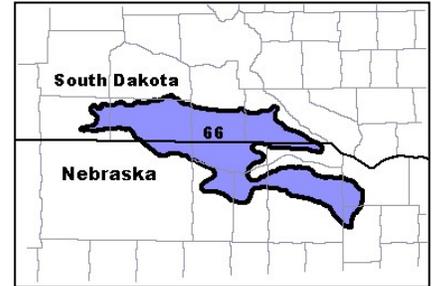


FORAGE SUITABILITY GROUP Claypan

FSG No.: G066XY800NE

Major Land Resource Area: 66 - Dakota-Nebraska Eroded Tableland



Physiographic Features

These soils are found on flood plain, outwash plain, terrace, and upland positions.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1970	2950
Slope (percent):	0	3
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Medium	Very high

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 66. Average annual precipitation for all climate stations listed below is about 21 inches. About 77 percent of the annual precipitation occurs during the months of April through September. On average there are about 29 days with greater than .1 inches of precipitation during that same time period.

Average annual snowfall ranges from 33 inches at O'Neill, NE to 43 inches at Harrington, SD. Snow cover at depths greater than 1 inch range from 43 days at Springview, NE to 64 days at Harrington, SD.

Average July temperatures across the MLRA are about 74 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 -38 at Harrington and a high of 110 both recorded at Mission, Springview, and O'Neill. The MLRA lies in USDA Plant Hardiness Zones 4b and 5a.

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 www.wcc.nrcs.usda.gov

	From	To
Freeze-free period (28 deg)(days): (9 years in 10 at least)	120	150
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 23	May 08
Last Frost in Spring (32 deg): (1 year in 10 later than)	Jun 01	May 20
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 07	Sep 17
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 11	Sep 26

	From	To
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	104	130
Growing Degree Days (40 deg):	4580	5148
Growing Degree Days (50 deg):	2615	3038
Annual Minimum Temperature:	-25	-15
Mean annual precipitation (inches):	18	25

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	0.08	0.11	0.33	0.62	1.70	1.51	1.54	0.91	0.65	0.53	0.15	0.16
Precip. More Than	0.54	1.24	2.70	3.97	5.70	5.65	4.96	3.94	4.34	2.64	1.49	0.85

Monthly Average: 0.34 0.49 1.42 2.16 3.40 3.46 3.07 2.22 2.15 1.32 0.71 0.52

Temp. Min.	7.1	12.4	20.8	31.7	42.4	52.3	58.5	55.8	45.2	33.5	20.7	10.0
Temp. Max.	30.3	36.2	46.8	62.1	72.9	82.8	88.7	86.5	76.2	64.5	46.4	33.3
Temp. Avg.	19.7	24.8	34.1	47.1	57.9	68.0	74.2	72.1	61.8	49.8	34.7	22.9

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
SD3574	Harrington SD	1961	1990
SD5620	Mission SD	1966	1990
SD5638	Mission SD	1961	1990
SD0778	Bonesteel SD	1961	1990
NE8090	Springview NE	1961	1990
NE6290	O'Neill NE	1961	1990

Soil Interpretations

This group consists of moderately well and well drained, moderately coarse and medium textured soils formed from alluvium, residuum, and sediments. They have claypan subsoils with slow and very slow permeability. The underlying material and lower part of the subsoil typically have high amounts of soluble salts and are sodic.

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

	<u>Minimum</u>	<u>Maximum</u>
Depth:	20	
Surface Fragments >3" (% Cover):	0	3
Organic Matter (percent): (surface layer)	1.0	4.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	2	16
Sodium Absorption Ratio: (0 - 12 inches)	0	20
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.6	7.8
Available Water Capacity (inches): (0 - 60 inches)	4	8
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	6

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

Mosher Whitelake Wortman

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>Legumes</u>	<u>Symbol</u>
Beardless wildrye	LETR5	F	Alfalfa	MESA F
Crested wheatgrass	AGCR	F		
Green needlegrass	NAVI	F		
Intermediate wheatgrass	THIN	F		
Newhy hybrid wheatgrass		F		
Pubescent wheatgrass	THIN	F		
Russian wildrye	PSJU3	F		
Slender wheatgrass	ELTR7	F		
Smooth bromegrass	BRINI2	F		
Tall wheatgrass	THPO7	G		
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	
	<u>High</u> (lbs/ac)	<u>Low</u> (lbs/ac)
Alfalfa	4600	2300
Alfalfa/Intermediate wheatgrass	3700	1900
Intermediate wheatgrass	3600	1600
Tall wheatgrass	3600	1600
Western wheatgrass	2400	1100

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 107, 102B, 63B, 66, 65

<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	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

<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

Soil Limitations

These soils have severe limitations to the production of climatically adapted forage species. The claypan and the soluble salts and sodicity in the subsoil produce an unfavorable rooting environment, limiting species selection and production potential.

Management Interpretations

The impact on yields can be reduced by selecting forage species that are tolerant of salinity and sodicity and can root in dense, clayey subsoils.

FSG Documentation

Similar FSGs:

FSG ID

G066XY210N

FSG Narrative

Clayey subsoils are less saline and/or sodic and have a more favorable rooting zone.

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 and Nebraska counties in MLRA 66

South Dakota and Nebraska 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

Forage Suitability Group Approval:

Original Author: Tim Nordquist

Original Date: 4/4/02

Approval by: Dana Larsen

Approval Date: