

FORAGE SUITABILITY GROUP WET

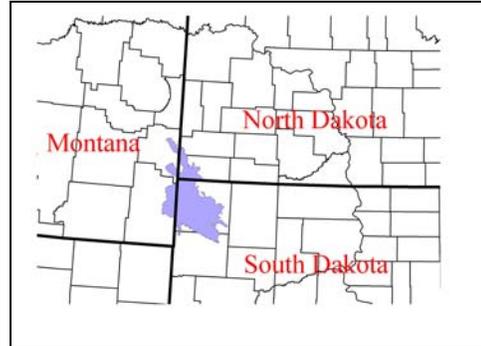
FSG No.: G058DY900SD

Major Land Resource Area (MLRA): 058D - Northern Rolling High Plains, Eastern Part

Physiographic Features

These soils are in depressions and lake basins

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2300	3300
Slope (percent):	0	2
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	0	3
Frequency:	None	Frequent
Duration:	None	Long
Runoff Class:	Negligible	Negligible



Climatic Features

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

Average annual precipitation for all climate stations in MLRA 58D listed below is about 16 inches. Although average annual precipitation is low, about 80 percent occurs during the growing season months of April through September. On average, there are about 25 days with greater than .1 inches of precipitation during that same time period.

Average annual snowfall ranges from 25 inches at Amidon, North Dakota (ND), to 46 inches at Redig, South Dakota (SD). Days with insulating snow cover at depths greater than 1 inch range from 22 at Ludlow, SD, to 81 at Bowman, ND.

Average July temperatures across the MLRA are about 70°F and average January temperatures are about 15°F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -46° recorded at Camp Crook, SD, and a high of 115 recorded at Ludlow, SD. The MLRA lies mostly in USDA Plant Hardiness Zones 4a with a small area of colder 3b on the western edge of Harding County in South Dakota.

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)	107	131
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 25	May 15
Last Frost in Spring (32 deg): (1 year in 10 later than)	Jun 19	May 28
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Aug 26	Sep 06
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 02	Sep 16

	From	To
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	80	110
Growing Degree Days (40 deg):	3815	4091
Growing Degree Days (50 deg):	2250	2108
Annual Minimum Temperature:	-35	-25
Mean annual precipitation (inches):	14	16

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	0.12	0.24	0.45	1.18	1.52	0.64	0.45	0.36	0.31	0.14	0.14
Precip. More Than	0.57	0.44	1.18	2.99	4.25	4.70	2.84	2.10	2.31	1.71	0.86	0.74
Monthly Average:	0.34	0.32	0.64	1.65	2.79	3.20	2.03	1.36	1.35	0.98	0.44	0.41
Temp. Min.	2.8	8.5	18.3	29.3	40.1	49.2	54.3	51.7	40.2	29.8	16.8	5.8
Temp. Max.	29.4	35.2	44.7	58.6	68.9	79.1	88.0	87.4	75.6	62.8	44.2	31.8
Temp. Avg.	15.5	21.1	30.5	43.1	54.1	63.7	70.5	69.0	57.4	46.2	30.7	18.7

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
SD1294	Camp Crook, SD	1961	1990
SD5048	Ludlow, SD	1961	1990
SD6907	Ralph, SD	1961	1990
SD7062	Redig, SD	1961	1990
ND0209	Amidon, ND	1961	1990
ND0995	Bowman, ND	1961	1990

Soil Interpretations

This group consist of poorly drained soils that pond during a portion of the growing season.

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

	<u>Minimum</u>	<u>Maximum</u>
Depth:	72	
Surface Fragments >3" (% Cover):		
Organic Matter (percent): (surface layer)	2.0	4.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	8	8
Sodium Absorption Ratio: (0 - 12 inches)	4	4
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	6.6	9
Available Water Capacity (inches): (0 - 60 inches)	9	9
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	9

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>		Warm Season Grasses	<u>Symbol</u>	
Creeping foxtail	ALAR	G	Switchgrass	PAVIV	F
Reed canarygrass	PHAR3	G	Legumes	<u>Symbol</u>	
Tall wheatgrass	THPO7	F	Alsike clover	TRHY	F
Western wheatgrass	PASM	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. Onsite 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.

	<u>Dryland</u>	
Forage Crop	Management Intensity	
	<u>Low</u>	<u>High</u>
	(lbs/ac)	(lbs/ac)
Creeping foxtail	2300	4300
Reed canarygrass	3100	5100

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: ND0002
Growth Curve Name: Cool season grass
Growth Curve Description: Cool season grass

<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	40	35	10	5	5	0	0	0

Growth Curve Number: ND0003
Growth Curve Name: Warm season grass
Growth Curve Description: Warm season grass

<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

The primary limitation for these soils is wetness, which may severely limit species selection, delay planting and harvesting of forage crops or result in wheel track ruts or livestock poach marks from hooves. The result can be soil compaction, injury to plants, poor soil aeration affecting plant growth, and problems with movement of livestock and machinery. Many of the soils in this group are subject to flooding or ponding that will adversely impact forage production when it occurs during the growing season. The length of time that plants are under water and the soil temperature while it occurs is important for the survival of forage crops. Dormant forages are little affected by inundation unless the water turns to ice.

Management Interpretations

When establishing new stands or renovating older stands select species that are tolerant of poorly drained soils. Exclude livestock and machinery during extended periods of soil wetness to reduce poaching, rutting, and soil compaction.

Pasture and hayland can include considerations for wildlife. Delaying grazing on portions of the pasture or rotating pastures will allow nest initiation of grassland nesting birds or species of concern. Nest initiation of most grassland nesting birds occurs from April 15 to June 1. Delaying haying until after July 15 allows for most species to fledge their young. Consider planting species with later maturity to allow for harvesting after nests have fledged. Avoid mowing around the field. Mow back and forth or from the inside to the outside of the field. Consider using flushing bars on swathers and mowers.

FSG Documentation

Similar FSG's:

FSG ID

G058DY895SD

FSG Narrative

Saline soils have elevated levels of salinity that are detrimental to plants.

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 for soil surveys in North Dakota, South Dakota and Montana counties in MLRA 58D
- NRCS North Dakota Field Office Technical Guide, South Dakota Field Office Technical Guide and Montana Field Office Technical Guide
- NRCS National Range and Pasture Handbook
- Various North Dakota, South Dakota and Montana 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: North Dakota, South Dakota and Montana

Forage Suitability Group Approval:

Original Author: Tim Nordquist

Original Date: 4/17/2002

Approval by: Dave Schmidt

Approval Date: March 2005