FORAGE SUITABILITY GROUP

Clayey

FSG No.: G034B3001CO
Major Land Resource Area: 034B - Warm Central Desertic Basins and Plateaus
Land Resource Unit 34B-3: 12-14 inches precipitation zone

PHYSIOGRAPHIC FEATURES

The land resource area 34B-3 occurs in Northeastern Utah and Western Colorado. Utah Counties included in this area are Carbon, Emery, Grand, Duchesne and Uintah. Colorado counties included in this area are Mesa, Delta, Montrose, Garfield, Rio Blanco and Moffat.

The soils on this group are found on terraces or mesa breaks.

	Minimum	Maximum
Elevation (feet):	**4000**	**7000**
Slope (percent):	**0**	**15**
Flooding:		
Frequency:	**None**	**None**
Duration:	**None**	**None**
Ponding:		
Depth (inches):		
Frequency:	**None**	**None**
Duration:	**None**	**None**
Runoff Class:	**High**	**Very high**

CLIMATIC FEATURES

The climate for this land resource area is considered arid or semi arid. The yearly total annual precipitation for this resource area ranges from 12-14 inches. Following are data for a representative climate stations within this precipitation zone. For data from a climate station nearer to your location, access the national Water and Climate Center at http://www.wcc.nrcs.usda.gov/, or visit your local Natural Resources Conservation Service Field Office.

Temperature Data Related To Growth of Plants										
County/ State	Climate Station	Elevation (Feet)	Growing Degree-Day Units †		Growing Season					
					Length of Period		Average Date of 32°F		Average Date of 28°F	
			Base 50°F	Base 40°F	32°F	28°F	Last frost in Spring	First Frost in Fall	Last Killing freeze in Spring	First Killing freeze in Fall
Delta/ CO	Cedaredge	6830	2525	4615	115	139	June 1	Sep. 15	May 16	Sep. 25

† **Growing Degree-Day Units** are computed as the difference between the daily average temperature and the base temperature. (Daily Average Temperature - Base Temperature) One unit is accumulated for each degree Fahrenheit the average temperature is above the base temperature. Negative numbers are discarded**.**

Example: If the day's high temperature was 95 and the low temperature was 55, the base 50 heating degree-day units is [(95 + 55) / 2] - 50 = 25. This is done for each day of the month and summed.

Precipitation and Temperature, Monthly and Annual Average		
Month	**Precipitation (inches)**	**Temperature (°F)**
	Cedaredge Station	**Cedaredge Station**
January	0.88	26.4
February	0.79	32.4
March	1.22	39.5
April	0.91	47.5
May	1.14	56.6
June	0.75	66.1
July	0.95	72.1
August	1.20	69.8
September	1.38	61.7
October	1.47	50.7
November	1.13	38.0
December	1.06	28.5
Annual Average	**12.87**	**49.1**

Climate Station	Location	From	To
CO1440	Cedaredge	1961	1991

SOIL PROPERTIES

This group consists of very deep, well drained, moderately fine to fine textured soils. Available water capacity is moderate, and permeability is slow.

Drainage Class:	Well drained	To	Well drained
Permeability Class: (0 - 40 inches)	Slow	To	Slow
Frost Action Class:	Low	To	Low

	Minimum	Maximum
Depth:	60	>60
Organic Matter (percent): (surface layer)	1.0	3.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	4
Sodium Absorption Ratio: (0 - 12 inches)	0	0
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	7.4	8.4
Available Water Capacity (inches): (0 - 60 inches)	6	9
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	>15

ADAPTED SPECIES LIST

The followings forage species are 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 these species can be accessed at the following web site: http://plants.usda.gov/

Cool Season Grasses	**Plant Symbol**	**Dryland**	**Irrigated**
Altai wildrye	LEYMU	NS	G
Basin wildrye	LECI	F	NS
Bluebunch wheatgrass	PSSPI	F	NS
Bottlebrush squirreltail	ELELE	G	NS
Canada wildrye	ELCA4	NS	F
Creeping meadow foxtail	ALAR	NS	G
Crested wheatgrass	AGCR	G	NS
Indian ricegrass	ACHY	F	NS
Intermediate wheatgrass	THIN6	NS	G
Kentucky bluegrass	POPRP2	NS	F
Meadow brome	BRBI	NS	G
Meadow foxtail	ALPR3	NS	G
Mountain brome	BRMA4	NS	F
Muttongrass	POFEF	F	NS
Newhy hybrid wheatgrass	ELHO	NS	G
Orchardgrass	DAGLG	NS	G
Perennial ryegrass	LOPEP	NS	G
Pubescent wheatgrass	THIN6	NS	G
Reed canarygrass	PHAR3	NS	F
Russian wildrye	PSJU3	F	G
Siberian wheatgrass	AGFR	G	NS
Slender wheatgrass	ELTRS	NS	F
Smooth brome	BRIN2	NS	G
Streambank wheatgrass	ELLA3	F	NS
Tall fescue	LOAR10	NS	G
Tall wheatgrass	THPO	NS	G
Thickspike wheatgrass	ELLAR	F	NS
Timothy	PHPR3	NS	G
Western wheatgrass	PASM	NS	F
Warm Season Grasses	**Plant Symbol**	**Dryland**	**Irrigated**
Blue grama	BOGR2	F	NS
Alkali sacaton	SPAI	F	G
Galleta grass	PLJA	F	NS
Inland saltgrass	DISP	NS	F
Little bluestem	SCSC	NS	F
Switchgrass	PAVIV	NS	G

Legumes	Plant Symbol	Dryland	Irrigated
Alfalfa	MESAS	NS	G
Alsike clover	TRHY	NS	G
Birdsfoot trefoil	LOCO4	NS	G
Cicer milkvetch	ASCI	NS	G
Red clover	TRPR2	NS	G
Sainfoin	ONVI3	NS	F
Utah sweetvetch	HEBO	F	NS
White clover	TRRE3	NS	F
Yellow sweetclover	MEOF	NS	G
Other Perennial Forbs	**Plant Symbol**	**Dryland**	**Irrigated**
Fourwing saltbush	ATCAC	G	NS
Small burnet	SAMI3	NS	G

G - Good adaptation for forage production on this group of soils in this MLRA

F - Fair Adaptation but will produce at its highest potential

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

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.

Listed below are low and high production estimates for the more commonly grown forages for this group. The high forage production estimates are based on dense, vigorous stands of climatically adapted, superior performing cultivars. Stands are Properly fertilized to obtain high yields. 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. Optimum beginning and ending grazing heights are adhered to, if stands are grazed. Adequate time is allowed for plant recovery before entering winter dormancy under both harvest regimes.

These production estimates represent total annual above ground plant production on an air-dry-matter basis. Production estimates for hay and grazing, can be calculated from these numbers by multiplying them by a harvest efficiency factor. A seventy percent harvest efficiency is commonly used when converting to hay yields. Pasture harvest efficiency depends upon the grazing management system applied, and usually ranges from 25 to 50 percent efficiency.

	Dryland		Irrigated	
	Production Range (lb/ac)		Production Range (lb/ac)	
Forage Crop	**Low**	**High**	**Low**	**High**
Alfalfa	NS*	NS	10000	19900
Alkali sacaton	800	1400	6100	12100
Alsike clover	NS	NS	4800	9700
Altai wildrye	NS	NS	3400	12300
Birdsfoot trefoil	NS	NS	6100	12400
Bluebunch wheatgrass	650	1100	NS	NS
Bottlebrush squirreltail	800	1400	NS	NS
Canada wildrye	NS	NS	6000	11400
Cicer milkvetch	NS	NS	6300	12600

	Dryland Production Range (lb/ac)		Irrigated Production Range (lb/ac)	
Forage Crop	**Low**	**High**	**Low**	**High**
Creeping meadow foxtail	NS	NS	6100	12300
Crested wheatgrass	800	1400	NS	NS
Fourwing saltbush	800	1400	NS	NS
Galleta grass	800	1400	NS	NS
Indian ricegrass	650	1150	NS	NS
Inland saltgrass	NS	NS	2900	5700
Intermediate wheatgrass	NS	NS	6400	14200
Kentucky bluegrass	NS	NS	3600	7100
Little bluestem	NS	NS	4300	8600
Meadow brome	NS	NS	6600	13000
Meadow foxtail	NS	NS	6000	12300
Mountain brome	NS	NS	5000	9600
Mutton grass	600	1000	NS	NS
Newhy hybrid wheatgrass	NS	NS	6400	12300
Orchardgrass	NS	NS	5700	11600
Perennial ryegrass	NS	NS	6000	12900
Pubescent wheatgrass	NS	NS	7500	15000
Reed canarygrass	NS	NS	4600	9400
Russian wildrye	650	1100	5700	12300
Sainfoin	NS	NS	6000	12100
Siberian wheatgrass	800	1400	NS	NS
Slender wheatgrass	NS	NS	5700	12000
Small burnet	NS	NS	1400	2900
Smooth brome	NS	NS	5000	10400
Streambank wheatgrass	600	1000	NS	NS
Switchgrass	NS	NS	9700	18000
Tall fescue	NS	NS	8300	16600
Tall wheatgrass	NS	NS	7800	15000
Thickspike wheatgrass	600	1000	NS	NS
Timothy	NS	NS	5000	10100
White clover	NS	NS	5700	11400
Yellow sweetclover	NS	NS	8600	15000

*NS = not suited

FORAGE GROWTH CURVES

Growth Curve Number: CO1221
Growth Curve Name: Crested Wheatgrass
Growth Curve Description: Grand Valley, Dryland Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	15	30	35	5	5	5	0	0	0

Growth Curve Number: CO1222
Growth Curve Name: Pubescent Wheatgrass
Growth Curve Description: Grand Valley, Dryland Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	20	40	25	5	5	5	0	0	0

Growth Curve Number: CO1231
Growth Curve Name: Cool Season Grasses
Growth Curve Description: Grand Valley, Irrigated Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	30	30	5	10	15	5	0	0

Growth Curve Number: CO1232
Growth Curve Name: Warm-Season Grasses
Growth Curve Description: Grand Valley, Irrigated Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	5	20	40	25	5	5	0	0

Growth Curve Number: CO1234
Growth Curve Name: Brome/Orchard
Growth Curve Description: Grand Valley, Irrigated Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	20	30	25	10	5	0	0	0

Growth Curve Number: CO1236
Growth Curve Name: Alfalfa/Cool-Season Grass Mix
Growth Curve Description: Grand Valley, Irrigated Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	10	30	20	15	10	5	5	0	0

Growth Curve Number: CO125A
Growth Curve Name: Legumes
Growth Curve Description: Irrigated 2-Cuttings Graze Aftermath/Birdsfoot Trefoil/Sainfoin/Clover
Percent Production by Month:

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

SOIL LIMITATIONS

Soil Compaction could be a potential problem with this group, especially when topsoil is wet.

MANAGEMENT CONSIDERATIONS

Soil Compaction - Defer grazing or delay haying when topsoil is wet to minimize soil compaction and maintain a healthy forage stand.

FSG DOCUMENTATION

Similar FSGs:

FSG ID	FSG Narrative
G034B2001CO	Clayey group in land resource area 34-B2 is similar, however, yearly precipitation is less (10-12 inches)

REFERENCES:

United States Department of Agriculture, Soil Conservation Service. Land Resource Regions and Major Land Resource Areas of The United States. Agriculture Handbook 296. Washington, D.C.

United States Department of Agriculture, Natural Resources Conservation Service. National Water and Climate Center. http://www.wwc.nrcs.usda.gov/

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United States Department of Agriculture, Natural Resources Conservation Service. 1997. National Range and Pasture Handbook. Grazing Lands Technology Institute.

Brummer, J.E., C.H., Pearson, and J. J. Johnson. 2000. Colorado Forage Research 1999. Alfalfa, Irrigated Pastures and Mountain Meadows. Colorado State University , Agricultural Experiment Station, Technical Report TR00-6.

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Personal Communication from various Technical Specialists from Colorado Natural Resources Conservation Service.

Cooley, A.W., C.H., Pearson and J. Brummer. Intermountain Grass and Legume Forage Production Manual.
Colorado State University Cooperative Extension.

Montana State University. 2000. Montana Interagency plant Materials Handbook for Forage Production, Conservation, Reclamation and Wildlife. MSU Extension Service EB 69.

STATE CORRELATION:

This site has been correlated with the following states: UT

FORAGE SUITABILITY GROUP APPROVAL:

Original Author:	Manuel Rosales-I.
Original Date:	April 17, 2003
Approval by:	James L. Sharkoff, State Conservation Agronomist
Approval Date:	June 2, 2003
Technical Advisors:	Charlie Holcomb, Robert Killian, Dennis Gorsett, John Murray, David Dearstyne, James Sharkoff, Herman Garcia, Bob Rayer, Jeff Burwell, Calvin Pearson, Larry Ellicott, Steve Park, Leland Sasser, Jim Brown.