have a seasonal water table within 12 to 48 inches of the surface during part of the growing season.

Drainage Class:	Somewhat poorly drained	To	Moderately well drained
Permeability Class: (0 - 40 inches)	Slow	To	Rapid
Frost Action Class:	Moderate	To	High

	<u>Minimum</u>	<u>Maximum</u>
Depth:	72	
Surface Fragments >3" (% Cover):	0	0
Organic Matter (percent): (surface layer)	0.5	4.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	8
Sodium Absorption Ratio: (0 - 12 inches)	0	9
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.6	8.4
Available Water Capacity (inches): (0 - 60 inches)	4	13
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	23

Soil Series List

Alda	Elsmere	Lex	Platte
Boel	Gibbon	Libory	Rusco
Bolent	Hord	Lockton	Silver creek
Caruso	Lamo	Novina	Wann
Cozad	Lawet	Ord	
Els	Leshara	Ovina	

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>	
Canada wildrye	ELCA4	F
Creeping foxtail	ALAR	F
Intermediate wheatgrass	THIN6	G
Meadow brome grass	BRBI2	F
Pubescent wheatgrass	THIN6	G
Reed canarygrass	PHAR3	G
Smooth brome grass	BRINI2	G
Tall fescue	LOAR10	G
Tall wheatgrass	THPO7	G
Western Wheatgrass	PASM	F

<u>Warm Season Grasses</u>		
Big bluestem	ANGE	G
Eastern gamagrass	TRDA3	G
Indiangrass	SONU2	G
Sideoats grama	BOCU	F
Switchgrass	PAVIV	G

PASTURE AND HAYLAND INTERPRETATIONS

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Legumes

Alfalfa	MESA	F
Alsike clover	TRHY	G
Birdsfoot trefoil	LOCO6	F
Cicer milkvetch	ASCI4	G
Red clover	TRPR2	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.

Forage Crop	Management Intensity	
	<u>Low</u> (lbs/ac)	<u>High</u> (lbs/ac)
Alfalfa	1400	12900
Alfalfa/Cool Season Grass	2900	14300
Big bluestem	2900	7100
Smooth brome grass	2900	7100
Switchgrass	2600	6300

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: NE0003

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: NE0004

Growth Curve Name: Eastern Gamagrass

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	10	35	40	15	0	0	0	0	0

Growth Curve Number: NE0005
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: NE0006
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

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.

Salinity

- Because of the predominately upward movement of water in these soils some of them may be slightly saline.

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.

Salinity

- If these soils become more saline over time, select species that can tolerate slight salinity levels.

FSG Documentation

Similar FSGs:

G071XY500NE

Loamy Bottomland 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 counties in MLRA 71
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:

NE

Forage Suitability Group Approval:

Original Author: Tim Nordquist

Original Date: 7/10/200

Approval by: Dana Larsen

Approval Date: