

## FORAGE SUITABILITY GROUP Saline

**FSG No.:** G063BY895SD

**Major Land Resource Area:** 63B - Southern Rolling Pierre Shale Plains



### Physiographic Features

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

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1300	2000
<b>Slope (percent):</b>	0	1
<b>Flooding:</b>		
<b>Frequency:</b>	None	Rare
<b>Duration:</b>	None	Very Brief
<b>Ponding:</b>		
<b>Depth (inches):</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Negligible	Very low

### 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 63B. Average annual precipitation for all climate stations listed below is about 22 inches. About 76 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 frame.

Average annual snowfall ranges from 19 inches at Creighton, NE to 44 inches at Winner, SD. Snow cover at depths greater than 1 inch range from 4 days at Stephan, SD to 57 days at Winner.

Average July temperatures across the MLRA are about 76 degrees F., and average January temperatures are about 17 degrees F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -37 and a high of 114 both recorded at Kennebec, SD. 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 <http://www.wcc.nrcs.usda.gov>

	<b>From</b>	<b>To</b>
<b>Freeze-free period (28 deg)(days):</b> (9 years in 10 at least)	128	152
<b>Last Killing Freeze in Spring (28 deg):</b> (1 year in 10 later than)	May 20	May 08
<b>Last Frost in Spring (32 deg):</b> (1 year in 10 later than)	Jun 09	May 17
<b>First Frost in Fall (32 deg):</b> (1 year in 10 earlier than)	Sep 01	Sep 21
<b>First Killing Freeze in Fall (28 deg):</b> (1 year in 10 earlier than)	Sep 19	Sep 30

	<b>From</b>	<b>To</b>
<b>Length of Growing Season (32 deg)(days):</b> (9 years in 10 at least)	92	131
<b>Growing Degree Days (40 deg):</b>	4526	5505
<b>Growing Degree Days (50 deg):</b>	2652	3257
<b>Annual Minimum Temperature:</b>	-25	-15
<b>Mean annual precipitation (inches):</b>	18	25

**Monthly precipitation (inches) and temperature (F):**

<b>2 years in 10:</b>	<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>
<b>Precip. Less Than</b>	0.06	0.09	0.27	0.66	1.18	1.80	1.24	0.73	0.65	0.55	0.12	0.13
<b>Precip. More Than</b>	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:**      0.41   0.55   1.56   2.36   3.34   3.54   3.08   2.45   2.13   1.45   0.77   0.56

<b>Temp. Min.</b>	1.3	7.5	18.2	31.1	42.2	52.3	58.2	55.5	44.9	32.8	18.9	6.1
<b>Temp. Max.</b>	32.4	38.6	48.5	62.8	74.0	84.0	91.1	88.9	78.7	66.0	47.7	35.2
<b>Temp. Avg.</b>	18.7	24.4	34.9	48.5	59.6	69.5	75.7	73.5	63.2	51.1	35.2	22.4

<b><u>Climate Station</u></b>	<b><u>Location</u></b>	<b><u>From</u></b>	<b><u>To</u></b>
NE1990	Creighton, NE	1961	1990
NE1365	Butte, NE	1961	1990
SD9367	Winner, SD	1961	1990
SD0778	Bonesteel, SD	1961	1990
SD3452	Gregory, SD	1961	1990
SD7992	Stephan, SD	1961	1990
SD4516	Kennebec, SD	1961	1990

**Soil Interpretations**

This group consists of somewhat poorly drained soils with elevated salinity.

<b>Drainage Class:</b>	Somewhat poorly drained	To	Somewhat poorly drained
<b>Permeability Class:</b> (0 - 40 inches)	Very slow	To	Very slow
<b>Frost Action Class:</b>	Moderate	To	Moderate

	<b><u>Minimum</u></b>	<b><u>Maximum</u></b>
<b>Depth:</b>	72	
<b>Surface Fragments &gt;3" (% Cover):</b>	0	3
<b>Organic Matter (percent):</b> (surface layer)	4.0	6.0
<b>Electrical Conductivity (mmhos/cm):</b> (0 - 24 inches)	8	16
<b>Sodium Absorption Ratio:</b> (0 - 12 inches)	0	0
<b>Soil Reaction (1:1) Water (pH):</b> (0 - 12 inches)	7.4	8.4
<b>Available Water Capacity (inches):</b> (0 - 60 inches)	3	6
<b>Calcium Carbonate Equivalent (percent):</b> (0 - 12 inches)	0	6

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

**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/>

<b><u>Cool Season Grasses</u></b>	<b><u>Symbol</u></b>		<b><u>Warm Season Grasses</u></b>	<b><u>Symbol</u></b>
Beardless wildrye	LETR5	G	Alkali sacaton	SPAI F
Creeping foxtail	ALAR	F	Switchgrass	PAVIV F
Intermediate wheatgrass	THIN	F	<b><u>Legumes</u></b>	<b><u>Symbol</u></b>
Newhy hybrid wheatgrass		G	Alfalfa	MESA F
Nuttall alkaligrass	PUNU2	G	Alsike clover	TRHY F
Pubescent wheatgrass	THIN	F	Birdsfoot trefoil	LOCO6 F
Reed canarygrass	PHAR3	F	Cicer milkvetch	ASCI4 F
Russian wildrye	PSJU3	F		
Slender wheatgrass	ELTR7	G		
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.

<b>Forage Crop</b>	<b>Management Intensity</b>	
	<b><u>High</u></b> <b>(lbs/ac)</b>	<b><u>Low</u></b> <b>(lbs/ac)</b>
Switchgrass	2900	1700
Tall wheatgrass	4600	1700
Western wheatgrass	2900	1700

### **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

<b><u>Percent Production by Month</u></b>											
<b><u>Jan</u></b>	<b><u>Feb</u></b>	<b><u>Mar</u></b>	<b><u>Apr</u></b>	<b><u>May</u></b>	<b><u>Jun</u></b>	<b><u>Jul</u></b>	<b><u>Aug</u></b>	<b><u>Sep</u></b>	<b><u>Oct</u></b>	<b><u>Nov</u></b>	<b><u>Dec</u></b>
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

<b><u>Percent Production by Month</u></b>											
<b><u>Jan</u></b>	<b><u>Feb</u></b>	<b><u>Mar</u></b>	<b><u>Apr</u></b>	<b><u>May</u></b>	<b><u>Jun</u></b>	<b><u>Jul</u></b>	<b><u>Aug</u></b>	<b><u>Sep</u></b>	<b><u>Oct</u></b>	<b><u>Nov</u></b>	<b><u>Dec</u></b>
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

<b><u>Percent Production by Month</u></b>											
<b><u>Jan</u></b>	<b><u>Feb</u></b>	<b><u>Mar</u></b>	<b><u>Apr</u></b>	<b><u>May</u></b>	<b><u>Jun</u></b>	<b><u>Jul</u></b>	<b><u>Aug</u></b>	<b><u>Sep</u></b>	<b><u>Oct</u></b>	<b><u>Nov</u></b>	<b><u>Dec</u></b>
0	0	0	0	10	40	35	15	0	0	0	0

### **Soil Limitations**

These soils have severe limitations to the production of climatically adapted forage species. Species selection and productivity are severely limited by the high salinity levels. Also, these soils are somewhat poorly drained and will experience periods when trafficability will be difficult or impossible. These soils are subject to compaction if grazed or machinery is operated on them when wet. Drainage also limits species selection.

### **Management Interpretations**

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

### **FSG Documentation**

#### **Similar FSGs:**

##### **FSG ID**

G063BY700S

##### **FSG Narrative**

Subirrigated soils do not have restrictive levels of salinity.

#### **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 63B

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: 4/3/02

Approval by: Dave Schmidt

Approval Date: