FORAGE SUITABILITY GROUP
Very Droughty Loam

FSG No.: G055CY130SD

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

Physiographic Features
These soils are found mostly on terraces and glacial outwash plains.

	Minimum	Maximum
Elevation (feet):	1300	1970
Slope (percent):	0	9
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Very low	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.

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 75^0F and average January temperatures are about 16^0F. 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):	128	161
(9 years in 10 at least)		
Last Killing Freeze in Spring (28 deg):	May 19	May 07
(1 year in 10 later than)		
Last Frost in Spring (32 deg):	May 31	May 18
(1 year in 10 later than)		

	From	To
First Frost in Fall (32 deg):	Sep 08	Sep 23
(1 year in 10 earlier than)		
First Killing Freeze in Fall (28 deg):	Sep 16	Oct 04
(1 year in 10 earlier than)		
Length of Growing Season (32 deg)(days):	105	136
(9 years in 10 at least)		
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:	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
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

Climate Station	**Location**	**From**	**To**
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

This group consists of very deep, somewhat excessively drained, moderately coarse to medium textured soils formed in loamy and gravelly materials deposited over sand and gravel by water. Available water capacity is low due to moderate to shallow depths to sand and gravel.

Drainage Class:	Somewhat excessively drained	To	Somewhat excessively drained
Permeability Class:	Moderate	To	Moderately rapid
(0 - 40 inches)			
Frost Action Class:	Low	To	Low

	Minimum	**Maximum**
Depth:	72	
Surface Fragments >3" (% Cover):	0	3
Organic Matter (percent):	1.0	4.0
(surface layer)		
Electrical Conductivity (mmhos/cm):	0	2
(0 - 24 inches)		
Sodium Absorption Ratio:	0	0
(0 - 12 inches)		

	Minimum	Maximum
Soil Reaction (1:1) Water (pH): **(0 - 12 inches)**	6.1	7.8
Available Water Capacity (inches): **(0 - 60 inches)**	3	6
Calcium Carbonate Equivalent (percent): **(0 - 12 inches)**	0	3

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		**Warm Season Grasses**	
Crested wheatgrass	F	Little bluestem	F
Green needlegrass	F	Prairie sandreed	F
Intermediate wheatgrass	F	Sand bluestem	F
Newhy hybrid wheatgrass	F	Sideoats grama	F
Pubescent wheatgrass	F		
Russian wildrye	F	**Legumes**	
Slender wheatgrass	F	Purple prairieclover	G
Smooth bromegrass	F	Sweetclover	F
Western wheatgrass	F	White prairieclover	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. 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**	
	High	**Low**
	(lbs/ac)	**(lbs/ac)**
Crested wheatgrass	2900	1400
Pubescent wheatgrass	2900	1700
Western wheatgrass	2000	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: SD0004
Growth Curve Name: Cool season grass
Growth Curve Description: Cool season grass, statewide

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	10	40	35	15	0	0	0	0

Soil Limitations

The primary limitation for these soils is their moderate depth to sand and gravel and resulting low available water capacity which limits species selection and production potential. On steeper slopes, water erosion is a potential problem during establishment, when renovating stands, and in thin established stands. 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 low available water capacity of these soils can be reduced by selecting forage species that are highly 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.

FSG Documentation

Similar FSGs:

FSG ID	FSG Narrative
G055CY120S	Droughty Loam soils have higher available water capacity and greater 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 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

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