

FORAGE SUITABILITY GROUP Subirrigated

FSG No.: G064XY700NE

Major Land Resource Area: 64 - Mixed Sandy and Silty Tableland



Physiographic Features

The soils in this group are mostly found on flood plains and low stream terraces.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2950	3940
Slope (percent):	0	2
Flooding:		
Frequency:	None	Frequent
Duration:	None	Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Medium

Climatic Features

This group occurs in a mid-continental climate characterized by wide seasonal temperature and precipitation fluctuations and extremes.

Annual precipitation varies widely from year to year in MLRA 64. Average annual precipitation for all climate stations listed below is about 16 inches. About 79 percent of the annual precipitation occurs during the months of April through September. On average there are about 26 days with greater than .1 inches of precipitation during that same time period. Precipitation in this MLRA 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 20 inches at Interior, SD to 60 inches at Harrison, NE. Snow cover at depths greater than 1 inch range from 28 days at Interior, SD to 60 days at Long Valley, SD.

Average July temperatures across the MLRA are about 74 degrees F., and average January temperatures are about 22 degrees F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -45 and a high of 114 both recorded at Porcupine, SD. The MLRA lies mostly in USDA Plant Hardiness Zones 4a and 4b, with a small area of warmer 5a around Alliance, NE.

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)	111	158
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	Jun 01	May 05
Last Frost in Spring (32 deg): (1 year in 10 later than)	Jun 12	May 14
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 06	Sep 19

First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	From Sep 11	To Sep 28
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	94	135
Growing Degree Days (40 deg):	3867	4974
Growing Degree Days (50 deg):	2128	2913
Annual Minimum Temperature:	-30	-15
Mean annual precipitation (inches):	15	18

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	0.07	0.10	0.32	0.71	1.22	1.19	1.43	0.66	0.34	0.47	0.12	0.15
Precip. More Than	0.37	0.61	1.87	3.10	4.14	5.14	3.84	2.61	2.02	1.57	0.81	0.50
Monthly Average:	0.33	0.38	0.97	1.88	2.89	2.90	2.32	1.50	1.33	0.97	0.47	0.38
Temp. Min.	8.5	13.4	19.6	28.9	38.8	48.6	55.1	52.7	42.0	31.1	19.8	11.0
Temp. Max.	35.1	40.2	49.7	63.0	73.1	83.6	92.0	91.0	79.9	67.9	48.9	37.1
Temp. Avg.	22.4	27.4	35.2	46.2	56.8	66.7	74.2	72.2	61.3	49.4	35.1	24.5

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
SD4184	Interior, SD	1961	1990
SD4983	Long Valley, SD	1961	1990
SD6736	Porcupine, SD	1963	1990
NE1575	Chadron, NE	1961	1990
NE0130	Alliance, NE	1961	1990
NE3615	Harrison, NE	1961	1990

Soil Interpretations

The subirrigated group consists of very deep, somewhat poorly drained, coarse to 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	Somewhat poorly drained
Permeability Class: (0 - 40 inches)	Rapid	To	Moderately slow
Frost Action Class:	Moderate	To	High

	<u>Minimum</u>	<u>Maximum</u>
Depth:	0	2
Surface Fragments >3" (% Cover):	0	3
Organic Matter (percent): (surface layer)	0.5	3.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	4
Sodium Absorption Ratio: (0 - 12 inches)	0	0
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	7.4	8.4
Available Water Capacity (inches): (0 - 60 inches)	5	12
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	6

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

Bolent Lamo Las animas

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://www.plants.usda.gov>

<u>Cool Season Grasses</u>	<u>Symbol</u>		<u>Warm Season Grasses</u>	<u>Symbol</u>	
Altai wildrye	LEAN3	G	Big bluestem	ANGE	G
Basin wildrye	LECI4	G	Little bluestem	SCSC	G
Creeping foxtail	ALAR	F	Switchgrass	PAVIV	G
Crested wheatgrass	AGCR	G	<u>Legumes</u>	<u>Symbol</u>	
Green needlegrass	NAVI	F	Alfalfa	MESA	F
Intermediate wheatgrass	THIN	G	Alsike clover	TRHY	F
Meadow brome	BRBI2	G	Birdsfoot trefoil	LOCO6	F
Newhy hybrid wheatgrass		F	Canada milkvetch	ASCAC6	F
Pubescent wheatgrass	THIN	G	Cicer milkvetch	ASCI4	G
Russian wildrye	PSJU3	G	Purple prairieclover	DAPUP	F
Smooth brome	BRINI2	G	Red clover	TRPR2	F
Streambank wheatgrass	ELLAL	F	Sainfoin	ONVI	F
Tall wheatgrass	THPO7	G	White prairieclover	DACAC	F
Thickspike wheatgrass	ELM	F			
Western wheatgrass	PASM	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	
	High (lbs/ac)	Low (lbs/ac)
Alfalfa	7400	3100
Alfalfa/Crested wheatgrass	6000	2600
Alfalfa/Intermediate wheatgrass	6600	2900
Alfalfa/Pubescent wheatgrass	6600	2900
Alfalfa/Smooth brome grass	6600	2900
Big bluestem	6600	2900
Crested wheatgrass	4600	2000
Intermediate wheatgrass	5100	2300
Pubescent wheatgrass	5100	2300
Smooth brome grass	5100	2300
Switchgrass	6300	2600

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: SD0002

Growth Curve Name: Alfalfa

Growth Curve Description: Alfalfa, MLRAs 65, 64, 60A

<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	35	35	15	5	5	0	0	0

Growth Curve Number: SD0004

Growth Curve Name: Cool season grass

Growth Curve Description: Cool season grass, state wide

<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	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

<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	10	40	35	15	0	0	0	0

Soil Limitations

These soils have few limitations to the production of climatically adapted forage crops, and production potential is high relative to other groups in the MLRA. Forage species like alfalfa that are less tolerant of saturated soils for extended periods of time may suffer stand loss during wet years when watertables stay abnormally high. These soils are also subject to compaction if grazed or machinery is operated on them when wet.

Management Interpretations

When establishing new stands select species that are tolerant of somewhat poorly drained, occasionally saturated soils, and that are also capable of utilizing the additional moisture inherent to these soils. Excluding livestock and machinery during extended periods of soil wetness will help reduce soil compaction.

FSG Documentation

Similar FSGs:

FSG ID

G064XY500N

FSG Narrative

Overflow soils do not have watertables that come as near to the surface during part of the growing season.

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 South Dakota, Nebraska, and Wyoming counties in MLRA 64
South Dakota and Nebraska and Wyoming NRCS Field Office Technical Guides
NRCS National Range and Pasture Handbook
Various South Dakota and Nebraska 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

WY

Forage Suitability Group Approval:

Original Author: Tim Nordquist

Original Date: 4/15/02

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Approval Date: