

FORAGE SUITABILITY GROUP

Saline/Sodic

FSG No.: G071XY895NE

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

Physiographic Features

Saline/Sodic soils are found on flood plains and stream terraces.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1640	2600
Slope (percent):	0	2
Flooding:		
Frequency:	None	Frequent
Duration:	None	Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Very high

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.

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)	From Sep 10	To 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:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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

This group consists of somewhat poorly and moderately well drained soils with elevated salinity and/or sodicity. Some of these soils have elevated pHs and are strongly alkaline.

Most of these soils are saline phases of soils in the Subirrigated group.

Drainage Class:	Moderately well drained	To	Poorly drained
Permeability Class: (0 - 40 inches)	Very slow	To	Moderate
Frost Action Class:	Low	To	High

Depth:	<u>Minimum</u>	<u>Maximum</u>
	72	
Surface Fragments >3" (% Cover):		
Organic Matter (percent): (surface layer)	1.0	5.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	15
Sodium Absorption Ratio: (0 - 12 inches)	0	40
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	6.1	9.6

	<u>Minimum</u>	<u>Maximum</u>
Available Water Capacity (inches): (0 - 60 inches)	7	13
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	13

Soil Series List

Cozad	Gibbon, saline, rarely flooded	Lex variant
Gayville	Lawet	Silver creek, alkali
Gayville variant	Lawet variant	Silver creek, saline, alkali
Gibbon	Lex	

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>	
Beardless wildrye	LETR5	G
Creeping foxtail	ALAR	F
Crested wheatgrass	AGCR	F
Intermediate wheatgrass	THIN6	F
Newhy hybrid wheatgrass		G
Nuttall's alkaligrass	PUNU2	G
Pubescent wheatgrass	THIN6	F
Slender wheatgrass	ELTR7	F
Tall wheatgrass	THPO7	G
Western wheatgrass	PASM	G

<u>Warm Season Grasses</u>		
Alkali sacaton	SPAI	F
Switchgrass	PAVIV	F

<u>Legumes</u>		
Alfalfa	MESA	F
Alsike clover	TRHY	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.

PASTURE AND HAYLAND INTERPRETATIONS

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>	<u>High</u>
	(lbs/ac)	(lbs/ac)
Tall wheatgrass	1700	5700

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: 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

Salinity/Sodicity

- Species selection and productivity are severely limited by the salinity and/or sodicity levels of these soils.

Drainage

- These are somewhat poorly and poorly drained soils and will experience periods when trafficability will be difficult or impossible.

Management Interpretations

Salinity/Sodicity

- When establishing new stands or renovating stands select species that are tolerant of the elevated salinity and/or sodicity levels of these soils.

Drainage

- Exclude livestock and machinery during extended periods of soil wetness to reduce soil compaction. Select species that are tolerant of somewhat poorly and poorly drained soils.

Compaction

- To reduce compaction exclude livestock and machinery when soils are wet.

FSG Documentation

Similar FSGs:

FSG ID

G071XY700NE

FSG Narrative

Subirrigated soils have lower salinity/sodicity levels providing for a broader species selection 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 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: