

FORAGE SUITABILITY GROUP (FSG)

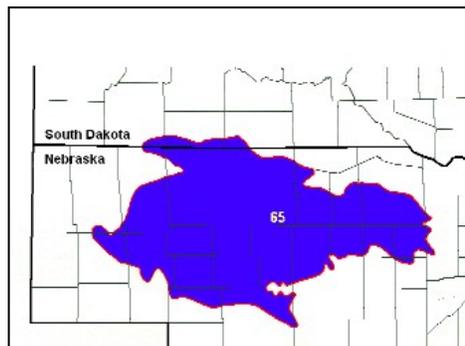
Sand

FSG No.: G065XY300NE

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

Physiographic Features

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



	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1970	3900
Slope (percent):	0	30
Flooding:		
Frequency:	None	Rare
Duration:	None	Very Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	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.

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>.

	From	To
Freeze-free period (28 deg)(days): (9 years in 10 at least)	133	151
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 17	May 10
Last Frost in Spring (32 deg): (1 year in 10 later than)	Jun 04	May 18
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 08	Sep 21
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 15	Sep 29
	From	To
Length of Growing Season (32 deg): (9 years in 10 at least)	105	133
Growing Degree Days (40 deg):	4584	4963

Sand

Pastureland and Hayland Interpretations

Growing Degree Days (50 deg):	3038	3061
Annual Minimum Temperature:	-25	-20
Mean annual precipitation (inches):	17	24

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	0.15	0.13	0.41	0.98	1.79	1.94	1.67	1.14	0.66	0.37	0.19	0.17
Precip. More Than	0.65	0.83	1.88	2.92	4.71	4.63	4.43	3.48	2.97	1.68	1.22	0.78
Monthly Average:	0.39	0.50	1.22	2.01	3.34	3.36	3.14	2.39	1.92	1.07	0.73	0.49
Temp. Min.	9.4	14.4	22.5	33.6	44.4	54.1	60.1	57.6	47.0	35.0	22.6	12.2
Temp. Max.	34.4	39.7	48.4	61.5	71.8	82.0	88.4	86.3	76.4	65.2	48.5	36.9
Temp. Avg.	21.9	27.0	35.4	47.6	58.1	68.1	74.2	72.0	61.7	50.1	35.6	24.6

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
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

This group consists of very deep, moderately well to excessively drained, coarse textured soils. Permeability is moderately rapid to rapid, and available water capacity is low to moderate.

Drainage Class:	Moderately well drained	To	Excessively drained
Permeability Class: (0 - 40 inches)	Moderate	To	Rapid
Frost Action Class:	Low	To	Moderate
	<u>Minimum</u>		<u>Maximum</u>
Depth:	72		
Surface Fragments >3" (% Cover): (surface layer)	0		0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0		2
Sodium Absorption Ratio: (0 - 12 inches)	0		0
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.1		8.4
Available Water Capacity (inches): (0 - 60 inches)	3		9
Calcium Carbonate Equivalent (0 - 12 inches)	0		8

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

Bankard	Duda	Jansen	Sandose
Boelus	Dunday	Josburg	Simeon
Calamus	Inavale	Meadin	Valent
Dailey	Inglewood	Nenzel	Valentine
Doger	Ipage	Pivot	

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/>.

<u>Cool Season Grasses</u>	<u>Symbol</u>	<u>Dry</u>	<u>Irrig</u>	<u>Legumes</u>	<u>Symbol</u>	<u>Dry</u>	<u>Irrig</u>
Crested wheatgrass	AGCR	G	NS	Alfalfa	MESA	G	G
Intermediate wheatgrass	THIN6	F	G	Birdsfoot trefoil	LOCO6	NS	G
Meadow bromegrass	BRBI2	NS	G	Cicer milkvetch	ASCI4	G	F
Orchardgrass	DAGL	NS	G	Purple prairieclover	DAPUP	F	NS
Pubescent wheatgrass	THIN6	F	G	Red Clover	TRPR2	NS	G
Smooth bromegrass	BRINI2	F	G				
Western wheatgrass	PASM	F	NS				
<u>Warm Season Grasses</u>							
Big bluestem	ANGE	F	G				
Indiangrass	SONU2	F	G				
Little bluestem	SCSC	G	NS				
Prairie sandreed	CALO	G	NS				
Sand bluestem	ANHA	G	NS				
Sand lovegrass	ERTR3	F	NS				
Sideoats grama	BOCU	F	NS				
Switchgrass	PAVIV	F	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

NS - Species is not adapted to the site and should not be planted

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 expected harvest efficiency. Seventy 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	Dryland		Irrigated	
	Management Intensity		Management Intensity	
	Low (lbs/ac)	High (lbs/ac)	Low (lbs/ac)	High (lbs/ac)
Alf/Intermediate wheatgrass	2000	3100	8600	14300
Alf/Smooth bromegrass	2000	3100	8600	14300
Alfalfa	2600	4000		
Crested wheatgrass	1700	2300		
Intermediate wheatgrass	1700	2300	6900	11400
Sand bluestem	2300	4000		
Smooth bromegrass	1700	2900	6900	11400
Switchgrass	2300	4000		

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

Growth Curve Number: SD0003
Growth Curve Name: Irrigated Alfalfa
Growth Curve Description: Irrigated Alfalfa, 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	5	25	25	20	15	10	0	0	0

Soil Limitations

Available Water Capacity

- Production potential is low to moderate due to the low available water capacity and droughtiness of these soils. Species choices are somewhat limited for pasture and hayland.

Management Interpretations

Available Water Capacity

- When establishing new stands select species that are tolerant of drought and coarse soils.

FSG Documentation

Similar FSG's:

FSG ID

G065XY120NE

FSG Narrative

Loamy, coarse soils typically have finer surface textures and greater available water holding capacity than sands.

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