

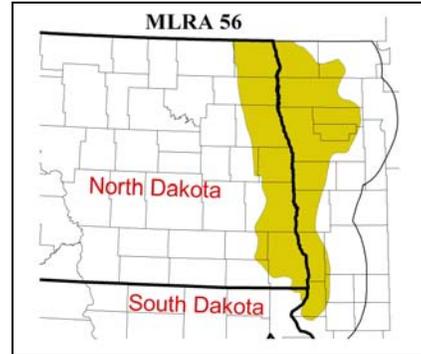
## FORAGE SUITABILITY GROUP DROUGHTY LOAM

**FSG No.:** G056XY120ND

**Major Land Resource Area:** 056X - Red River Valley of the North

### Physiographic Features

The soils in this group are mostly found on glacial lake, outwash, and delta plains and on terraces.



	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	660	1000
<b>Slope (percent):</b>	0	9
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Negligible	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 56. Average annual precipitation for all climate stations listed below is about 20 inches. About 70 percent of that occurs during the months of April through September. On average there are about 27 days with greater than .1 inches of precipitation during the 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 21 inches at Grafton, ND to 47 inches at Fargo, ND. Snow cover at depths greater than 1 inch range from 33 days at Grafton, ND to 124 days at Cavalier, ND.

Average July temperatures are about 70 degrees F., and average January temperatures are about 6 degrees F. Recorded temperature extremes in the MLRA during the years 1971 to 2000 are a low of -41 at McLeod, and a high of 107 recorded at both Colgate and Wapheton. The MLRA lies in USDA Plant Hardiness Zones 3b and 4a.

At Fargo, ND the average annual wind speed is about 12 MPH. The highest wind speeds occur during early spring and the lowest occur during the summer. It is cloudy about 165 days a year. Average morning relative humidity in June is about 82 percent and average afternoon humidity is about 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>.

	<b>From</b>	<b>To</b>
<b>Freeze-free period (28 deg)(days):</b> (9 years in 10 at least)	126	141
<b>Last Killing Freeze in Spring (28 deg):</b> (1 year in 10 later than)	May 24	May 14
<b>Last Frost in Spring (32 deg):</b> (1 year in 10 later than)	Jun 05	May 21

	<b>From</b>	<b>To</b>
<b>First Frost in Fall (32 deg):</b> (1 year in 10 earlier than)	Aug 27	Sep 18
<b>First Killing Freeze in Fall (28 deg):</b> (1 year in 10 earlier than)	Sep 11	Sep 25
<b>Length of Growing Season (32 deg)(days):</b> (9 years in 10 at least)	104	129
<b>Growing Degree Days (40 deg):</b>	3550	4444
<b>Growing Degree Days (50 deg):</b>	1968	2524
<b>Annual Minimum Temperature:</b>	-35	-25
<b>Mean annual precipitation (inches):</b>	18	22

**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>	0.20	0.20	0.40	0.40	1.20	1.60	1.50	1.40	0.80	0.30	0.20	0.10
<b>Precip. More Than</b>	0.90	0.80	1.40	2.20	3.60	4.80	4.70	3.70	3.20	2.90	1.50	0.70
<b>Monthly Average:</b>	0.60	0.50	0.90	1.30	2.40	3.30	3.20	2.60	2.00	1.70	0.90	0.40
<b>Temp. Min.</b>	-3.5	3.9	17.3	31.0	44.1	53.4	57.6	55.4	45.2	33.7	18.0	3.4
<b>Temp. Max.</b>	15.4	22.8	34.9	54.2	70.1	77.8	82.0	81.1	70.3	56.1	34.8	20.7
<b>Temp. Avg.</b>	6.0	13.3	26.1	42.6	57.1	65.6	69.8	68.3	57.8	44.9	26.4	12.0

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
ND5754	MC LEOD, ND	1971	2000
ND9100	WAHPETON, ND	1971	1999
ND1686	COLGATE, ND	1971	2000
ND2859	FARGO, ND	1971	2000
ND4203	HILLSBORO, ND	1971	2000
ND3616	GRAND FORKS, ND	1971	2000
ND5013	LARIMORE, ND	1971	2000
ND3594	GRAFTON, ND	1971	2000
ND1435	CAVALIER, ND	1971	2000

**Soil Interpretations**

This group consists of moderately well to well drained, moderately coarse to medium textured soils formed in loamy and sandy materials deposited by wind or water. Available water capacity is in the moderate range due to moderately coarse soil textures or moderate depth to sand and gravel.

<b>Drainage Class:</b>	Moderately well drained	To	Well drained
<b>Permeability Class:</b> (0 - 40 inches)	Moderate	To	Moderately rapid
<b>Frost Action Class:</b>	Low	To	Moderate

	<u>Minimum</u>	<u>Maximum</u>
<b>Depth:</b>	52	
<b>Surface Fragments &gt;3" (% Cover):</b>	0	3
<b>Organic Matter (percent):</b> (surface layer)	1.0	8.0
<b>Electrical Conductivity (mmhos/cm):</b> (0 - 24 inches)	0	2
<b>Sodium Absorption Ratio:</b> (0 - 12 inches)	0	1
<b>Soil Reaction (1:1) Water (pH):</b> (0 - 12 inches)	5.6	7.8

	<u>Minimum</u>	<u>Maximum</u>
<b>Available Water Capacity (inches):</b> (0 - 60 inches)	5	9
<b>Calcium Carbonate Equivalent (percent):</b> (0 - 12 inches)	0	8

### 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>Cool Season Grasses</b>	<u>Symbol</u>		<b>Warm Season Grasses</b>	<u>Symbol</u>	
Altai wildrye	LEAN3	F	Big bluestem	ANGE	F
Bluebunch/Quackgrass Hybrid		G	Blue grama	BOGR2	G
Canada wildrye	ELCA4	F	Indiangrass	SONU2	F
Crested wheatgrass	AGCR	G	Little bluestem	SCSC	G
Dahurian wildrye	ELDA3	F	Prairie sandreed	CALO	F
Green needlegrass	NAVI4	G	Sand bluestem	ANHA	F
Intermediate wheatgrass	THIN6	G	Sideoats grama	BOCU	G
Meadow bromegrass	BRBI2	G	Switchgrass	PAVIV	F
Pubescent wheatgrass	THIN6	G	<b>Legumes</b>	<u>Symbol</u>	
Russian wildrye	PSJU3	G	Alfalfa	MESA	G
Slender wheatgrass	ELTR7	G	American vetch	VIAM	F
Smooth bromegrass	BRINI2	G	Birdsfoot trefoil	LOCO6	F
Tall wheatgrass	THPO7	G	Canada milkvetch	ASCAC6	F
Western wheatgrass	PASM	G	Cicer milkvetch	ASCI4	G
			Hairy vetch	VIVI	F
			Purple prairieclover	DAPUP	G
			Red clover	TRPR2	F
			Sainfoin	ONVI	F
			Sweet clover	MELIL	G
			White prairieclover	DACAC	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.

Forage Crop	<u>Dryland</u>	
	Management Intensity	
	<u>Low</u> (lbs/ac)	<u>High</u> (lbs/ac)
Alfalfa	3500	8100
Alfalfa/Crested wheatgrass	2700	5800
Alfalfa/Intermediate wheatgrass	3100	6100
Alfalfa/Smooth brome grass	3100	6100
Big bluestem	2800	6100
Crested wheatgrass	2700	5500
Green needlegrass	1700	3500
Intermediate wheatgrass	2800	5800
Smooth brome grass	2800	5800
Switchgrass	2800	7200
Western wheatgrass	1800	3900

**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:** ND0001  
**Growth Curve Name:** Alfalfa  
**Growth Curve Description:** Alfalfa

<u>Percent Production by Month</u>											
<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	30	20	15	5	0	0	0

**Growth Curve Number:** ND0002  
**Growth Curve Name:** Cool season grass  
**Growth Curve Description:** Cool season grass

<u>Percent Production by Month</u>											
<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	40	35	10	5	5	0	0	0

**Growth Curve Number:** ND0003  
**Growth Curve Name:** Warm season grass  
**Growth Curve Description:** Warm season grass

<u>Percent Production by Month</u>											
<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**

The primary limitation for these soils is their moderate available water capacity which limits plant growth during periods of moisture deficit. On steeper slopes water erosion is a potential problem during establishment. 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 moderate available water capacity of these soils can be reduced by selecting forage species that are 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.

Pasture and hayland can include considerations for wildlife. Delaying grazing on portions of the pasture or rotating pastures will allow nest initiation of grassland nesting birds or species of concern. Nest initiation of most grassland nesting birds occurs from April 15 to June 1. Delaying haying until after July 15 allows for most species to fledge their young. Consider planting species with later maturity to allow for harvesting after nests have fledged. Avoid mowing around the field. Mow back and forth or from the inside to the outside of the field. Consider using flushing bars on swathers and mowers.

### **FSG Documentation**

#### **Similar FSGs:**

##### **FSG ID**

G056XY100ND

##### **FSG Narrative**

Loamy soils have greater available water capacity and greater production potential.

G056XY130ND

Very Droughty Loams have lower available water capacity and lower 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 North Dakota, South Dakota and Minnesota counties in MLRA 56
- North Dakota NRCS Field Office Technical Guide, South Dakota NRCS Field Office Technical Guide and Minnesota NRCS Field Office 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: ND, SD, MN

#### **Forage Suitability Group Approval:**

Original Author: Tim Nordquist

Original Date: 3/19/2000

Approval by: Jeff Printz

Approval Date: March 2005