

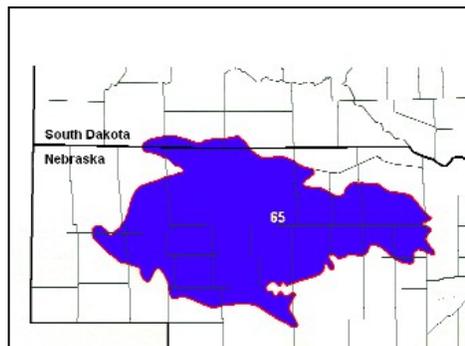
## FORAGE SUITABILITY GROUP (FSG) Subirrigated

**FSG No.:** G065XY700NE

**Major Land Resource Area (MLRA):** 065X - Nebraska Sand Hills

### Physiographic Features

The soils in this group are found in interdunal swales and valleys and on terraces and floodplains.



	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1970	3900
<b>Slope (percent):</b>	0	3
<b>Flooding:</b>		
<b>Frequency:</b>	None	Frequent
<b>Duration:</b>	None	Brief
<b>Ponding:</b>		
<b>Depth (inches):</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Negligible	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 65. Average annual precipitation for all climate stations listed below is about 21 inches, and ranges from about 17 inches in the west to about 24 inches in the east. About 78 percent of the annual precipitation occurs during the months of April through September. On average, there are about 28 days with greater than .1 inches of precipitation during that same time period. 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 Burwell, Nebraska (NE), to 44 inches at Newport, NE. Snow cover at depths greater than 1 inch range from 13 days at Ellsworth, NE, to 74 days at Newport, NE.

Average July temperatures for the listed stations are about 74°F., and average January temperatures are about 22°F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -42 at Ellsworth and a high of 114 recorded at Valentine. The MLRA lies almost wholly in USDA Plant Hardiness Zone 4b.

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)	133	151
<b>Last Killing Freeze in Spring (28 deg):</b> (1 year in 10 later than)	May 17	May 10
<b>Last Frost in Spring (32 deg):</b> (1 year in 10 later than)	Jun 04	May 18
<b>First Frost in Fall (32 deg):</b> (1 year in 10 earlier than)	Sep 08	Sep 21

	<b>From</b>	<b>To</b>
<b>First Killing Freeze in Fall (28 deg):</b> (1 year in 10 earlier than)	Sep 15	Sep 29
<b>Length of Growing Season (32 deg)</b> (9 years in 10 at least)	105	133
<b>Growing Degree Days (40 deg):</b>	4584	4963
<b>Growing Degree Days (50 deg):</b>	3038	3061
<b>Annual Minimum Temperature:</b>	-25	-20
<b>Mean annual precipitation (inches):</b>	17	24

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

<b>2 years in 10:</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>Precip. Less Than</b>	0.15	0.13	0.41	0.98	1.79	1.94	1.67	1.14	0.66	0.37	0.19	0.17
<b>Precip. More Than</b>	0.65	0.83	1.88	2.92	4.71	4.63	4.43	3.48	2.97	1.68	1.22	0.78
<b>Monthly Average:</b>	0.39	0.50	1.22	2.01	3.34	3.36	3.14	2.39	1.92	1.07	0.73	0.49
<b>Temp. Min.</b>	9.4	14.4	22.5	33.6	44.4	54.1	60.1	57.6	47.0	35.0	22.6	12.2
<b>Temp. Max.</b>	34.4	39.7	48.4	61.5	71.8	82.0	88.4	86.3	76.4	65.2	48.5	36.9
<b>Temp. Avg.</b>	21.9	27.0	35.4	47.6	58.1	68.1	74.2	72.0	61.7	50.1	35.6	24.6

<b><u>Climate Station</u></b>	<b><u>Location</u></b>	<b><u>From</u></b>	<b><u>To</u></b>
NE0050	Ainsworth	1960	1990
NE0365	Arthur	1960	1990
NE1130	Brewster	1960	1990
NE2647	Ellsworth	1960	1990
NE3540	Halsey	1960	1990
NE4100	Hyannis	1960	1990
NE5700	Mullen	1960	1990
NE5929	Newport	1960	1990
NE6385	Oshkosh	1960	1990
NE8650	Tryon	1960	1990
NE8760	Valentine	1960	1990

**Soil Interpretations**

The subirrigated group predominately consists of very deep, somewhat poorly drained, coarse to moderate textured soils. They have a seasonal water table within 12 to 48 inches of the surface during part of the growing season.

<b>Drainage Class:</b>	Moderately well drained	To	Somewhat poorly drained
<b>Permeability Class:</b> (0 - 40 inches)	Moderately slow	To	Rapid
<b>Frost Action Class:</b>	Low	To	High

	<b><u>Minimum</u></b>	<b><u>Maximum</u></b>
<b>Depth:</b>	72	
<b>Surface Fragments &gt;3" (% Cover):</b>	0	0
<b>Organic Matter (percent):</b> (surface layer)	0.5	4.0
<b>Sodium Absorption Ratio:</b> (0 - 24 inches)	0	2
<b>Sodium Absorption Ratio:</b> (0 - 12 inches)	0	6

	<u>Minimum</u>	<u>Maximum</u>
<b>Soil Reaction (1:1) Water (pH):</b> (0 - 12 inches)	5.6	8.4
<b>Available Water Capacity (inches):</b> (0 - 60 inches)	4	12
<b>Calcium Carbonate Equivalent</b> (0 - 12 inches)	0	23

**Soil Component List** (Some phases of these soils may also occur in other FSG's)

Boel	Els	Lamo	Ord
Bolent	Elsmere	Lawet	Ovina
Dunn	Gibbon	Libory	Wann

**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>	
Creeping foxtail	ALAR	F
Green needlegrass	NAVI4	F
Intermediate wheatgrass	THIN6	G
Meadow bromegrass	BRBI2	G
Orchardgrass	DAGL	F
Pubescent wheatgrass	THIN6	G
Reed canarygrass	PHAR3	F
Smooth bromegrass	BRINI2	G
Tall wheatgrass	THPO7	G
Western wheatgrass	PASM	G

**Warm Season Grasses**

Big bluestem	ANGE	G
Indiangrass	SONU2	G
Little bluestem	SCSC	G
Switchgrass	PAVIV	G

**Legumes**

Alfalfa	MESA	F
Alsike clover	TRHY	G
Birdsfoot trefoil	LOCO6	G
Canada milkvetch	ASCAC6	F
Cicer milkvetch	ASCI4	G
Purple prairieclover	DAPUP	F
Red Clover	TRPR2	G
Sainfoin	ONVI	F
White prairieclover	DACAC	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 Growth Curves**

**Growth Curve Number:** SD0001  
**Growth Curve Name:** Alfalfa  
**Growth Curve Description:** Alfalfa, MLRA's 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**

Water Table

- Forage species like alfalfa that are less tolerant of high watertables for extended periods of time may suffer stand loss during wet years when watertables stay abnormally high.

Flooding

- Flooding is a potential hazard to many of these soils.

**Management Interpretations**

Watertable and Flooding

- When establishing new stands select species that are tolerant of high water tables or occasional flooding, and that are also capable of utilizing the additional moisture inherent to these soils.

**FSG Documentation**

**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 South Dakota and Nebraska counties in MLRA 65  
NRCS South Dakota Technical Guide and Nebraska 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: Nebraska and South Dakota

**Forage Suitability Group Approval:**

Original Author: Tim Nordquist  
Original Date: 4/1/2003  
Approval by: Dave Schmidt  
Approval Date: 9/14/2004