AGRO-CLIMATIC AREAS OF ALBERTA

LEGEND

This map delineates areas that have, on the long-term average, similar climatic characteristics for cropping purposes. It is an attempt to provide a general guide in determining the range of crops that, as a result of a combination of climatic factors, can be satisfactorily grown in each area. It must be emphasized that climate is only one of the physical factors that influence the range of crops grown; there are others, particularly soil type and topographic features.

THE LINES DIVIDING THE AREAS ARE USUALLY BROAD TRANSITION BELTS: RARELY IS THERE A SHARP CHANGE IN CLIMATE FROM ONE AREA TO ANOTHER.

The area boundaries are delineated by broken lines to indicate that they are subject to change when additional data becomes available. Local topographical features and proximity to lakes and muskegs can cause local conditions: cold "frost pockets"; exceptionally good air drainage with longer than normal frost-free periods; warm belts; areas with heavy dew formation; and areas with more or less precipitation than the average for the larger area. These conditions may differ significantly from the average for the area but cannot be shown on a map of this scale. The frost-free data quoted in the area descriptions are long-term averages. It is recognized that throughout most of Alberta the average frost-free period since about 1950 has been significantly longer than for the period of record before that date. For the purpose of this map, however, the 1950-1965 period has been considered as an anomaly and not as a trend.

The map was compiled in collaboration with members of the Alberta Soil Survey using information taken from: (1) publications of the Meteorological Service of Canada, (2) *Climates of Canada for agriculture*, CLI Report No. 3 by Chapman and Brown of the Ontario Research Foundation, (3) *The frost-free period in Alberta* by R. W. Longley of the University of Alberta, (4) data and observations gathered by members of the Alberta Soil Survey, and (5) observations by grain elevator agents and federal and provincial field personnel. Recognition is also given for suggestions and data provided by Dr. A. Leahey, G. W. Robertson, and J. Day, of the Canada Department of Agriculture, Ottawa. The map was initially compiled to assist the Soil Survey to determine the capability of Alberta soils for agricultural use. The Arabic number designation of the areas indicates relative capability: 1 being top, or best. The subscript A (aridity) indicates that moisture is the limiting factor. The subscript H (heat) indicates that such factors as summer heat units, frost-free periods, and days between peak summer rainfall and first fall frost, are limiting factors.

1 Areas where the amount of precipitation has usually been adequate and the frost-free period long enough to permit the growing of all the dryland crops that are typical to the Prairie Region of Western Canada. The frost-free period in these areas has averaged over 90 days and the annual precipitation has averaged 16 to 18 inches.

2A Areas where the amount of precipitation, in approximately 50 percent of the years, has been a limiting factor to crop growth. The frost-free period has usually been long enough for wheat to mature without frost damage. In the 2A(H) area south of Lethbridge there is some frost hazard.

3A Areas where the amount of rain has usually been a severe limiting factor to crop growth; a wheat-fallow rotation is practiced to the virtual exclusion of all other rotations. The annual precipitation has averaged 12 inches. The frost-free period has averaged slightly over 100 days in the northern portion of the area and over 115 days in the south central portion. Wheat is rarely damaged by frost and sweet corn can be grown, under irrigation, in the southern portion.

2H Areas where the amount of precipitation has usually been adequate but where wheat has suffered some frost damage in approximately 30 percent of the years. The frost-free period has averaged between 75 and 90 days.

3H Areas where the amount of precipitation has usually been adequate but where it is not considered practical to grow wheat because of the frequency of damaging frosts. In the areas south of Latitude 55° N the average annual precipitation has averaged 17 to 19 inches. Going north from Latitude 55° N there is a gradual drop in precipitation and at Fort Vermilion the annual average is between 12 and 13 inches.*

5H Areas where the amount of precipitation has usually been adequate but where the average frost-free period has been so short (generally less than 60 days) that it is not practical to grow cereal crops: that is, hay crops are all that are recommended.*

UNC Mountain complex and Precambrian Shield. There is little to no agricultural potential in these areas.

*The portion of the province north of Latitude 58° N has an average annual precipitation of less than 14 inches. In most of this area rainfall, or lack of rainfall, may be an additional limiting factor to crop growth in a significant number of years. Therefore the 3 and 5 areas that, in general, lie north of Latitude 58° N are given the limiting subscript A in addition to H: i.e., 3H(A) and 5H(A).

1:2 500 000

20 0 20 40 60 80 100 Miles

Data compiled and analysed by W. Earl Bowser (Canada Department of Agriculture) with the cooperation of the Alberta Soil Survey, Edmonton, Alberta, 1967.

Cartography by the Cartographic Section, Soil Research Institute, Research Branch, Canada Department of Agriculture, Ottawa, 1967. Printed by the Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa.