

Soil Survey of the  
Big River Indian Reserves Nos. 118 and 118A  
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Saskatchewan Institute of Pedology, Publication S156  
University of Saskatchewan,  
Saskatoon, Saskatchewan.

1968.

## Soil Survey of the Big River Indian Reserves Nos. 118 and 118A

### Location

The Big River Indian Reserve No. 118 is located about 8 miles west of the village of Debden, while Big River Indian Reserve No. 118A is located about 12 miles southwest of the village of Debden. Reserve No. 118 is approximately 28,200 acres in extent, while Reserve No. 118A covers approximately 960 acres. (Reserve No. 118 includes all or portions of Sections 25 to 28 and 31 to 36 of Township 52, Range 8, Sections 1 to 12, 14 to 23 and 28 to 33 of Township 53, Range 8, Sections 4 to 8 and 17 to 20 of Township 54, Range 8, Sections 1, 12, 13, 24, 25 and 36 of Township 53, Range 9 and Sections 1, 2, 11 to 14, 23 and 24 of Township 54, Range 9. Reserve No. 118A includes all or portions of Sections 6 and 7 of Township 52, Range 7 and Sections 1, 2, 11 and 12 of Township 52, Range 8. All locations are 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 Understanding Saskatchewan Soils"<sup>1</sup> 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

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

Dominantly Dark Gray Chernozemic Soils

- Glenbush - Dominant Dark Gray Chernozemic soils developed on coarse to moderately coarse textured glacio-fluvial deposits.
- Gbl - Dominant Orthic Dark Gray.
- Whitewood - Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured calcareous glacial till.
- Whl - Dominant Orthic Dark Gray.

Dominantly Podzolic Soils

- Bodmin - Dominant Podzolic soils developed on coarse to moderately coarse textured glacio-fluvial deposits.
- Bdl - Dominant Dark Gray Wooded.
- Sylvania - Dominant Podzolic soils developed on coarse to medium textured sandy glacio-fluvial and glacio-lacustrine deposits.
- Syl - A combination of Dark Gray Wooded and Orthic Gray Wooded.
- Waitville - Dominant Podzolic soils developed on medium to moderately fine textured calcareous glacial till.
- Wv3 - Dominant Orthic Gray Wooded.
- Wv4 - Dominant Orthic Gray Wooded with significant\*\* Dark Gray Wooded.

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

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

Miscellaneous Soils

- Alluvium - A group of soils developed on variable textured alluvial deposits.
- Av5 - Dominant Orthic and Rego Humic Gleysols.
- Meadow-Bog Complex - MBx - A complex of sedge peat varying from one to three feet in thickness and peaty Gleysolic soils.

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 (gs1) and gravelly loam (gl) are recorded where present.

Landforms

Name	Symbol	Description
<u>Glacial Till Landforms</u>		
Moraine	Ma	Gently to moderately rolling moraine with a knob and kettle pattern having no external drainage.
<u>Glacio-Alluvial Landforms</u>		
Glacial Lake Delta and Post Glacial Alluvium Deposits	A	Nearly level alluvial flood plain having no external drainage.
	Aa	Roughly undulating to gently rolling plain with a knoll and depression pattern having no external drainage.

Glacio-Fluvial Landforms

Outwash Plain	F	Gently undulating plain having no external drainage.
	Fa	Gently rolling kettled or pitted plain without external drainage.
	Fd	Roughly undulating plain with external drainage or glacial drainage channels.

Topography

Description	Symbol	Percentage Slope
Depressional to nearly level	1	0-0.5%
Very gently sloping or gently undulating	2	0.5-2%*
Gently sloping or roughly undulating	3	2-5%
Moderately sloping or gently rolling	4	5-9%
Strongly sloping or moderately rolling	5	9-15%

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

Other Map Symbols



Slough or depressionally flooded area which is periodically flooded.



Drainage way indicating direction of flow.



Soil boundary.



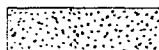
Township corner.

Tp

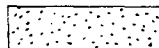
Township.

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.
0	Unimproved or virgin organic soils including muskeg and peat which are not included in the classes above.

Kind of Limitations

Soil limitations - caused by unfavorable soil characteristics.

m - insufficient soil moisture holding capacity.

d - poor structure and/or permeability.

f - low soil fertility.

s - unfavorable soil characteristics. This subclass is used in a collective sense in place of subclasses m, d, f and n where more than two of them are present or where two of these limitations are present in addition to some other limitation.

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.

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 BIG RIVER INDIAN RESERVES NOS. 118 AND 118A

Interpretation of the Soil Symbol Sequence

One report only is being presented for both Reserve No. 118 and 118A, inasmuch as Reserve No. 118A is too small to warrant a separate report. The ability to interpret the symbols on the map of one reserve will enable the reader to do the same for the other reserve.

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 Wv3:l-s1:Ma4, which occurs in Section 18 of Township 53, Range 8 of Reserve 118.

The letters Wv represent the abbreviation for the Waitville Association described in the legend as "Dominant Podzolic soils developed on medium to moderately fine textured calcareous glacial till". Medium to moderately fine textural groups are dominantly loam and clay loam textural classes. The number 3 indicates a Map Unit of the Waitville Association, namely Wv3, which is described as Dominant Orthic Gray Wooded. The letters l-s1 represent the textural class of the surface soil, namely loam to sandy loam. The letters Ma described under the heading "Landforms", signify a "Gently 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 5-9%.

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 of Township 53, Range 9 of Reserve No. 118 where the symbols Wv3:l-s1-Syl:s1 represent both Waitville and Sylvania 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<sup>2</sup> 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 symbols Wv3:l-sl:Ma4 the symbols  $3d^{10}_t$  occur and are interpreted as follows. The lower number is the capability class, the small letters indicate the "limitations" or adverse soil or topographic features which relegate the soil area to its particular capability class. The upper number indicates 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  $3d^{10}_t$  describes an area of 100% Class 3 soil which has moderately severe limitations due to poor structure and/or permeability (d) and unfavorable topography (t). It can, therefore, be concluded that this area of gently rolling Waitville loam to sandy loam, while it has certain limitations, is suited to the production of annual crops.

#### EVALUATION OF THE AGRICULTURAL POTENTIAL OF THE BIG RIVER RESERVES NOS. 118 and 118A

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 with the best potential on Reserve No. 118 are the areas of Waitville (Wv) which appear as unshaded areas on the map. These areas represent approximately 9,400 acres of Class 3 soils which have structural as well as topographic limitations but are still suitable for crop production. The remainder of the reserve, which is made up of Class 4 and 5 soils, is either marginal or unsuitable for annual crop production. The Class 4 soils, which are marginal for crop production, are better utilized for forage crop production, while the Class 5 soils are suitable only for improved pasture. The Meadow-Bog Complex is not rated as to its agricultural capability.

The soils of Reserve No. 118A are all rated as either Class 4 or 5. The Class 4 soils which make up most of the reserve, are marginal for crop production and would be better utilized as areas for forage crop production. The Class 5 soils have serious limitations and are suitable only for improved pasture.

#### Acknowledgments

The authors wish to acknowledge the assistance of Mr. J.A. Shields who reviewed the soil capability of the reserve and Mr. B. Wilmot and Mr. N.S. Rosha who assisted with the field work.

#### 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. Publication M8, Saskatchewan Institute of Pedology, University of Saskatchewan, Saskatoon, Sask. 1968.

