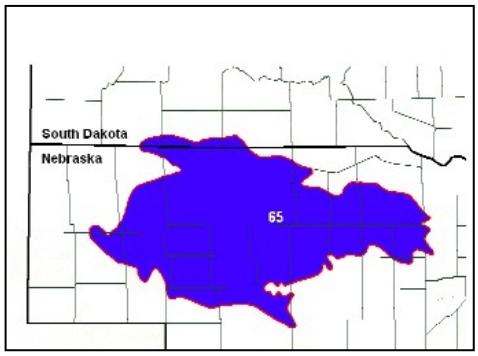
FORAGE SUITABILITY GROUP (FSG)
Loamy, Coarse

FSG No.: G065XY120NE
Major Land Resource Area (MLRA): 065X - Nebraska Sand Hills



Physiographic Features
The soils in this group are found on upland slopes in sand hill valleys and on stream terraces.

	Minimum	Maximum
Elevation (feet):	1970	3900
Slope (percent):	0	30
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Low	High

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. Days with snow cover at depths greater than 1 inch range from 13 at Ellsworth, NE, to 74 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

	From	To
First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	Sep 15	Sep 29
Length of Growing Season (32 (9 years in 10 at least)	105	133
Growing Degree Days (40 deg):	4584	4963
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

Climate Station	Location	From	To
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 mostly of very deep, moderately well and well drained, moderately coarse textured soils. Permeability is moderately rapid, and available water capacity is moderate to high.

Drainage Class:	None selected	To	None selected
Permeability Class: (0 - 40 inches)	Moderate	To	Moderately rapid
Frost Action Class:	Moderate	To	Moderate

	Minimum	Maximum
Depth:	72	0
Surface Fragments >3" (% Cover):	0	0
Organic Matter (percent): (surface layer)	0.5	4.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	2
Sodium Absorption Ratio: (0 - 12 inches)	0	5
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.1	8.4

	Minimum	Maximum
Available Water Capacity (inches): (0 - 60 inches)	6	9
Calcium Carbonate Equivalent (0 - 12 inches)	0	14

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

Anselmo	Hersh	Vetal
Doughboy	Jansen	

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	Symbol	Dry	Irrig
Crested wheatgrass	AGCR	G	NS
Green needlegrass	NAVI4	G	NS
Intermediate wheatgrass	THIN6	G	G
Meadow bromegrass	BRBI2	F	G
Orchardgrass	DAGL	NS	G
Pubescent wheatgrass	THIN6	G	G
Russian wildrye	PSJU3	G	NS
Smooth bromegrass	BRINI2	F	G
Western wheatgrass	PASM	G	NS
Warm Season Grasses			
Big bluestem	ANGE	G	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	G	NS
Switchgrass	PAVIV	F	G

Legumes	Symbol	Dry	Irrig
Alfalfa	MESA	G	G
Birdsfoot trefoil	LOCO6	NS	G
Cicer milkvetch	ASCI4	G	F
Purple prairieclover	DAPUP	G	NS
Red Clover	TRPR2	NS	G
Sainfoin	ONVI	F	NS
White prairieclover	DACAC	F	NS

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 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	Dryland Management Intensity Low (lbs/ac)	Dryland Management Intensity High (lbs/ac)	Irrigated Management Intensity Low (lbs/ac)	Irrigated Management Intensity High (lbs/ac)
Alfalfa	2300	3700		
Alf/Intermediate wheatgrass	1700	2900	6900	11400
Alf/Smooth bromegrass	1700	2900	6900	11400
Crested wheatgrass	1400	2600		
Intermediate wheatgrass	1400	2600	6900	11400
Smooth bromegrass	1400	2600	6900	11400

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

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

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

Growth Curve Number: SD0003
Growth Curve Name: Irrigated Alfalfa
Growth Curve Description: Irrigated Alfalfa, statewide

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	25	25	20	15	10	0	0	0

Soil Limitations

Available water capacity

- Moderate available water capacity limits plant growth during periods of moisture deficit.

Water erosion

- A potential problem during establishment, and in thin, open established stands

Livestock trail erosion

- A potential problem in established stands.

Wind erosion

- A potential problem during stand establishment on moderately coarse textured soils and in heavy use areas.

Management Interpretations

Available water capacity

- When establishing new stands select forage species that are tolerant to periods of drought and inadequate soil moisture.

Wind and water erosion

- Include sod forming grass species in new seedings on steeper slopes to reduce sheet and rill erosion. Incorporate both wind and water erosion control practices during the establishment period.

Livestock trail erosion

- Locate fences, lanes, water developments, and mineral areas to reduce livestock trailing perpendicular to steeper slopes.

FSG Documentation

Similar FSGs:

FSG ID	FSG Narrative
G065XY100NE	Loamy soils have greater available water capacity and greater production potential.
G065XY300NE	Sands soils typically have coarser textures and lower available water holding capacity.

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 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:	9/14/04