Soil Survey of the

Mosquito Indian Reserve No. 109

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Location

The Mosquito Reserve, located about 16 miles south of the city of North Battleford, includes an area of approximately 22,200 acres. (All or portions of Sections 26-35 in Township 40, Range 16, Sections 2-11, and 14-23 in Township 41, Range 16, Sections 25, 26, 35 and 36 in Township 40, Range 17, and Sections 1, 2, 11-14, 23 and 24 in Township 41, Range 17, all west of the 3rd Principal Meridian).

MAP LEGEND

The series of symbols which appear within each area, separated on the map by a soil boundary, are interpreted by means of the map legend.

There may be some terms in the legend which are unfamiliar to the reader. The booklet, "A Guide to Underatanding Soils"[1], will familiarize the reader with the terms used. To properly interpret the legend it is essential that the above-mentioned booklet be used as a reference.

Soils

Dominantly Black Chernozemic Soils

Blaine Lake - Dominant* Black Chernozemic soils developed on medium to moderately fine textured, moderately calcareous, silty, glacio-lacustrine deposits.

- B1 - Dominant Orthic Black.
- B3 - Dominant Orthic Black with significant Eluviated Black.
- B5 - Dominant Orthic Black with a significant occurrence of undifferentiated Gleysolic soils.

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*Series which are Dominant occupy over 40% of the Map Unit.

Oxbow - Dominant Black Chernozemic soils developed on medium to moderately fine textured, calcareous, glacial till.

01 - Dominant Orthic Black.

03 - Dominant Orthic Black with significant** Eluviated Black.

05 - Dominant Orthic Black with a significant occurrence of undifferentiated Gleysolic soils.

08 - Dominant Orthic Black with a significant combination of Rego and Calcareous Black and a significant occurrence of undifferentiated Gleysolic soils.

Whitesand - Dominant Black Chernozemic soils developed on coarse to moderately coarse textured glacio-fluvial deposits.

Ws1 - Dominant Orthic Black.

Dominantly Dark Gray Chernozemic Soils

Corbett - Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured, silty glacio-lacustrine deposits.

Ct2 - A combination of Orthic and Eluviated Dark Gray.

Rossall - Dominant Dark Gray Chernozemic soils developed on coarse to moderately coarse textured, sandy glacio-fluvial and glacio-lacustrine deposits.

Rs1 - Dominant Orthic Dark Gray.

Shellbrook - Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured, slightly to moderately calcareous, sandy glacio-lacustrine deposits.

Sb1 - Dominant Orthic Dark Gray.

**Series which are Significant occupy over 15% of the Map Unit but less than 40%.

Whitewood - Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured, calcareous, glacial till.

Wh1 - Dominant Orthic Dark Gray.

Dominantly Podzolic Soils

Waitville - Dominant Podzolic soils developed on medium to moderately fine textured, calcareous, glacial till.

Wv1 - Dominant Orthic Dark Gray Wooded.

Wv5 - Combination of Orthic Dark Gray Wooded and Orthic Gray Wooded with a significant occurrence of undifferentiated Gleysolic soils.

Wv6 - Dominant Orthic Dark Gray Wooded with a significant occurrence of undifferentiated Gleysolic soils.

Miscellaneous Soils

Alluvium - A group of soils developed on variable textured alluvial deposits.

Av6 - Dominant saline and carbonated Rego Humic Gleysols.

Textural Groupings and Classes

Textural Group	Textural Class
Coarse textured	Sands (s), loamy sands (ls)
Moderately coarse textured	Sandy loam (sl), fine sandy loam (fl)
Medium textured	Very fine sandy loam (vl), loam (l), silt loam (sil)
Moderately fine textured	Sandy clay loam (scl), clay loam (cl), silty clay loam (sicl)
Fine textured	Sandy clay (sc), clay (c), silty clay (sic), heavy clay (hc)

Gravelly sandy loam (gsl) and gravelly loams (gl) are recorded where present.

Landforms

Name	Symbol	Description
Glacial Till Landforms		
Moraine	Ma	Gently to strongly rolling moraine with a knob and kettle pattern having no external drainage.
Ground Moraine	Ga	Gently to roughly undulating ground moraine with a knob and kettle pattern having no external drainage.
Glacio-Lacustrine Landforms		
Glacial Lake Plain	La	Undulating plain of knolls and depression without external drainage.
Glacio-Alluvial Landforms		
Glacial Lake Delta	Aa	Undulating plain with a knoll and depression pattern having no external drainage.
	Ad	As above with external drainage.

Topography

Description	Symbol	Percentage Slope
Very gently sloping or gently undulating	2	0.5-2%*
Gently sloping or roughly undulating	3	2-5%
Moderately sloping or gently rolling	4	6-9%
Strongly sloping or moderately rolling	5	10-15%

*A slope of 2% means a rise or fall of 2 feet for every 100 feet of horizontal distance.

Other Map Symbols

Slough or depressional area which is periodically flooded.

Soil boundary.

Township corner.

Tp — Township.

Rg — Range.

Not suitable for grain production.

Marginal for grain production.

SOIL CAPABILITY FOR AGRICULTURE

Class	Soil Capability for Agriculture
1	No significant limitations.
2	Moderate limitations.
3	Moderately severe limitations.
4	Severe limitations.
5	Serious limitations - not suitable for annual crops but suitable for improved pasture.
6	Very serious limitations - suited only for permanent pasture.

Kind of Limitations

Soil limitations - caused by unfavorable soil characteristics.

m: - insufficient soil moisture holding capacity.

d: - poor structure and/or permeability.

p: - excess stones.

Landscape limitations

t: - unfavorable topography.

w: - excess water - applies to soils where excess water, apart from inundation, is a limitation in their use for agriculture.

e: - erosion damage.

Guiding Criteria for Capability Classes in Saskatchewan

Class	Degree of Limitations	Range of Adaptability	Productivity*	Other Characteristics
1	No significant limitations.	Wide range of field crops.	Moderately high to high, 20-25 bu/acre (30.0 to 35.0 bu/acre)**	Deep, well drained, good water holding capacity. Natural high fertility.
2	Moderate limitations due to climate, soil or landscape.	Fairly wide range of field crops.	Moderately high to high, 15.5-20 bu/acre (24.0 to 30.0 bu/acre)**	Good water holding capacity. Natural high fertility or highly responsive to fertilizer.
3	Moderately severe limitations due to climate, soil or landscape.	Moderate range of field crops.	Medium to moderately high, 11.0 -15.5 bu/acre (19-24 bu/acre)**	Limitations adversely affect the timing and ease of tillage, planting, harvesting, and application of conservation practices.
4	Severe limitations due to climate, soil or landscape.	Narrow range of field crops.	Low to medium 9.0-11.0 bu/acre (13-15 bu/acre)**	The high incidence of low yields or disastrous failures suggests that some of these soils be removed from continued cultivation.
5	Serious soil or landscape limitations make them unsuitable for the production of annual crops.	Suited for the production of adapted grasses and legumes.		Soils within this class are responsive to improvement practices through the use of farm machinery. Improvement of 25% of an area can double the carrying capacity.
6	Very serious soil or landscape limitations restrict their use to native grazing.	Suited only to native pasture.		Soils in this class are not responsive to improvement practice.
7	Prevent agricultural use.	Unsuited for agricultural use.		Bodies of water, townsites, parks, airports, railroads.

* Estimated productivity of arable Classes 1-4 is expressed in terms of long-time (1932-1961) average wheat yields in bu/acre.

** Estimated potential productivity.

THE SOILS OF THE MOSQUITO INDIAN RESERVE NO. 109

Interpretation of the Soil Symbol Sequence

The sequence of the soil symbols given for each area separated on the map is always arranged in the following order: Soil Association and Map Unit:Texture: Landform:Percentage Slope. An illustration of this is the symbol sequence 08:fl:Ma4 which occurs in Section 32, Township 40, Range 16.

The letter O represents the abbreviation for the Oxbow Association described in the legend as "Dominant Black Chernozemic Soils developed on medium to moderately fine textured calcareous glacial till deposits". Medium to moderately fine textured groups are dominantly loam and clay loam textured classes. The number 8 indicates a map unit in the Oxbow Association, namely 08, which is described as "Dominant Orthic with significant combinations of rego and calcareous black and a significant occurrence of undifferentiated Gleysolic Soils. The letters fl represent the specific textural class of the surface soil, namely fine sandy loam. The letters Ma described under the heading "Landforms" signify "A gently to strongly rolling moraine with a knob and kettle pattern having no external drainage". The topography in the area is indicated by the symbol 4, defined in the legend as slopes ranging from 6-9%.

It will be noted that the soil symbol sequence in certain areas contains two or more Associations and their Map Units, as in Section 5, Township 41, Range 16 where the symbols Bl:1-O1:fl-Ct2:1 represent Blaine Lake, Oxbow and Corbett Associations and their Map Units. Where two or more Associations and their Map Units occur in the one sequence, the first mentioned Association is dominant. The reason that some areas are indicated as a complex, such as the one above, is that at the present scale of mapping and the expected land use it was not considered practical to separate these soils.

Interpretation of Soil Capability[2] Symbol Sequence

Each area separated on the map (by a soil boundary), contains not only the soil symbol sequence already described, but also a capability sequence. In the area containing the symbol 08:f1:Ma4 the symbols $3^{7}_{t\,m}\ 5^{3}_{w}$ occur and are interpreted as follows. The lower numbers indicate the capability class, the small letters indicate the "limitations" or adverse soil features which relegate the soil to its particular capability class. The upper numbers indicate the percentage of the soil area designated to a specific capability class. By referring to the heading in the legend designated as "Soil Capability for Agriculture", it can be seen that $3^{7}_{t\,m}\ 5^{3}_{w}$ describes an area of 70% Class 3 soil, which has moderately severe limitations due to unfavorable topography (t) and insufficient moisture holding capacity (m), and 30% Class 5 soil which has limitations due to excessive water. It can, therefore, be concluded that this area of gently rolling Oxbow fine sandy loam, subject to the limitations described, is suited to the production of annual crops.

EVALUATION OF THE AGRICULTURAL POTENTIAL OF THE MOSQUITO RESERVE

An evaluation of the agricultural potential may be made of any portion of the map area by interpreting the map symbols by means of the legend.

The areas of best potential are the areas of Blaine Lake-Oxbow-Corbett (B-O-Ct) which occurs in Sections 31 and 32, Township 40, Range 16, and Sections 5 and 6, Township 41, Range 16, and an area of Oxbow-Blaine Lake (O-B) which occurs in Section 34, Township 40, Range 16. Areas of slightly lower potential include areas of Blaine Lake-Oxbow (B-O) in Sections 27-29, 33 and 34, Township 40, Range 16, an area of Oxbow (O) in Sections 11-14, Township 41, Range 17, and an area of Oxbow-Blaine Lake (O-B) in Section 10, Township 41, Range 16. These areas represent 2,700 acres of dominantly Class 2 soils which are well suited to the production of annual crops. Other areas which are less suited to

crop production than those mentioned above are areas of Oxbow-Whitewood-Waitville (O-Wh-Wv) which occur in Sections 17-20, Township 41, Range 16 and Sections 13, 14, 23 and 24, Township 41, Range 17, an area of Oxbow (O) in Sections 27-34, Township 40, Range 16 and Sections 3-6, Township 41, Range 16, and an area of Oxbow-Whitesand (O-Ws) in Sections 26, 27, 34 and 35, Township 40, Range 16. These soils represent 7,800 acres of Class 3 soils which are suitable for the production of annual crops. The areas of Waitville-Whitewood-Oxbow (Wv-Wh-O) in Sections 2-4 and 8-11, Township 41, Range 16, and the area of Oxbow (O) in Sections 25, 26, 35 and 36, Township 40, Range 17, Sections 1, 2, 11, 12, Township 41, Range 16, and Sections 3, 4, 7, 8 and 18, Township 41, Range 16, are listed as Class 4 soils and should not be considered for continuous grain production as they could be better utilized as areas for forage production. All other areas on the reserve are essentially Class 5 and 6 soils, which occur on very rough topography, and are suited only to permanent or improved pasture.

Acknowledgments

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References

1. A Guide to Understanding Saskatchewan Soils. H.C. Moss. 1965. Saskatchewan Institute of Pedology Publication M1. Extension Publication 175. Distributed by Extension Division, University of Saskatchewan, Saskatoon.

2. A Guide to Soil Capability and Land Inventory Maps in Saskatchewan. Saskatchewan Institute of Pedology Publication M2. Department of Soil Science, University of Saskatchewan, Saskatoon. 1966.

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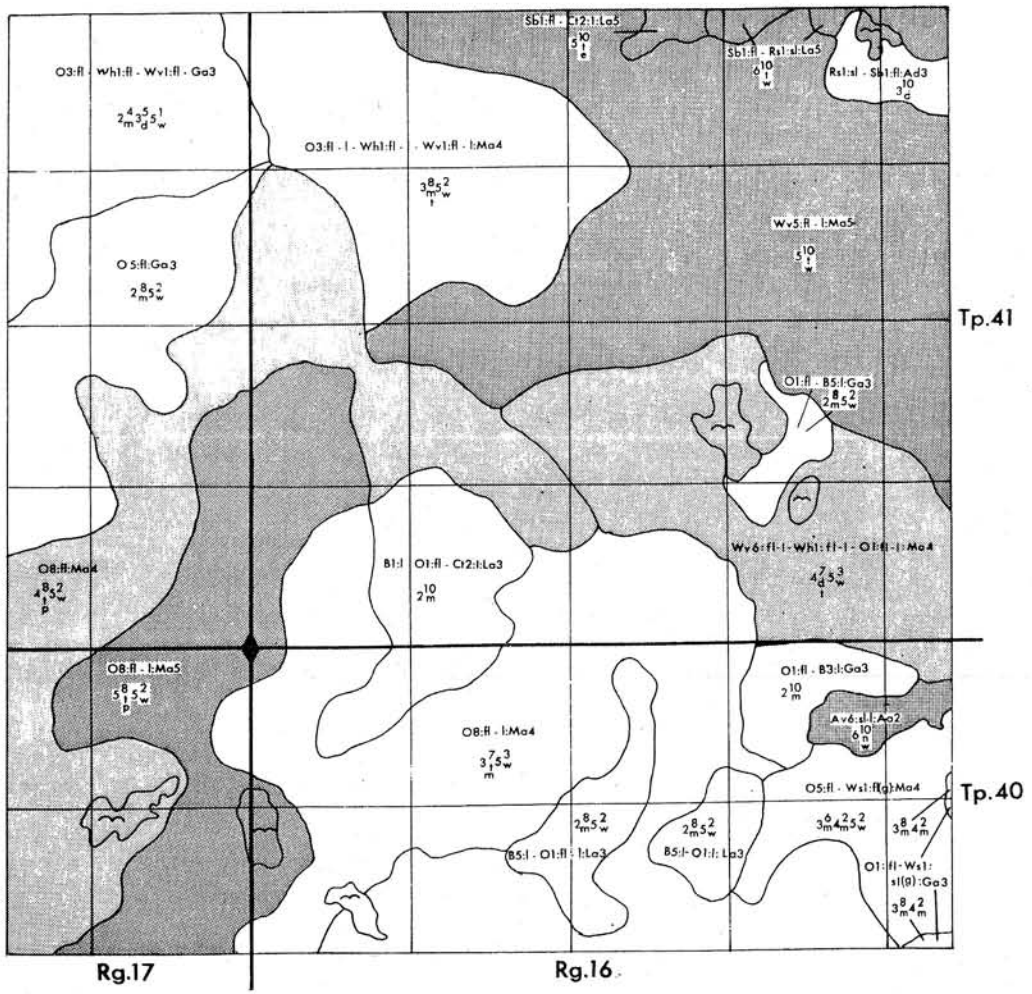

Scale - 1.25 inches to 1 mile or 1:50,000

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