

4. Soil material - glaciolacustrine
 - glaciolacustrine over glacial till
 - glacial till
 - glacio-fluvial
 - aeolian
5. Soil texture - coarse
 - moderately coarse
 - medium
 - moderately fine
 - fine

Results and Discussion

Of the total samples examined about 9.6% were saline and 12.4% were solonetzic. Figure 1 shows the approximate areal extent of the saline and solonetzic soils in the Rosetown Map Sheet. Most of the saline and solonetzic soils lie in the Saskatchewan Rivers Plain between the Allan Hills Upland and the Hawarden Hills Upland.

Figure 2 shows that 95% of the saline soils and 81% of the solonetzic soils occurred in lowland areas. This situation is as expected considering the salt content of glacial till soils in the Uplands, the solubility of salts and the tendency of water to move from higher to lower topographic positions.

The peculiarities of the landforms and soil materials that saline and solonetzic soils are associated with are illustrated by comparisons to the control composed of all samples. The control was necessary to avoid the irrelevancy of stating, for example, that saline soils occurred most frequently on lacustrine materials if only lacustrine materials were present in the area studied.

Compared to the control saline soils occurred with greater frequency in lowland positions and less frequently in upland positions (figure 2); with greater frequency on unpatterned and dune landforms, less frequently on ablation landforms and with the same frequency on dissected landforms (figure 3); with greater frequency on class 1 and class 2 slopes, not at all on class 5 slopes and less frequently on the other slope classes (figure 4); with greater frequency in all texture classes except the medium texture class in which saline soils occurred less frequently (figure 5); with greater frequency on lacustrine, fluvial and aeolian deposits and less frequently on lacustrine over till and till deposits (figure 6).

The solonetzic soils behaved differently from the saline soils in several respects. Compared to the control they occurred with greater frequency in lowland positions and less frequently in upland positions (figure 2); with greater frequency on ablation landforms, not at all on dune landforms and with approximately the same frequency on dissected and unpatterned landforms (figure 3); with greater frequency on class 2 and class 3 slopes and less frequently on the other slope classes (figure 4); with greater frequency on medium and moderately fine textured materials and less frequently on the other texture classes (figure 5); with greater frequency on the lacustrine over till and till deposits, not at all on fluvial and aeolian deposits and less frequently on lacustrine deposits (figure 6).

The non-saline, non-solonetzic soils occurred with approximately the same frequency as the control in all classes as may be expected from the fact that

this category accounted for 78% of all samples.

Summary and Conclusions

In summary on the basis of the data used in this study it may be tentatively concluded that saline and solonetzic soils do not occur at random but tend to be associated more than proportionately with certain physiographic, landform and soil characteristics. Saline soils were found predominantly in lowland positions on coarse textured lacustrine materials with unpatterned landforms and 2+ - 5% slopes. Solonetzic soils occurred most often in lowland positions on medium textured glacial till with knob and kettle landforms and 5+ - 9% slopes.

References

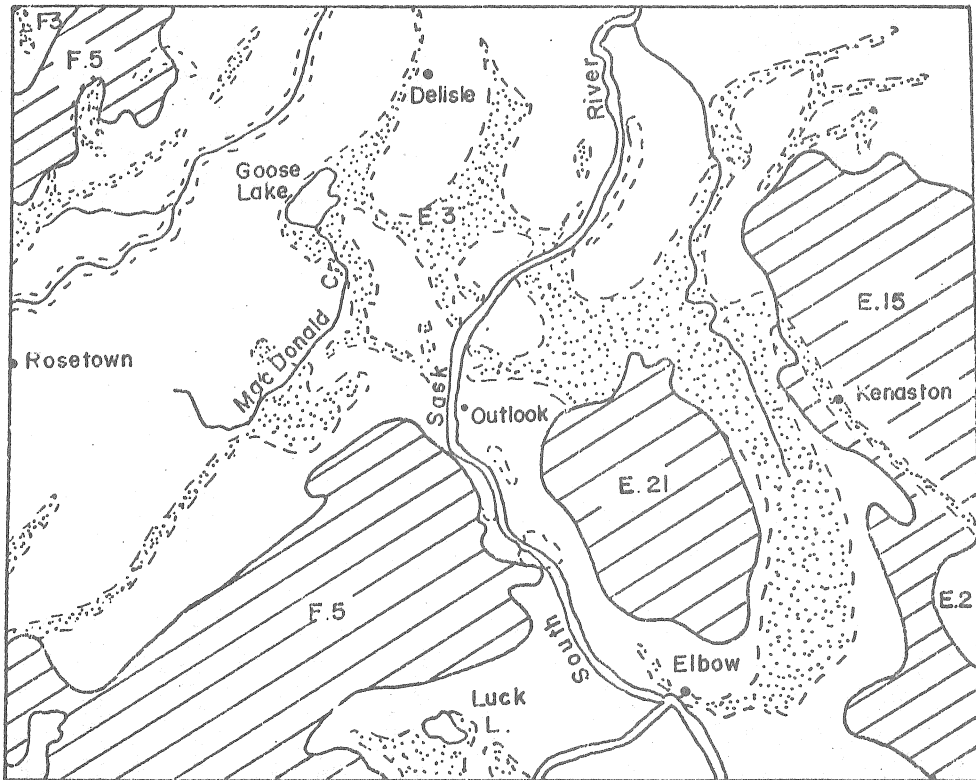
1. Physiographic Divisions of Saskatchewan (an annotated map) by D. F. Acton, J. S. Clayton, J. G. Ellis, E. A. Christiansen and W. O. Kupsch. 1960.
2. The Soils of the Rosetown Map Area, 72-0, Saskatchewan by J. G. Ellis, D. F. Acton and H. C. Moss. 1970.

DISCUSSION

Question: Could it be possible that an upland saline area is acting as a recharge area for a lowland saline location?

Answer: Could be possible.

Figure 1. Distributions of Saline and Solonetzic Soils in the Rosetown Map Sheet (72 0)



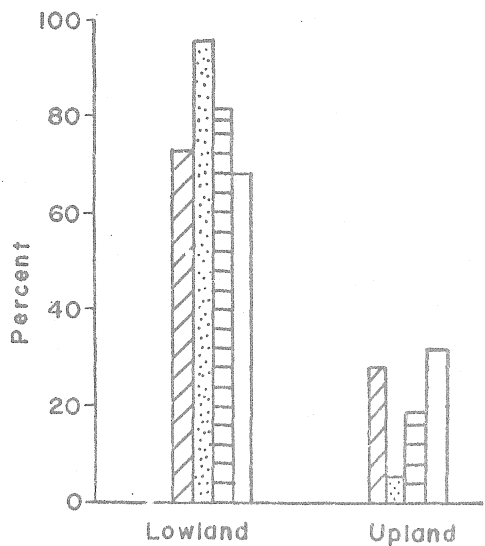


Fig 2. Physiographic Location

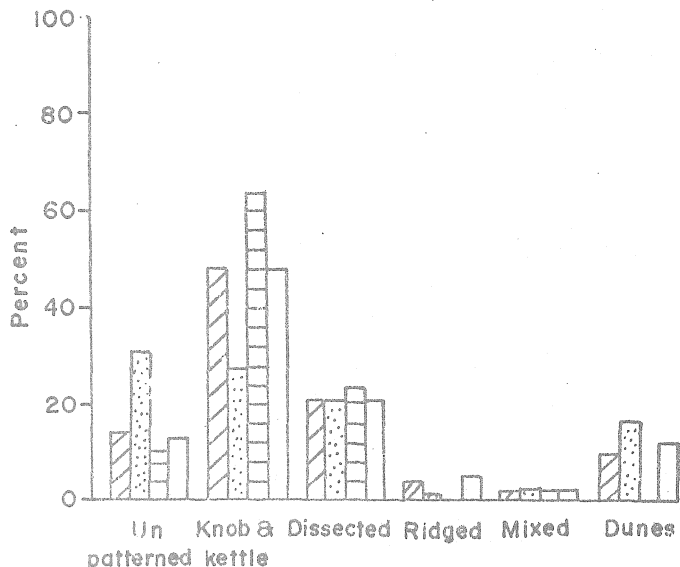


Fig 3 Landform Type

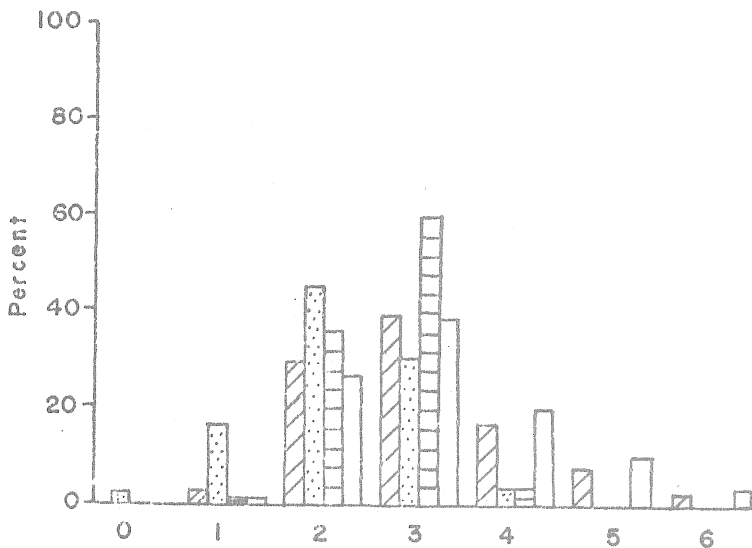


Fig 4. Slope Class

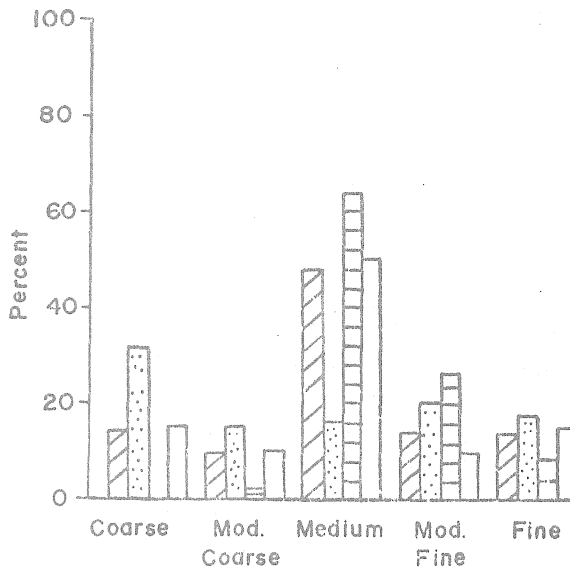


Fig.5 Texture of Surficial Material

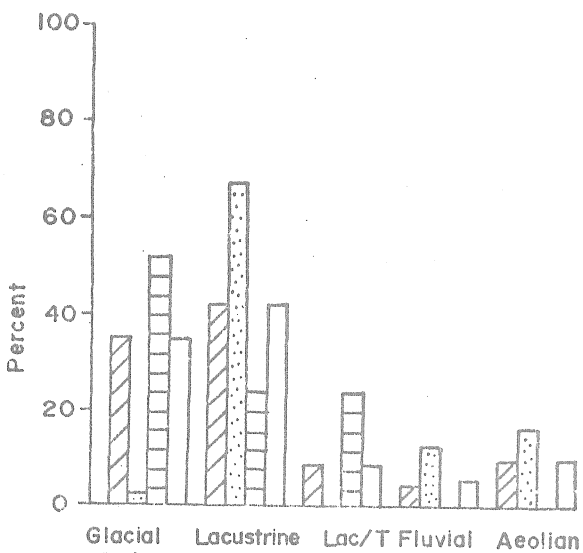


Fig.6 Surficial Material

