

FORAGE SUITABILITY GROUP Subirrigated

FSG No.: G055CY700SD

Major Land Resource Area: 55C - Southern Black Glaciated Plains

Physiographic Features

The soils in this group are found on level and nearly level flood plains, terraces, and outwash plains, and on plains and in swales, drainage ways, and depressions of upland areas.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1300	1970
Slope (percent):	0	6
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 55C. Average annual precipitation for all climate stations listed below is about 21 inches. About 75 percent of that occurs during the months of April through September. On average, there are about 28 days with greater than .1 inches of precipitation during the same timeframe. Annual precipitation and temperature increase from the north to the south 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 23 inches at Pickstown to 41 inches at Huron. Snow cover at depths greater than 1 inch range from 32 days at Howard to 72 days at Huron.

Average July temperatures are about 75⁰F and average January temperatures are about 16⁰F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -39 at both Mellette and Huron, and a high of 114 recorded at Mellette. The MLRA lies mostly in USDA Plant Hardiness Zones 4a and 4b, with a small area of warmer 5a along the Missouri River.

At Huron, the average annual wind speeds are about 11.5 mph. The highest wind speeds occur during March through May. It is cloudy about 154 days a year. Average morning relative humidity in June is about 86 percent and average afternoon humidity is 59 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)	128	161
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 19	May 07
Last Frost in Spring (32 deg): (1 year in 10 later than)	May 31	May 18
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 08	Sep 23
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 16	Oct 04
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	105	136
Growing Degree Days (40 deg):	4360	5304
Growing Degree Days (50 deg):	2763	3192
Annual Minimum Temperature:	-30	-20
Mean annual precipitation (inches):	18	22

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	0.12	0.18	0.36	0.85	1.28	1.35	1.40	0.94	0.52	0.43	0.18	0.20
Precip. More Than	0.93	1.28	2.56	3.74	5.15	5.28	4.68	3.53	4.20	2.68	1.90	1.38
Monthly Average:	0.44	0.61	1.48	2.32	3.11	3.56	2.72	2.27	2.10	1.47	0.80	0.56
Temp. Min.	-1.5	4.9	18.8	31.6	43.3	53.4	58.8	55.4	44.1	32.5	18.7	4.1
Temp. Max.	30.6	36.4	47.0	62.4	73.4	83.0	90.4	88.6	78.2	65.5	46.7	33.4
Temp. Avg.	15.8	21.8	33.4	47.8	59.3	69.0	75.2	72.9	62.3	50.2	33.9	17.7

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
SD0043	Academy, SD	1961	1990
SD4037	Howard, SD	1961	1990
SD4127	Huron, SD	1961	1990
SD5456	Mellette, SD	1961	1990
SD5561	Miller, SD	1961	1990
SD6574	Pickstown, SD	1961	1990
SD7052	Redfield, SD	1961	1990
SD8767	Wagner, SD	1961	1990

Soil Interpretations

The soils in this group are fine to coarse textured and somewhat poorly to moderately well-drained. 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	Moderately well-drained
Permeability Class: (0 - 40 inches)	Slow	To	Rapid
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)	0.5	6.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	8
Sodium Absorption Ratio: (0 - 12 inches)	0	6

	<u>Minimum</u>	<u>Maximum</u>
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.6	8.4
Available Water Capacity (inches): (0 - 60 inches)	5	12
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	55

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 at <http://plants.usda.gov/>.

Cool Season Grasses

Altai wildrye	F
Canada wildrye	F
Creeping foxtail	F
Green needlegrass	F
Intermediate wheatgrass	F
Meadow brome	G
Newhy hybrid wheatgrass	G
Pubescent wheatgrass	F
Reed canarygrass	G
Slender wheatgrass	G
Smooth brome	G
Tall wheatgrass	G
Western wheatgrass	G

Warm Season Grasses

Big bluestem	G
Indiangrass	G
Little bluestem	G
Switchgrass	G

Legumes

Alfalfa	F
Alsike clover	F
Birdsfoot trefoil	G
Canada milkvetch	F
Cicer milkvetch	F
Sweetclover	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. 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	9400	4600
Alfalfa/Intermediate wheatgrass	8300	4000
Alfalfa/Smooth brome grass	8300	4000
Big bluestem	8000	4000
Creeping foxtail	7400	4300
Indiangrass	6200	3400
Intermediate wheatgrass	7700	3100
Reed canarygrass	10300	6000
Smooth brome grass	7700	3100
Switchgrass	9700	4300

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

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, statewide

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, statewide

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

Soil Limitations

These soils have few limitations to the production of climatically adapted forage crops and production potential is high. Forage species like alfalfa that are less tolerant of saturated soils for extended periods of time may suffer stand loss during wet years when water tables stay abnormally high. Due to the dominant upward movement of water, these soils may become saline. A number of them have a high lime content near the surface which reduces the availability of some plant nutrients. These soils are also subject to compaction if grazed or machinery is operated on them when wet. Coarser textured soils in this group may be subject to soil blowing when establishing new stands.

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. On coarser textured soils, incorporate wind erosion control practices during stand establishment.

FSG Documentation

Similar FSGs:

FSG ID

G055CY500S

FSG Narrative

Overflow soils do not have water tables 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 counties in MLRA 55C

NRCS South Dakota 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: South Dakota

Forage Suitability Group Approval

Original Author: Tim Nordquist

Original Date: 2/7/02

Approval by: Dave Schmidt

Approval Date: 10/29/02