







## BACKGROUND INFORMATION

-  Northern transition soils
-  Grey soils
-  Transition soils
-  Black soils
-  Dark brown soils
-  Brown soils

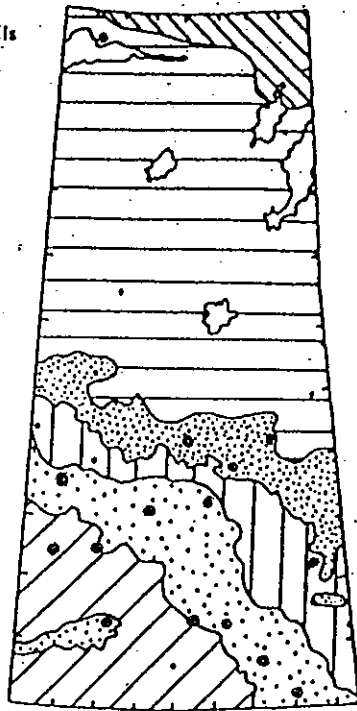


Fig. 74. Major soil groups of Saskatchewan. Dots represent cities and towns identified in fig. 1.

through harmful agricultural practices, and pollution. It was calculated in 1976 by a soil scientist at the University of Saskatchewan that prairie soils had lost about 50% of their original organic matter during the 75 years or so of cultivation. About 40% of Canadian arable land lies in Saskatchewan. This province therefore has an especially high responsibility to protect its soil.

The principal soils of Saskatchewan are divisible into six major soil groups (fig. 74) at a first level of classification although in detail the variety of soils in the province is much more complex than this. From south to north, the six major soil groups are as follows.

1. *Brown soils.* These soils are found in the driest part of Saskatchewan, the region of Palliser's Triangle in the southwest. Brown soils are the typical soils of the short grass prairie and of the drier part of the mixed grass prairie. They contain less organic matter than other grassland soils.

2. *Dark brown soils.* Richer in organic matter than the brown soils, these soils occur in the more humid part of the mixed grass prairie. They are found in a belt from Estevan through Saskatoon to Unity, and in the Cypress Hills. Dark brown soils are intermediate between brown soils and black soils. All three are grassland soils and they are all of the kind of soil sometimes referred to as chernozems.

3. *Black soils.* The black soil belt lies to the north and east of the dark brown soil belt where the generally more humid climate supports parkland vegetation. The black soils were developed under a grassland cover. The trees of the region are newcomers whose arrival marks an increase in climatic humidity. Black soils are very fertile.

4. *Transition soils.* In the Meadow Lake, Prince Albert, and Melfort areas there are old black soils developed under grassland that are changing to podzolic soil under the present cover of trees. They are almost as fertile as true black soils. Podzolic soils are grey colored and they are characteristic of forested regions.

5. *Grey soils (Podzols).* These soils form in cool, fairly humid conditions under a cover of parkland or forest. They are less fertile for agriculture than the black soils, but conifers and some broad leaved trees flourish on them. Most of the northern half of Saskatchewan is under podzolic soils.

6. *Northern transition soils.* In northernmost Saskatchewan, peaty soils have developed where the land is poorly drained because of permafrost in the subsoil. These northern soils are intermediate between podzols and the soils of the tundra.

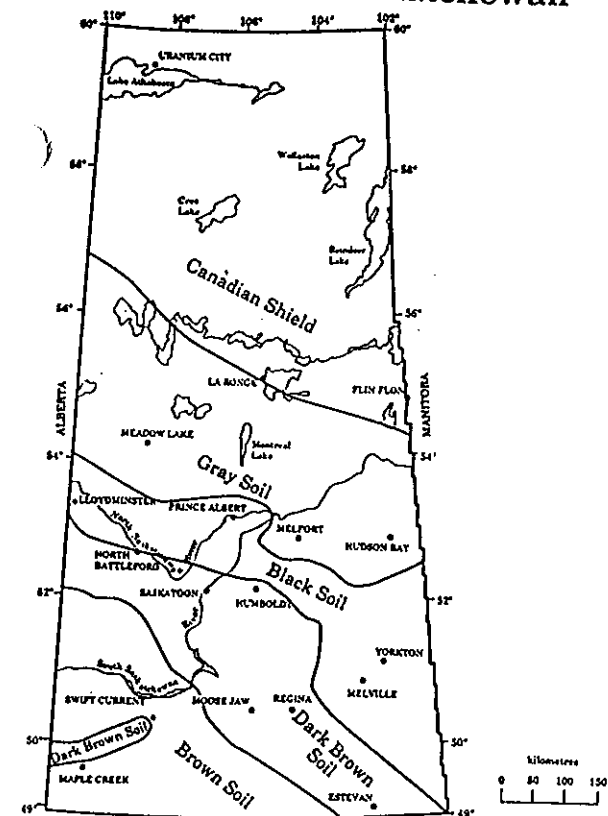
## SOIL

Can we tell what the climate is in a particular area by examining the type of soil that has formed?

Soils, like groundwater, are a renewable resource although the time taken for renewal runs into hundreds or thousands of years. The material underlying the soil must have time to decompose chemically and to break down into fine particles. This is the geological process of weathering. Then, there must be time for plants and other organisms to do their work of converting mere weathered rock into a true soil. Because of the length of time involved, it is important that our present soil resource be protected from erosion, loss of fertility

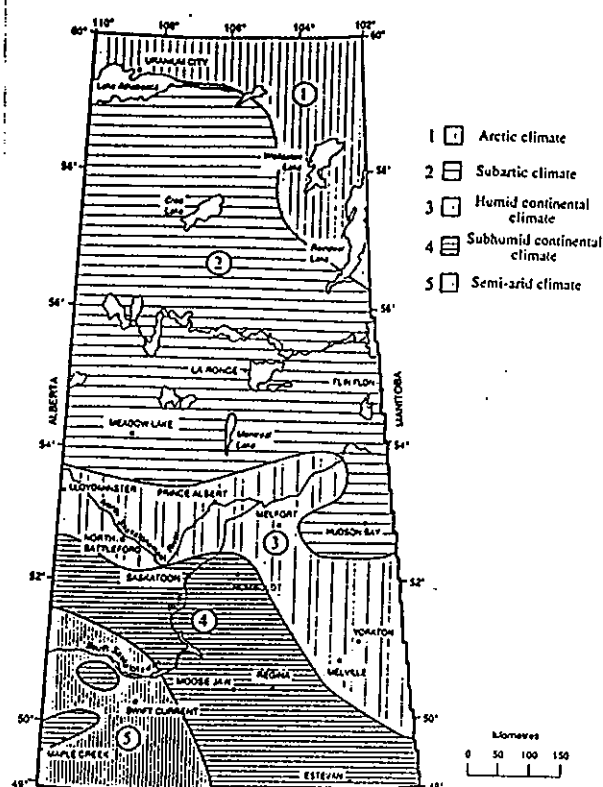
Two important general points about soils are illustrated by the distribution of soils in Saskatchewan. One is that when the soil developing processes have had sufficient time to form a mature soil from the underlying material, the kind of soil formed is a reflection of the climate and of the natural vegetational cover generated by the climate. Consequently, a soil map corresponds roughly to a climatic map. The second point follows from this. If climate changes, the soil will be slowly adjusted to match the new conditions.

## The Soil Zones of Saskatchewan



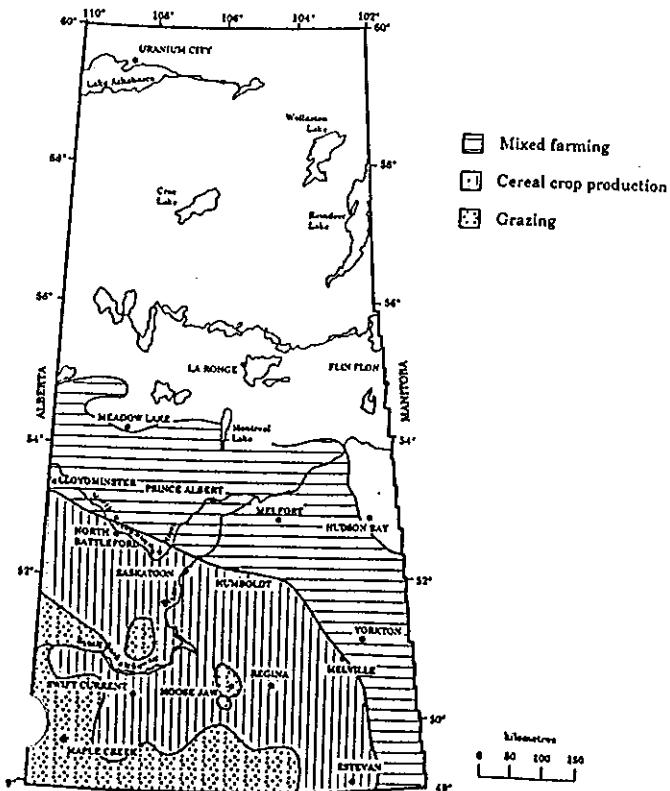
Lapointe, Richard (1990). Saskatchewan. Regina: La Société historique de la Saskatchewan, p. 86.

## The Climatic Zones of Saskatchewan



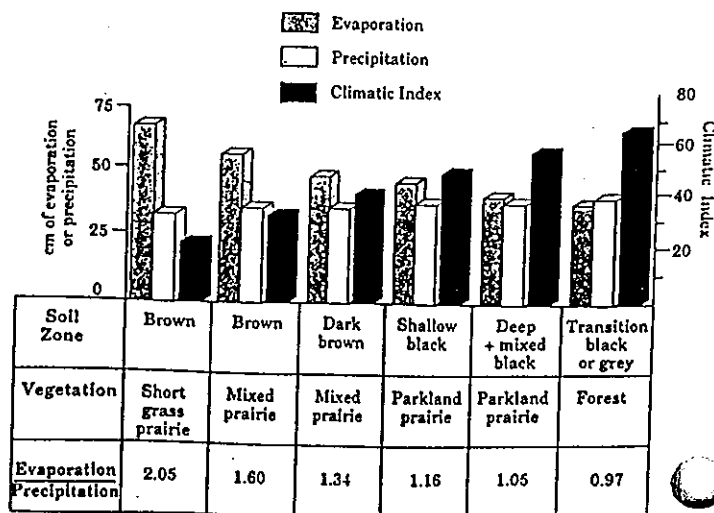
Lapointe, Richard (1990). Saskatchewan. Regina: La Société historique de la Saskatchewan, p. 86.

## The Agricultural Zones of Saskatchewan



College of Agriculture, University of Saskatchewan

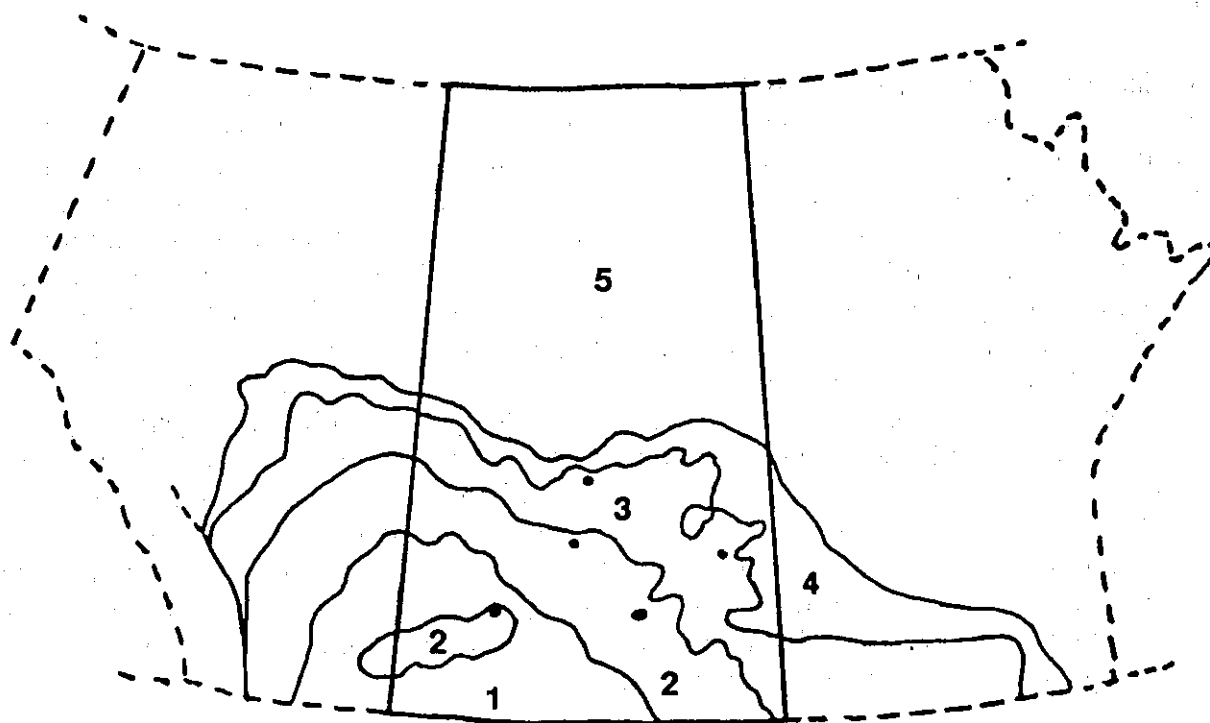
## Soil Zones, Vegetation, Precipitation and Evaporation Rates



College of Agriculture, University of Saskatchewan

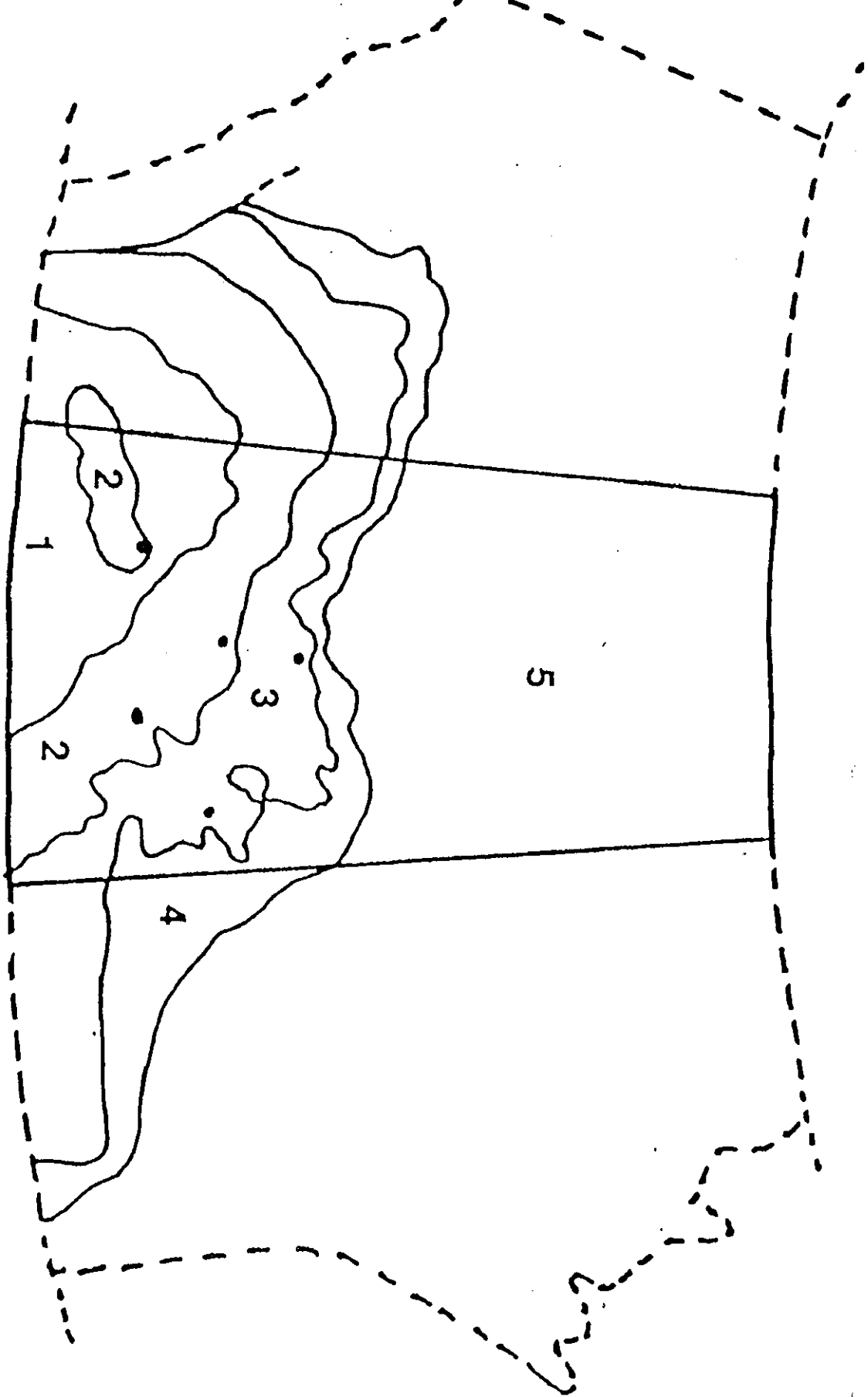
## Soil Zones

The colors of the A horizons or topsoils have resulted in the mapping of a number of distinct soil zones. A soil zone is an area where soil shows relatively uniform characteristics. In Saskatchewan, soil maps may show from 4 to 7 such zones: brown, dark brown, black, thick black, grey wooded, dark grey and podzolic zones.



- 1 - Brown
- 2 - Dark Brown
- 3 - Black (Thin black, Thick black)
- 4 - Grey
- 5 - Podzol

The soil zones are closely related to the climatic and vegetation belts, as these are two of the factors playing a role in soil formation. Taking soil, climate and vegetation into account, certain assumptions can be made about agricultural production in each zone. Brown soil zones are found in warmer and drier regions which may experience droughts. Normally short grass prairie, this soil zone has less organic matter in its A horizon than black soils.



## ***SOIL ANALYSIS***

From the maps:

1. What soil types are most prevalent in each agricultural zone?

What can you conclude about soil types and the agricultural activity in the area?

2. What climate is most prevalent in each of the agricultural zones of the province?

Describe what factors would determine climate. Use these factors to describe each of the climates on the map (ex: Arctic Climate -----precipitation/evaporation  
-----temperature)

3. From your observations, what soil type and climate is most suited to each agricultural activity?

4. Other factors determine land use for agriculture. Name two.

5. What natural vegetation is found in each area?

6. What are the % of components in ideal soil mixtures? How might this be determined?

7. What soil color and type (texture) would be best suited for:

a) grain farming

b) mixed farming

c) grazing

d) no agricultural use