

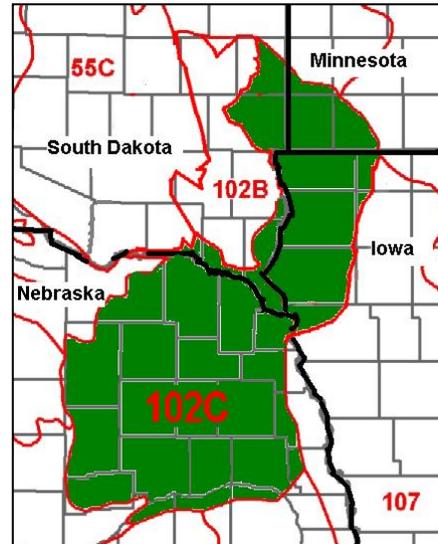
FORAGE SUITABILITY GROUP
Droughty Loam

FSG No.: G102CY120NE
Major Land Resource Area: 102C - Loess Uplands

Physiographic Features

The soils in this group are found mostly on uplands and stream terraces, and to a lesser extent on outwash plains and flood plains.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	980	1640
Slope (percent):	0	15
Flooding:		
Frequency:	None	Occasional
Duration:	None	Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Very low	High



Climatic Features

Annual precipitation varies widely from year to year in MLRA 102C. Average annual precipitation for all climate stations listed below is about 27 inches. About 73 percent of the annual precipitation occurs during the months of April through September. On average there are about 33 days with greater than .1 inches of precipitation during the same time period. Annual precipitation and temperature increase from the northwest to the southeast in the MLRA. 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 19 inches at Creighton, to 36 inches at Wakefield. Days with snow cover at depths greater than 1 inch range from 9 days at Creighton to 55 days at Wakefield.

Average July temperatures are about 76 degrees F., and average January temperatures are about 20 degrees F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -36 at Creighton and a high of 108 recorded at both Columbus and Wakefield. The MLRA lies mostly in USDA Plant Hardiness Zone 4b with some small areas of warmer 5a.

At Norfolk, NE, the average annual wind speeds are about 11.2 MPH. The highest wind speeds occur during March and April. It is cloudy about 146 days a year. Average morning relative humidity in June is about 82 percent, and average afternoon humidity is 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>.

	From	To
Freeze-free period (28 deg)(days): (9 years in 10 at least)	138	168
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 12	Apr 25
Last Frost in Spring (32 deg): (1 year in 10 later than)	May 20	May 10
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 12	Sep 23

	From	To
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 20	Oct 04
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	126	146
Growing Degree Days (40 deg):	4833	5730
Growing Degree Days (50 deg):	2815	3551
Annual Minimum Temperature:	-25	-15
Mean annual precipitation (inches):	23	30

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	0.15	0.17	0.51	0.83	1.92	1.98	1.71	1.35	1.07	0.44	0.15	0.30
Precip. More Than	1.13	1.20	3.39	3.93	5.93	6.63	4.33	5.39	5.53	3.85	2.16	1.47
Monthly Average:	0.55	0.76	2.04	2.53	4.03	4.20	3.09	3.03	3.00	2.02	1.18	0.86
Temp. Min.	5.3	10.6	23.0	35.4	46.5	56.8	61.9	58.7	48.4	35.6	23.8	10.7
Temp. Max.	32.4	38.2	50.2	65.2	75.6	84.8	88.7	86.1	77.7	66.5	49.7	35.3
Temp. Avg.	19.7	25.3	36.8	50.6	61.6	71.3	75.9	73.1	63.9	52.3	37.1	23.5

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
NE1825	Columbus, NE	1961	1990
NE1990	Creighton, NE	1961	1990
NE3050	Fremont, NE	1961	1990
NE6018	NE Nebraska Experiment	1964	1990
NE8110	Stanton, NE	1961	1990
NE8480	Tekamah, NE	1961	1990
NE8915	Wakefield, NE	1961	1990
NE8935	Walthill, NE	1961	1990

Soil Interpretations

This group consists of moderately well to well drained, moderately coarse to medium textured soils formed in loamy and sandy materials deposited by wind or water. Available water capacity is in the moderate range due to moderately coarse soil textures or moderate depth to sand and gravel.

Drainage Class:	Well drained	To	Well drained
Permeability Class: (0 - 40 inches)	Moderately slow	To	Moderately rapid
Frost Action Class:	Low	To	High

Depth:	60	
Surface Fragments >3" (% Cover):		
Organic Matter (percent): (surface layer)	0.5	4.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	2
Sodium Absorption Ratio: (0 - 12 inches)	0	0
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.1	8.4
Available Water Capacity (inches): (0 - 60 inches)	6	9
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	18

Soil Map Unit List (Some phases of these soils may also occur in other FSGs)

Bazile	Loretto	Dempster	Scroll
Cass	Ortello	Dobalt	
Grable	Alwilda	Enet	
Hadar	Blendon	Henkin	
Hall	Davis variant	Maddock	

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>.

Cool Season Grasses	<u>Symbol</u>	<u>Dry</u>	<u>Irrig</u>	Warm Season Grasses	<u>Symbol</u>	<u>Dry</u>	<u>Irrig</u>
Green needlegrass	NAVI4	G	NS	Big bluestem	ANGE	G	G
Intermediate wheatgrass	THIN6	G	G	Indiangrass	SONU2	F	G
Meadow brome	BRBI2	G	G	Little bluestem	SCSC	G	NS
Orchardgrass	DAGL	G	G	Prairie sandreed	CALO	F	NS
Pubescent wheatgrass	THIN6	G	G	Sand bluestem	ANHA	F	NS
Smooth brome	BRINI2	G	G	Sideoats grama	BOCU	G	NS
Tall fescue	LOAR10	F	F	Switchgrass	PAVIV	F	G
Tall wheatgrass	THPO7	F	NS	Legumes	<u>Symbol</u>	<u>Dry</u>	<u>Irrig</u>
Western wheatgrass	PASM	G	NS	Alfalfa	MESA	G	G
				Birdsfoot trefoil	LOCO6	F	G
				Cicer milkvetch	ASCI4	G	F
				Purple prairieclover	DAPUP	G	NS
				White prairieclover	DACAC	F	NS

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. 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	3700	8300		
Alfalfa/Intermediate wheatgrass	3400	7700	8600	14300
Alfalfa/Smooth brome	3400	7700	8600	14300
Intermediate wheatgrass	2900	5400	6900	11400
Smooth brome	2900	5400	6900	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: SD0001

Growth Curve Name: Alfalfa

Growth Curve Description: Alfalfa, MLRAs 102B, 102C, 63B, 66, 65

Percent Production by Month

<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	30	25	20	15	5	0	0	0

Growth Curve Number: SD0004

Growth Curve Name: Cool season grass

Growth Curve Description: Cool season grass, state wide

Percent Production by Month

<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	10	5	5	0	0	0

Growth Curve Number: SD0005

Growth Curve Name: Warm season grass

Growth Curve Description: Warm season grass, state wide

Percent Production by Month

<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	10	40	35	15	0	0	0	0

Growth Curve Number: SD0003

Growth Curve Name: Irrigated Alfalfa

Growth Curve Description: Irrigated Alfalfa, state wide

Percent Production by Month

<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	25	25	20	15	10	0	0	0

Soil Limitations

The primary limitation for these soils is their moderate available water capacity which limits plant growth during periods of moisture deficit. On steeper slopes water erosion is a potential problem during stand establishment, and livestock trail erosion is a potential problem on established stands. Also, wind erosion is a potential problem during stand establishment on moderately coarse textured soils.

Management Interpretations

The impact on yields of the moderate available water capacity of these soils can be reduced by selecting forage species that are tolerant to periods of drought and inadequate soil moisture. Including sod forming grass species in stands, especially on steeper slopes, will reduce the potential for sheet and rill erosion. Incorporate both wind and water erosion control practices during the establishment period. Properly locating facilitating practices such as fences, lanes, and water developments can help control livestock movement, reduce trailing perpendicular to steeper slopes, and evenly distribute grazing pressure.

NE-T.G. Notice 557

SECTION II

NRCS-SEPTEMBER 2004

FSG Documentation

Similar FSGs:

FSG ID

G102CY100NE

FSG Narrative

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

G102CY130NE

Very Droughty Loams have lower available water capacity and lower 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) for soil surveys in Nebraska and South Dakota counties in MLRA 102C

Nebraska and South Dakota 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

SD

Forage Suitability Group Approval:

Original Author: Tim Nordquist

Original Date: 6/8/2001

Approval by: Dana Larsen

Approval Date: