PRAIRIE POPULATION POSSIBILITIES

A STUDY PREPARED FOR THE

ROYAL COMMISSION ON DOMINION-PROVINCIAL RELATIONS

BY

W. J. WAINES

OTTAWA

1939

Prairie Population Possibilities

EDITORIAL FOREWORD

W. J. Waines, assistant professor of economics at the University of Manitoba, was retained by the Royal Commission on Dominion-Provincial Relations to assist Dr. Mackintosh in his work for the Commission (The Economic Background of Dominion-Provincial Relations) and to make a study of the outlook for population growth in the Prairie Provinces. This subject appeared to be of particular importance in any consideration of the general economic prospects of the country, and also in relation to a number of special public finance problems.

The method of presentation and any expressions of opinion are solely the responsibility of the author, and not of the Commission.

Professor Waines analyzes the present distribution of population by soil zones and collates estimates of the amount of unoccupied land, classified by quality, available. Assuming no major change in technique which would make submarginal areas commercially productive, Professor Waines finds room for only a limited additional settlement in the northern grey timber and black park transitional zones. Probable abandonment of submarginal lands in other zones, and the application of more extensive mechanized farming methods in the areas where that would appear economical may well displace an equal population. The problem is thus whether the prairies can, far from absorbing new immigration, support their own natural increase without a reduction in the average standard of living.

The limitation to population increases imposed by the available natural resources is accentuated by the serious economic problems confronting prairie agriculture. Professor Waines notes briefly such factors as the changed condition in world wheat markets, the incidence of drought and depression,

and the particular problems and strains created by the combination of a highly variable farm income and the fixed interest method of farm financing. In connection with the farm debt problem the results of a special inquiry into the total of agricultural debt in the three Prairie Provinces are included, and an appendix summarizing debt adjustment measures is attached.

The first draft of this study was completed in August, 1938, amd after having been circulated to the Dominion and provincial governments for comment, was revised where necessary and put in its present form in the spring of 1939.

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Chapter I - Introduction

The probable trend of prairie population in the early future is of considerable significance to the Canadian economy and to Dominion-provincial financial relations. The developmental programme of the past forty years has been founded on the belief that Canada's population would continue to expand far beyond the present level, and to a large extent it has been the Canadian West on which these hopes have been based. Governmental and private overhead costs have been assumed (both in the prairie regions and in other areas which rely upon the prairies for markets) which looked toward a prairie population substantially above present levels. Legislative and administrative buildings, schools, highways and railways, municipal utilities and services, have been provided on a scale which in some areas could only be finally justified by a much greater density of population. Industrial plants in both the West and the East have in numerous cases anticipated a continuation of the rapid growth of 1900-1930. If this expansion materializes the present heavy burden of fixed charges on government and industry may well constitute a declining proportion of the increased income produced by the increasing population and may become less onerous. If not, governments and private industry must face the probability that the burden will grow even more oppressive.(1)

Until quite recently it was assumed that the farm lands of the Prairie Provinces were capable of supporting for many years to come a steadily rising population, partly by the exploitation of new lands and partly by the adoption of more intensified farming methods in the settled areas. The assumption has lately been challenged in both respects. Careful estimates of virgin land, suitable for settlement and capable of being exploited without excessive developmental costs, provide no grounds for extravagant hopes. Moreover, the trend over a large part of

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(1) Mackintosh, W. A., The Economic Background of Dominion-Provincial Relations, a study prepared for the Royal Commission on Dominion-Provincial Relations, Ch. VIII.

the settled West is toward a more extensive rather than a more intensive agriculture, and the density of population in those areas is falling rather than rising.

The basis for the extraordinary expansion of the prairie region in the past forty years was the existence of a vast area of virgin soil, to which could be applied a recently-perfected farming technique, during a period when expanding external markets were able to absorb at safisfactory prices a steadily mounting annual production. The development of transportation systems and the availability of large sums of outside capital were also necessary, but the foundation of the whole development was the existence of many millions of acres of cheap and fertile land capable of rapid and inexpensive exploitation.

This suggests that the continuation of the upward trend of population, at least in the near future, depends mainly on the extent of the virgin resources still available, and the degree of their accessibility. These factors have been examined in the following study, in the light of soil surveys and climatic experience. For convenience in the preliminary discussion, it is assumed that market possibilities, farming techniques, costs and similar factors remain substantially as at present, though the bearing upon the future probabilities of any major change in them is considered in a later section. The possibility of supporting an enlarged population in mining, lumbering and manufacturing in the prairie region is also examined.

The classification of the land of the Prairie Provinces by soil zones and suitability for cultivation (Table I) is the basis for a crude assessment of the available land resources. Over the entire prairie region (including the Peace River Block in British Columbia) there are estimated to be 64.4 million acres satisfactory for cultivation, and an additional 42.7 million acres marginal for cultivation, a total of 107.1 million acres broadly classed as suitable for settlement.(1a)

(1a) That is, suitable for agricultural settlement.

TABLE I

Classification of the Land of the Prairie Provinces by Soil Zones and its Suitability for Cultivation (a)
(Millions of acres)

	Total area	Light Brown	Dark Brown	Black Park	Black Meadow (Manitoba)	Total Black and Black Meadow	Grey Timber & Black Park Transitional	Grey Timber & High Lime Peat. (Manitoba)
Satisfactory for Cultivation	64.4 (b)	16.5	15.0	20.3	1.4	21.7	10.2 (b)	1.0
Marginal for Cultivation	42.7 (b)	9.4	7.5	10.1	.3	10.4	13.4 (b)	2.0
Total suitable for settlement	107.1 (b)	25.9	22.5	30.4	1.7	32.1	23.6 (b)	3.0
Sub. Marginal for Cultivation	59.7 (b)	8.1	7.5	10.1	.3	10.4	26.7 (b)	7.0
Grand Total	166.8 (b)	34.0	30.0	40.5	2.0	42.5	50.3 (b)	10.0
Area Occupied, 1936	112.9	29.5	28.8			38.6	16.0)	
Area Improved, 1936	61.1	14.9	18.6			22.6	5.0)	
Area unimproved-occupied, 1936	51.8	14.6	10.2			16.0	11.0)	
Area not Occupied, 1936	53.9	4.5	1.2			3.9	44.3)	
Rural Population, 1936, (000)	1,537	183	276			714	364)	
No. of Occupied Farms, 1936 (000)	296	45	60			132	59)	
Average area per Farm, 1936, (acres)	376	658	485			288	267)	

(a) Compiled from W. A. Mackintosh, Prairie Settlement: The Geographical Setting. (Toronto, 1934), Appendix. This appendix was adapted from a memorandum by Dr. J. D. Newton, of the University of Alberta.

(b) Includes the Peace River Block of British Columbia (3.5 million acres.)

The area occupied in 1936 amounted to 113 million acres. As this exceeds the area of satisfactory and marginal land for cultivation by 6 million acres and as the unoccupied area contains substantial tracts of satisfactory and marginal lands, it follows that much sub-marginal land is now occupied. The utilization of the occupied area throws some light on this aspect:

Improved	Unimproved	
61 million acres	Prairie and natural pasture	34 m. acres
	Woodland	12 "
	Marsh and Wasteland	6 "
		52 "

Occupancy of sub-marginal lands is explained broadly by two quite different circumstances. The local variability of soil quality is so marked over a large part of the prairie that a section of land or less may include satisfactory, marginal and sub-marginal soils. The natural tendency is to cultivate the better parts and use the marginal and sub-marginal areas for pasture. The other explanation is the existence of considerable numbers of farmers now attempting unsuccessfully to exploit sub-marginal soils. In some cases these soils were satisfactory or marginal when they were first cultivated and have since deteriorated by blowing or prolonged cropping. In others they were sub-marginal from the first. To the extent to which a considerable acreage of sub-marginal land is now being farmed unsuccessfully, a movement of people away from parts of the settled areas to unoccupied lands is indicated. Such a transfer has been going on in waves (coinciding roughly with drought cycles) since the earliest days of settlement, and there is ample evidence that the process has still some distance to go. Some demands on the satisfactory and marginal lands now unoccupied will therefore be made as the farmers abandon sub-marginal areas and in this way a considerable portion of the virgin lands now available may be settled without any addition to the farm population of the prairies.

The location of the unoccupied lands within the several soil zones throws further light on the prospects for increased population. Of the area not now occupied, 5.7 million acres or 11% lies within the treeless plains region, which was the most accessible in the earlier years, the most inexpensive to exploit and has consequently been carefully culled over many years ago. These plains embrace the core of the drought area. Practically all of the unoccupied land in these zones (light brown and dark brown soils) consists of sub-marginal land incapable of supporting even a sparse farm population, lacking irrigation or some revolutionary discovery in agriculture. Another 3.9 million acres or 7½% lies in the park and black meadow zones. This is a more promising type of country and the climate is more favourable to agriculture, but it should be noted that the occupied area in these zones already exceeds the area classified as suitable for cultivation by 6.5 million acres, or 20%, and that consequently the demand for farms there has already led to the occupancy of considerable sub-marginal lands, some of which are valuable adjuncts as pasture or woodlots but others of which will probably have to be abandoned. A preponderating part of the unoccupied farm lands of the Prairie Provinces (81½%) lies in the grey timber and black park transitional zone. Here, of a grand total of 60.3 million acres, 26.7 million acres are classified as suitable for settlement, and 16 million acres are now occupied. Based on experience for the whole region, the 16 million acres occupied probably includes a considerable area of non-arable land, and the area still available for settlement in this zone is proportionately larger than the 11 million acres arrived at by deducting occupied area from the total suitable for settlement. Allowing also for unoccupied land in the other zones which may be suitable for settlement, there may be of the order of 18 million acres in the entire West still available for settlement.

A detailed examination of these virgin resources is given later in the study, and the limitations due to inaccessibility, cost of providing transportation facilities, etc., are taken into consideration. The above figures, however, provide a crude basis for a summary calculation of the top limits of new population possible through the settlement of new lands. Eighteen million acres of satisfactory and marginal lands would provide 67,500 new farms of the average size (267 acres) of those already in that type of country. Assuming a rural population of present average density on such soils, a hypothetical maximum of 400,000 people is reached.(2) Since the cost of clearing some of these lands is prohibitive, since some of the best soils are in such limited areas far removed from transportation facilities that it would be highly unprofitable to settle upon them, and since some provision must be made to accommodate the movement from sub-marginal lands elsewhere, it is clear that the additional population which the settlement of the remaining suitable lands can reasonably be expected to support is well below the hypothetical maximum. Indeed, a case can be made out for the view that the available lands will all be required to meet the needs of farmers now settled on sub-marginal land and the demand for new land arising out of the natural increase in the rural population. If this view is correct there is no scope for rural immigration into the region.

Furthermore, the question of the future possibility of settlement and increases in population cannot be disposed of without a consideration of the serious problems besetting prairie agriculture as it exists today. The most important of these problems, together with their bearing upon the future of the Prairie Provinces, are discussed in Chapter IV.

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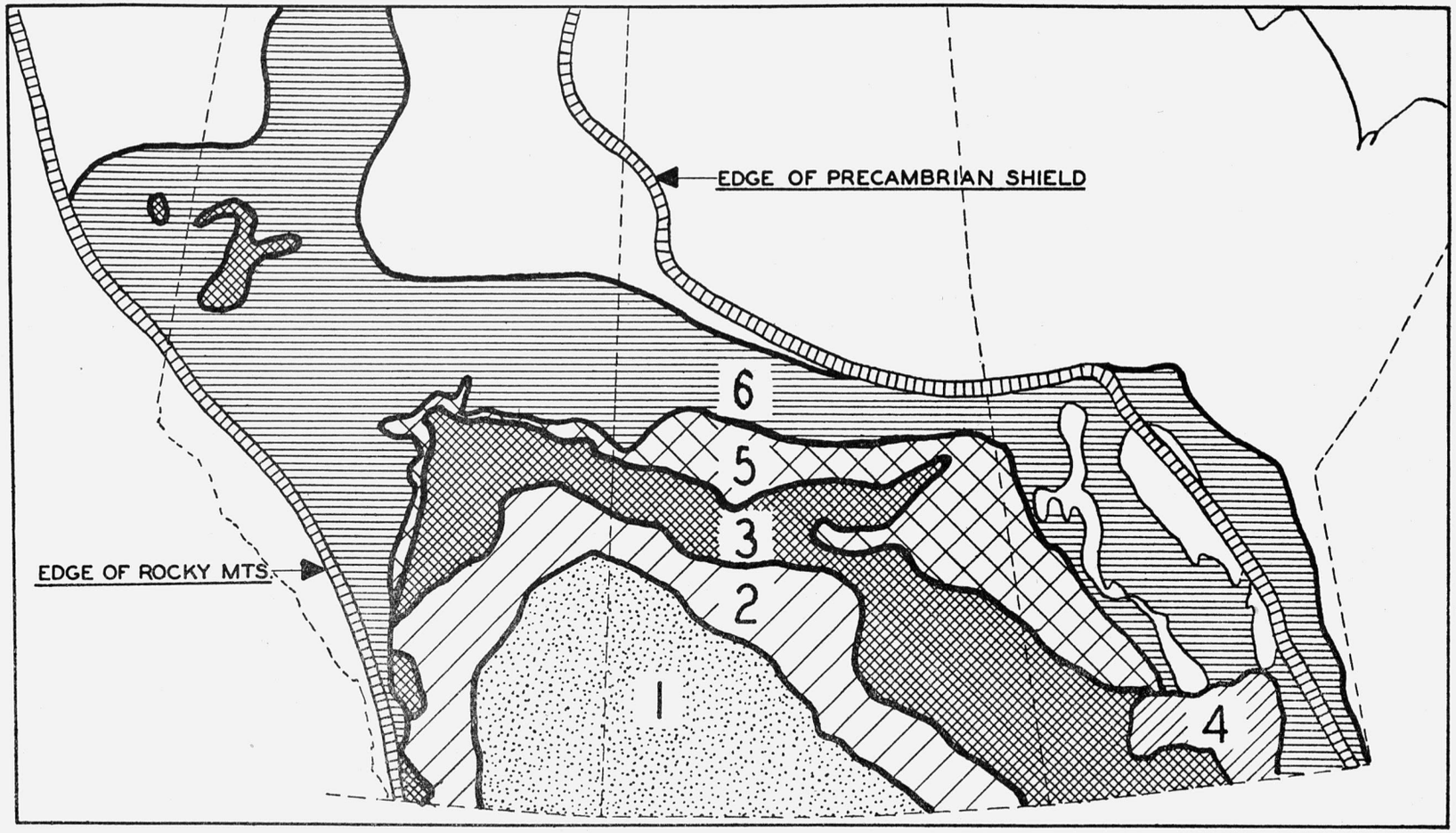
(2) As shown below, p. 39, the figure based on past experience is more likely to be between 200,000 and 250,000. It should be noted, of course, that such an increase in rural population would involve some additions to the urban population in both Eastern and Western Canada.

FIGURE 1

PRAIRIE SOIL MAP



1 BROWN PRAIRIE SOILS

2 DARK BROWN PRAIRIE SOILS

3 BLACK PARK SOILS

4 BLACK MEADOW SOILS

5 TRANSITIONAL SOILS

6 GREY TIMBER SOILS AND PEAT

Chapter II - The Major Soil Zones: Land Utilization: Climatic and Physical Characteristics.

1. The Physical Environment

An examination of the soil map (Figure I) of the Prairie Provinces shows that there are five main soil zones in the region, and an additional sub-zone in Manitoba. These are the light and dark brown, the park, the grey timber and black park transitional and the true grey timber soils. The high lime peat soils in Manitoba may be considered a sub-zone of the true grey timber soils. It should be emphasized that the soils of an area, designated as being of a certain kind, are not uniform in quality but are, in fact, very mixed. However, such local differences, will, in general, be ignored, though they are far from being unimportant. The soil belts correspond roughly with the major vegetation zones, and each has, in general, well-defined climatic characteristics. These geographical features have been of predominant importance in determining the types of agriculture which can be most successfully prosecuted in the different parts of the region. The resources of the prairies are specialized and the physical environment, while lending itself to rapid and profitable exploitation over considerable areas, imposes limitations on the types of agricultural activity which may be prosecuted. Moreover, resources and environment show considerable diversity over the region as a whole thus giving rise to varied lines of development in its different parts. While specialization of resources has contributed to specialized activity and dependence on outside markets, the location of the region in the middle of the continent and the consequent costliness of transportation has promoted a somewhat more diverse type of development than would have been possible otherwise.

The agricultural settlements in the Prairie Provinces occupy the northern part of the continental plain of North America. The northern and eastern portions of Manitoba and the

bulk of the northern half of Saskatchewan are located within the Precambrian Shield. The area west of the Shield rises in three steppes, or levels, to the Rocky Mountains. The most easterly level, with an altitude of less than 1,000 feet, includes the Red River Valley and the Manitoba Lakes area; the second, rising from an altitude of about 1,000 feet on the eastern edge to over 2,000 feet on the western, includes a large section of the southern half of Saskatchewan and the southwestern part of Manitoba. The third level stretches to the foothills of the Rocky Mountains, with an altitude of from over 2,000 feet on the east to 4,000 on the west. The river systems flow in a northerly and north-easterly direction. The topography is diverse, varying from level plain to rolling and hilly country, interspersed with large sections of extremely rough non-arable land.

The whole area varies from semi-arid to sub-humid. Average annual precipitation varies from about 11 to 20 inches. Rainfall effectiveness varies with differences in temperature and with the velocity and prevalence of winds. South-western Saskatchewan and south-eastern Alberta are arid, not simply because rainfall is deficient, but also because the rate of evaporation is high. Rainfall deficiency is to a lesser extent a limiting factor in the north than in the south. Rainfall deficiency is less significant than extreme variability from season to season, with its consequent variations in crop yields. Good yields, with their accompanying prospects of profit, lead to expansion and the assumption of obligations which cannot be met in periods of poor yields. An economy can adjust itself more easily to a stable situation, even though at a low level, than to one where fluctuations in income are extreme and costs are relatively fixed.

Climate has a direct bearing on the type of vegetation, and the character of the soils of a region. The natural vegetation of the short-grass prairie region is a thin stand of relatively

short grass, sagebrush and cactus. Trees are found only in some valleys and in certain portions of the hilly country. In the intermediate prairie region the stand of grass is slightly heavier. In the park land, on the other hand, where the climate is sub-humid, vegetation is more luxuriant - tall grasses prevail, and bluffs of poplar and willow are common. North of the park land is the mixed-wood forest and beyond that the northern coniferous wooded area. The northern extension of the forest belt far down the Mackenzie River Valley is possible because climate is more temperate than in the eastern portions of the prairie region. As a consequence of more favourable climate and soils, commercial agriculture and settlement extend much farther north in Alberta than in Saskatchewan or Manitoba. While the limitations of precipitation are less serious in the north than in the south, the frost hazard is greater.

Since soils are the product of the original material composing the surface of the region, modified by climate and vegetation, it follows that soil types and vegetation are an accurate indication of the climatic conditions over a long period of time. The soils of the "true prairie", like the vegetation, are of two general types. There are the brown prairie types with a relatively low organic content because of the sparse vegetation, and the dark brown prairie types with a relatively higher organic content. Beyond the "true prairie" are the black soils which correspond roughly with the park vegetation. Beyond the black soils are the inferior grey soils corresponding to the wooded area. The depth below the surface of the lime carbonate concentration in a soil, marking the normal lower limit of moisture penetration, is a particularly good index of the average amount of precipitation. The concentration of lime tends to be nearer the surface in a dry region than in a humid one. In the brown soils it is nearer the surface than in the black soils, and in the grey soils it is found at considerable depths.

Climate, topography and soils are the geographical factors which have determined the character and extent of agricultural development. They are of such a nature that agricultural development based upon them is highly specialized. In this regard geography contributes to the economic difficulties of the prairies, as it does also in that precipitation and temperature are unstable and unpredictable.

2. The Brown Soil Zone

The brown soil zone, lying wholly in Alberta and Saskatchewan, is roughly triangular in shape and extends about 500 miles along the international boundary and has its apex just west of the Alberta-Saskatchewan border some 300 miles north of the forty-ninth parallel. The area is about 64 million acres; the rural population is 459,000 and there are 106,000 occupied farms. It corresponds closely with what is known as the "true prairie", or grassland. It is arid to semi-arid and constitutes roughly the drought area of the west. The light colour is due to the relatively low organic content which, in turn, is the result of the sparse vegetative cover characteristic of the area. The low moisture efficiency produces nothing but a short thin covering of natural vegetation. The lime carbonate concentration, marking the normal lower limit of moisture penetration, is near the surface in these soils, indicating a normal semi-arid condition.

As indicated on the map the brown soils area consists of two belts - a light or greyish brown zone which is encircled by soils of a darker brown colour. There are important climatic differences as between these two zones. The light brown soils, occupying an area of about 34 million acres of which some 13 million acres are in Alberta and 21 million acres in Saskatchewan, have a lower organic content than the darker soils and are low in total nitrogen content and deficient in phosphorus. In general, the lime carbonate accumulation is nearer the surface, indicating a somewhat more arid condition. The combined effects of precipitation and temperature, calculated as a precipitation-

temperature ratio for these soil zones in Saskatchewan are:[3]

Light brown soil zone - 39

Dark brown soil zone - 42

(a) The Light Brown Soil Zone

The average rainfall in the light brown soil zone is very near the minimum for successful agriculture, and, in many years, it is deficient and drought conditions prevail. The average annual precipitation is 15 inches or less; in the more arid portions of the area it is 11 inches. High summer temperatures and the prevalence and high velocity of winds which increase the rates of evaporation and transpiration, lower the rainfall efficiency in the area. Annual precipitation of less than 12 inches, and growing season precipitation of less than 7½ inches is probably insufficient for the production of crops.[4] Some indication of the variability of annual precipitation is found in the following table for typical points in the light brown soil zone:

Range Between High and Low Annual Precipitation at Swift Current and Medicine Hat

	High	Low	Range as Per Cent of Average
Swift Current	24.55 in.	9.68 in.	98
Medicine Hat	25.28 in.	6.38 in.	147

Source: E. S. Hopkins, et al, Soil Drifting Control in the Prairie Provinces (Ottawa, 1937), p. 51.

Over a considerable portion of the area in 40% to 60% of the years, warm-season rainfall is below the minimum necessary for

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(3) University of Saskatchewan, Reconnaissance Soil Survey of Saskatchewan (Saskatoon, 1936), Report No. 10, p. 11. The precipitation-temperature ratio is calculated as follows:

$$\frac{\text{Annual Precipitation in inches} \times 100}{\text{Annual Temperature in degrees F.}}$$

The higher ratios correspond to higher moisture efficiencies.

(4) W. A. Mackintosh, Prairie Settlement; The Geographic Setting, (Toronto, 1934), p. 175.

successful agriculture. Consequently, it is in this region, where moisture efficiency is least and the margin of safety is narrow, that the variability and unreliability of the rainfall is greatest. The length of the growing season is satisfactory and rust damage is usually less than in the sub-humid areas. These facts are of major importance in the agricultural life of the area.

The natural vegetation reflects the moisture deficiency. The typical vegetation is a short thin stand of grass, with cactus and sagebrush in the more arid portions. The area is treeless except in the river valleys and hills.

The soils are medium in texture, interspersed with areas of heavy clay, especially along the Saskatchewan River. There are large areas of light, sandy soils.

The surface of the area varies from level to hilly, with considerable areas of rolling and hilly topography. Large areas are very rough and badly eroded and there are extensive areas of "blow-out" soils. The light soils, and the rough, eroded and alkaline areas account for the large proportion of marginal and sub-marginal land in this soil zone.

An examination of the land utilization maps of the province of Saskatchewan reveals a surprisingly large proportion of sub-marginal land. According to the survey made by Dr. J. D. Newton of the University of Alberta, and published in 1934, less than 50% of the land in this soil zone is suitable for cultivation, and less than 30% is marginal. Thus more than 20% is sub-marginal for cultivation.

Area Satisfactory for Cultivation, Marginal for Cultivation, and Unsuitable for Cultivation in the Light Brown Soil Zone.

	Acres	Per Cent of Total
Satisfactory	16,550,000	48
Marginal	9,390,000	28
Not suitable	8,060,000	24
	34,000,000	100

Source: W. A. Mackintosh, Prairie Settlement, Appendix on Soils by Dr. J. D. Newton. It should be borne in mind that this classification is based on soils and topography only, and does not reflect climatic factors. Taking the latter into account probably a much larger area is unsuited to cultivation.

This general classification for the area as a whole does not reveal the great differences within the soil zone. The Sounding Creek Area in Alberta, lying within this soil belt and containing some 1.7 million acres was classified as follows:

	Per Cent of Total Acreage
Suitable for wheat	8
Marginal for wheat	32
Sub-marginal for wheat	60

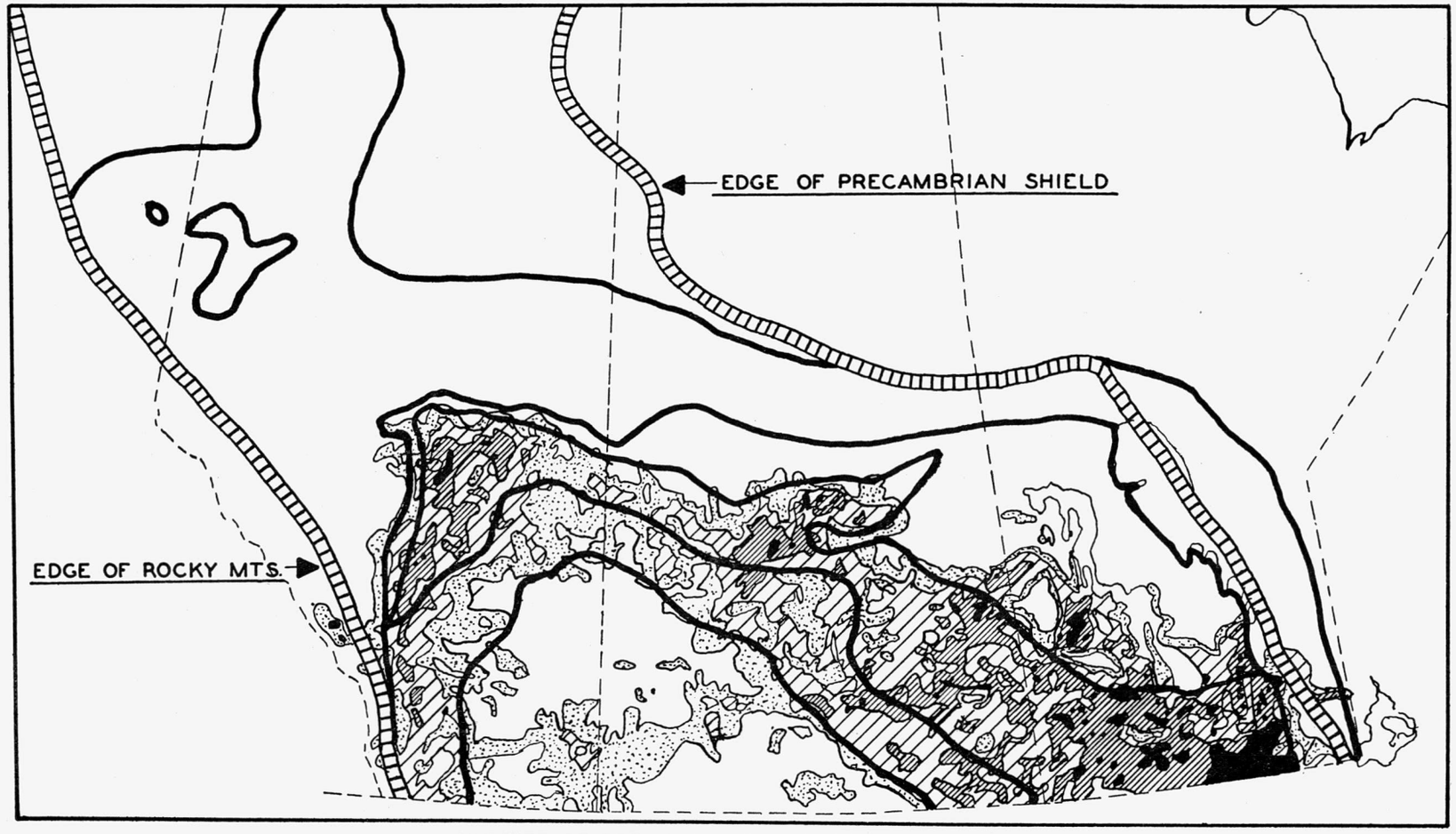
Source: Preliminary Report on the Classification of Land in the Sounding Creek Special Area of Alberta. Unpublished material in the Department of Agriculture, Economics Branch, Ottawa.

Topography, soils and climate suggest ranching as the most suitable land utilization with wheat production on the heavier soils. Tillage practices must be adopted which will serve the dual purpose of conserving moisture and resisting soil drifting. In any case, a general type of farming offers little prospect of success in this region.

By 1911 the light brown soil belt was thinly populated, the bulk of it having a rural population density of less than two persons to the square mile (Figures 3-6). Certain areas, especially those along the railway, had population densities of two to five persons to the square mile. By 1921 a relatively small proportion of the area contained less than two persons to the square mile; the bulk of it contained two to five persons and a considerable area five to ten. The early settlement of the region was encouraged by the land settlement policy of the Dominion government and the increase in density between 1911 and 1921 was largely due to the stimulus given wheat production by high prices. In crop district number 3 in Saskatchewan (south central) wheat acreage increased from 1.5 millions in 1916 to 3.2 millions in 1921, and in crop district 4 (south-western) from .3 millions to 1.1 millions. By 1931 there was a noticeable decrease in rural population, the area containing less than two persons having increased somewhat. The decline in the rural population in this area continued between 1931 and 1936. Farm abandonment due to depression and drought and the increase in the average size of farms accounted for this decrease.

FIGURE 3

RURAL POPULATION DENSITY 1906



NUMBER OF PERSONS TO THE SQUARE MILE

LESS THAN 2

2-5

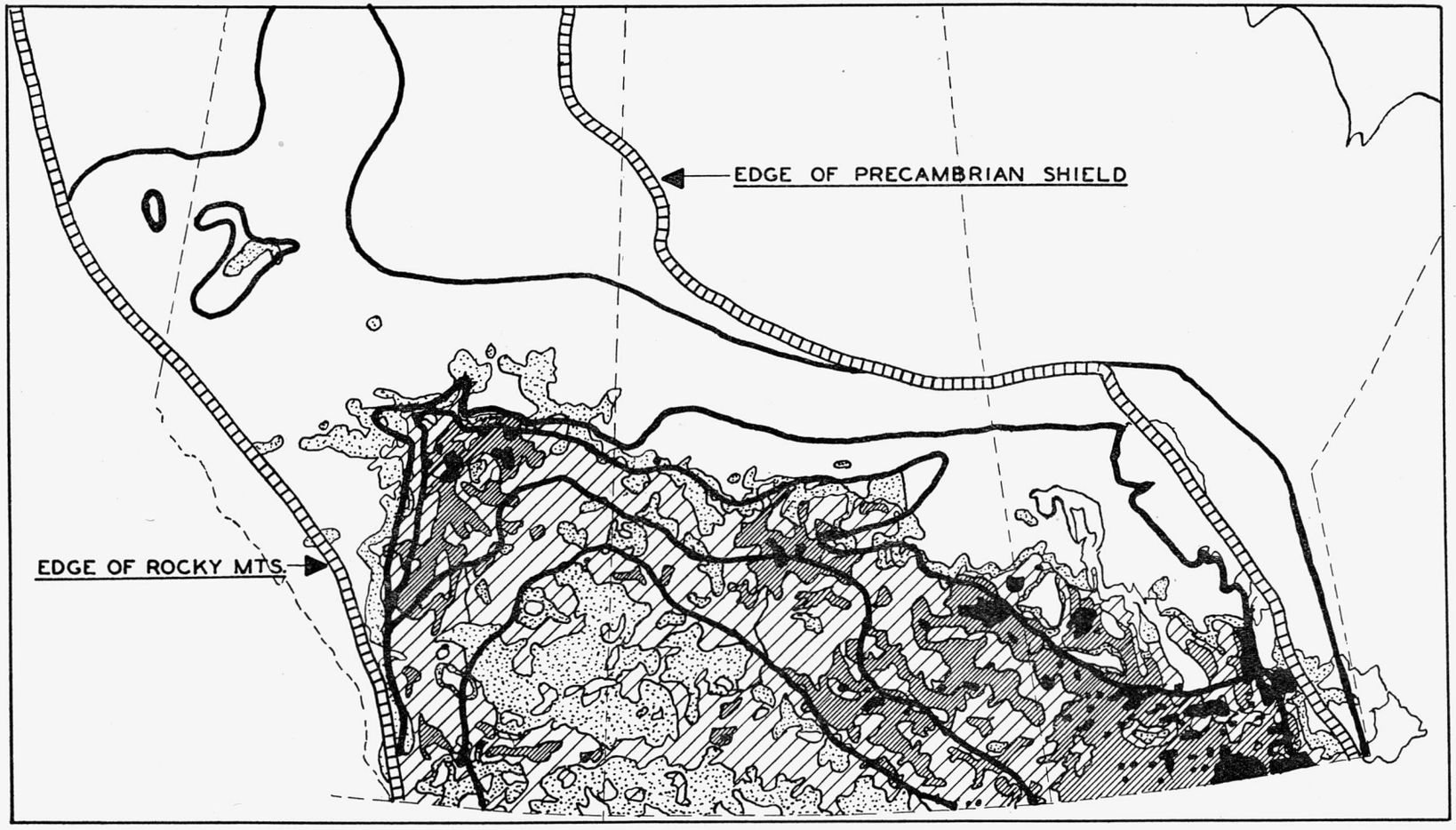
5-10

MORE THAN 10

MAJOR SOIL ZONE BOUNDARIES

FIGURE 4

RURAL POPULATION DENSITY 1911



NUMBER OF PERSONS TO THE SQUARE MILE

LESS THAN 2

2-5

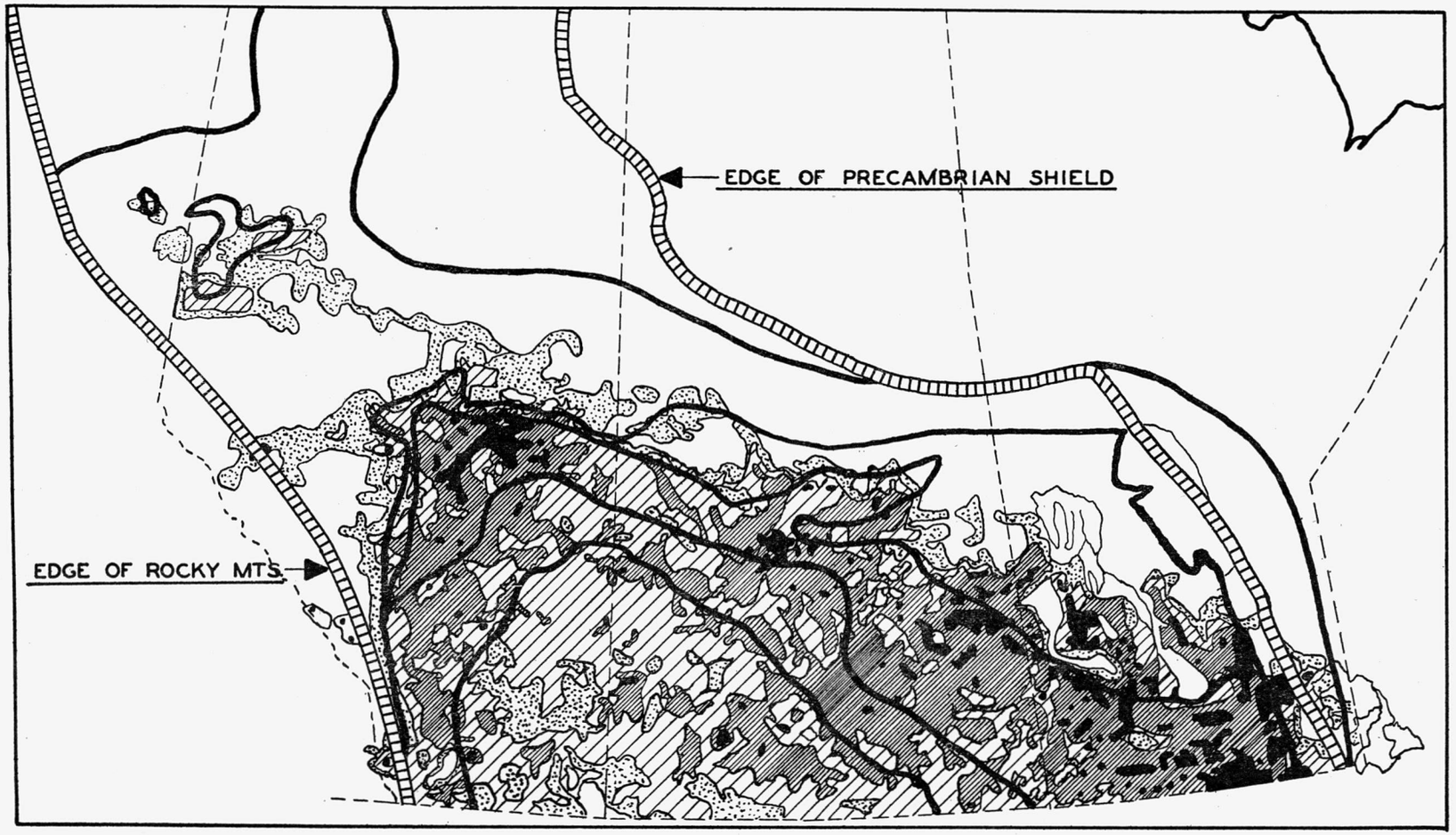
5-10

MORE THAN 10

MAJOR SOIL ZONE BOUNDARIES

FIGURE 5

RURAL POPULATION DENSITY 1921



NUMBER OF PERSONS TO THE SQUARE MILE

LESS THAN 2

2–5

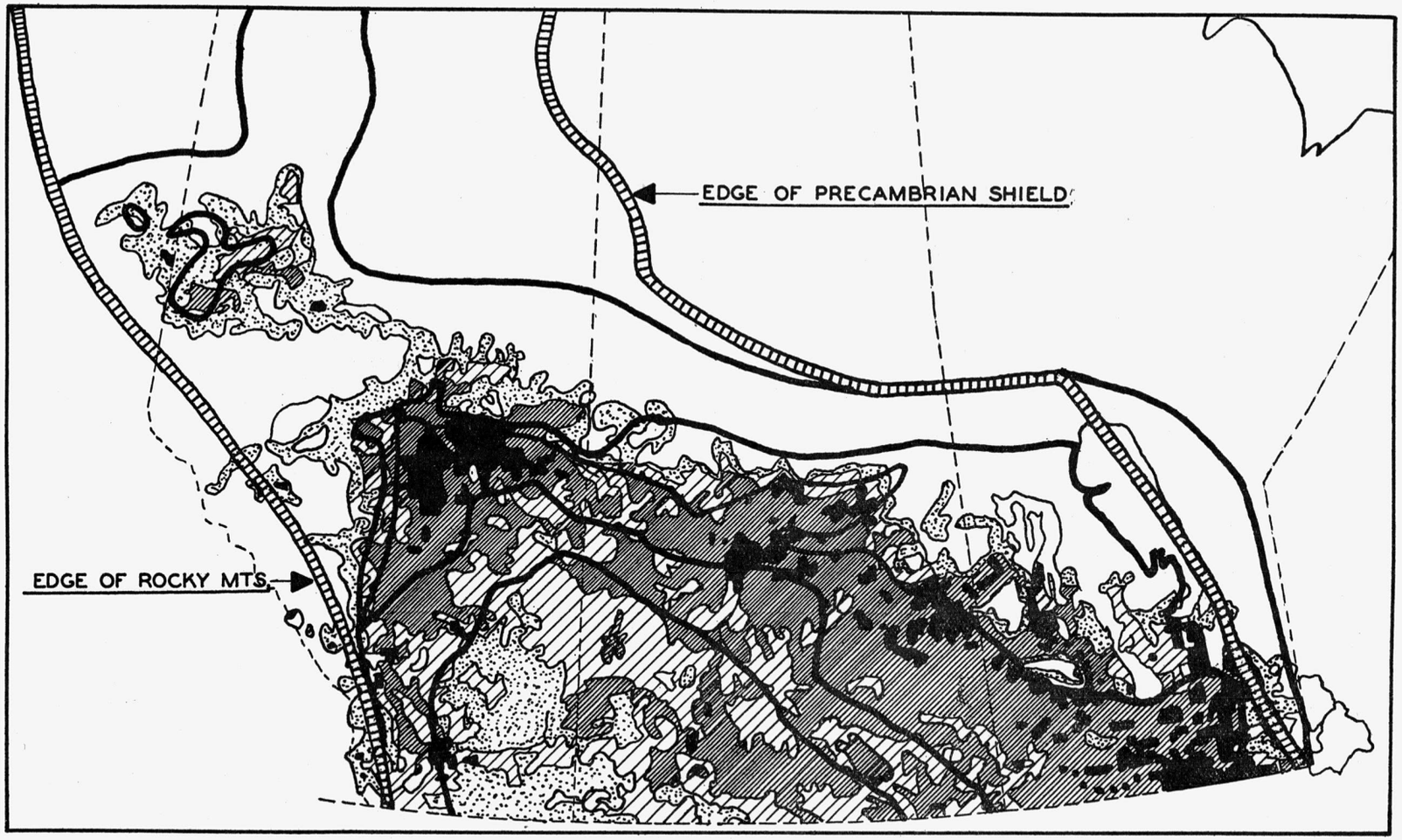
5–10

MORE THAN 10

MAJOR SOIL ZONE BOUNDARIES

FIGURE 6

RURAL POPULATION DENSITY 1931



NUMBER OF PERSONS TO THE SQUARE MILE

LESS THAN 2

2-5

5-10

MORE THAN 10

MAJOR SOIL ZONE BOUNDARIES

An analysis of farming operations in the light brown soil zone was made on the basis of 1936 census data. The following table shows the occupied and improved acreage and the area in field crops as recorded in the census of 1936:

Land Utilization in the Light Brown Soil Zone, 1936
(Millions of Acres)

Field Crops		8.7
(Wheat	6.9	
(Oats	.9	
(Rye	.2	
(Other	.7	
Fallow		4.7
Other Improved		1.5
Total Improved		14.9
Natural Pasture		13.9
Other occupied land		.7
Total Occupied		29.5
Unoccupied		4.5
TOTAL		34.0

The number of occupied farms is 45,000 with an average area per occupied farm of 657.8 acres. Many of the more successful farms are larger than the average. "Those farmers who have been able to maintain themselves in the dry area (of Alberta), are using three or four and, in some cases, seven sections of land to maintain the family unit. They have their own holdings of one or two sections and are either using under lease or squatters' rights, abandoned farms adjoining them, for pasture and forage purposes".(5) For the region as a whole 85% of the land is occupied, but here again there is great variation within the region. Some 50% of the occupied land is improved but this varies from 7% in census division 6 in Alberta to 70% in census division 13 in Saskatchewan. Forty-seven per cent of the area is in natural pasture. In census division 6 in Alberta over 90% is pasture and in census division 13 in Saskatchewan as

(5) A Report on the Rehabilitation of the Dry Areas of Alberta and Crop Insurance, 1935-1936 (Edmonton, 1936), p. 39.

little as 25%. Sixty per cent of the improved acreage is in field crops, 40% in wheat, and 30% in fallow, while only 8% is in other cereals. Eighty per cent of the field crop acreage is in wheat. The livestock population is relatively small. Some indication of the relative importance of these products in the income of the farmers is shown in that in 1935 the value of all field crops was $42.8 million, of wheat $34.1 million, of livestock sold $4.3 million and of butter fat sold $.4 million. It is evident that, for the area as a whole, wheat provides the major portion of the farm income, though again it should be remembered that there is considerable variation in the importance of wheat from one part of the region to another.

The areas which are relatively more dependent on livestock are the hilly and rough lands along the Alberta-Saskatchewan border, in the Cypress Hills, in the valley of the South Saskatchewan, and along the Missouri Coteau.(6) Climate and topography favour ranching in this area. Rainfall is inadequate for wheat farming and consequently land is cheap; topography is too broken for the use of machinery. "These combine to create a comparative advantage in favour of ranching. Where the topography is level, however, the competition of wheat growing is severe, and the over-crowding of ranges has destroyed much of the cover of native grass".(7) Even in the "grazing" areas field crops represent a large proportion of the total value of farm production.

There are three types of farming in this soil zone - the wheat farmer who depends almost entirely upon this crop for his cash income, the farmer who combines wheat growing with ranching, and the straight rancher. Where wheat growing is the main occupation the low yields due to deficient moisture imply an extensive type of farming involving a large area of land. On the short grass plains ranching requires large grazing areas as the grazing capacity is low.

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(6) See Mackintosh, Prairie Settlement, p. 130, Map.

(7) Ibid., p. 115.

Similarly, the farmer-rancher must have a large area to obtain a suitable combination of wheat and grazing lands.

The density of the rural population is low. In large areas the density is less than two to the square mile and only in a relatively small area, comprising the best wheat land, does it reach five to ten to the square mile. The increase in the size of farm and farm abandonment in recent years has been responsible for the declining density. In 1931 the abandoned area was 977,000 acres and in 1936 was 2,422,000 acres. As an illustration of the extent of the decline in population in the poorest sections, the experience of the Sounding Creek Area in Alberta might be cited. In 1921 the population was 10,535; by 1936 it had declined to 6,044.(8) A considerable part of this decline occurred prior to 1931. This retreat of settlement which was in process even before the severe drought and depression occurred, indicates that much unsuitable land was occupied in this area. The major problems are to adjust the number of people, the size and character of the farm unit and tillage practices to the capacity of the soil and climate to support a type of agriculture specialized in wheat and grazing. Moreover, this high degree of specialization implies widely fluctuating incomes, especially in view of the climatic and other natural hazards. Consequently, to promote successful agriculture, not only must farm practices be adopted which will cope with the peculiar climatic conditions as well as possible, but also some method of interjecting flexibility into the cost of farm operations must be devised.

(b) The Dark Brown Soil Zone

The dark brown soils encircle the light brown zone in the form of a narrow band. In area it is similar to the zone already described (30 million acres) and is very like it in many of its characteristics. However, there are certain contrasts which seem

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(8) Report on the Sounding Creek Special Area of Alberta. Unpublished material in the Department of Agriculture, Economics Branch, Ottawa.

to justify separate treatment. It is characterized by a surface soil of a somewhat darker colour than in the southern area, indicating a higher organic content, and the lime carbonate accumulation is rather lower, indicating slightly more rainfall. Precipitation efficiency is greater, as rainfall is heavier and the rate of evaporation is less. The region is semi-arid bordering on the sub-humid on the northern fringes. On the whole rainfall variability is slightly less as indicated in the following table:

Range between High and Low Annual Precipitation at Saskatoon, Scott, Lethbridge and Moose Jaw

	High	Low	Range as Per Cent of Average
Saskatoon	21.28 in.	10.38 in.	75
Scott	20.79 "	6.63 "	106
Lethbridge	27.92 "	7.63 "	130
Moose Jaw	20.8 "	10.1 "	71

Source: E. S. Hopkins, et al, Soil Drifting Control in the Prairie Provinces, p.51; Mackintosh, Prairie Settlement, p.176.

It appears that rainfall is to a lesser extent a limiting factor than in the light brown soil zone, though it is true that the area is far from being free from extreme drought.

This area corresponds closely with the intermediate prairie where vegetation is heavier. Aspen and willows begin to appear, especially on the northern margin. The soil of this region is of medium to heavy texture and in it are to be found some of the best wheat lands of the west, as for example, the Regina Plains.

The portion of this area, i.e., the eastern part, falling within the second prairie level contains a large proportion of land of even topography but it is rougher in the Alberta section.

The soil and climatic conditions of this region suggest that it is suited pre-eminently to the raising of wheat of a high protein content, with grazing on the light soils.

Dr. Newton's survey indicates about the same percentage of land suitable and marginal for cultivation as in the light brown soil zone.

Estimate of Soils Satisfactory for Cultivation, Marginal for Cultivation, and Unsuitable for Cultivation in the Dark Brown Soil Zone

	Acres	Per Cent of Total
Satisfactory	15,000,000	50
Marginal	7,500,000	25
Sub-marginal	7,500,000	25
	30,000,000	100

Source: Mackintosh, Prairie Settlement, Appendix on Soils by Dr. J. D. Newton.

This area was more densely populated by 1911 than was the light brown soil zone, most of the belt having two to five people to the square mile, with considerable areas having five to ten persons. By 1921 the area containing five to ten persons had increased a great deal and there were scarcely any sections with a density of less than two. Between 1921 and 1931 the areas having five to ten persons were extended somewhat.

The utilization of the land is indicated in the following analysis based on 1936 census data:

Land Utilization in the Dark Brown Soil Zone, 1936
(Millions of Acres)

Field Crops	11.5
(Wheat 7.9	
(Oats 2.1	
(Barley .4	
(Rye .1	
(Other 1.0	
Fallow	5.6
Other Improved	1.5
Total Improved	18.6
Natural Pasture	7.7
Other Occupied	2.5
Total Occupied	28.8
Unoccupied	1.2
TOTAL	30.0

There are 61,000 occupied farms with an average area of 485.2 acres, as compared with an area of 657.8 acres in the light brown soil zone. There is also considerable variation in size within the area.

Ninety-six per cent of the land is occupied and 65% of the occupied acreage is improved; 27% is in natural pasture, with a variation of from 13% to 47% in different areas. Field crops occupy over 60% of the improved acreage, wheat over 40%, and fallow 30%. Other cereals occupy 14% of the improved acreage. Almost 80% of the field crop acreage is in wheat. The value of all field crops produced in 1935 was $67.2 million. The value of wheat was $47.7 million, of livestock sold $8.0 million and butter fat sold $1.6 million. These values per acres of occupied land for each of the soil zones were:

	Light Brown Zone	Dark Brown Zone
Field crops	$1.45	$2.33
Wheat	1.15	1.66
Livestock	.15	.28
Butter fat	.01	.06

The higher percentage of occupied and improved acreage in the dark brown soil belt appears to suggest that Dr. Newton's estimate of the percentage of suitable land in this area, as compared with the light brown soil belt, is too low. But, the apparent discrepancy arises from the fact that while the relative proportion of good and poor soils is about the same, more favourable climatic conditions in the dark brown soil area make a higher percentage of permanent occupancy possible. In any case, wheat is the most important source of farm income, though there is relatively greater dependence on other cereals and livestock and animal products, than in the light brown soil zone.

The average density of the rural population is just under 6 persons to the square mile as compared with 3.5 per square mile in the light brown soil zone. Population densities are lower in Alberta than in Saskatchewan. Considerable abandonment of farm acreage was recorded in 1936 - over 1 million acres as compared with 345,000 acres in 1931.

Farm incomes, like those in the light brown soil zone, are subject to extreme fluctuation due to the great dependence on wheat and the variable nature of the weather. The problems are much

the same as those of the light brown soil zone, except that in the main, there is not the same over-extension of settlement on unsuitable lands. The costs for agricultural relief and other forms of assistance have been high in both soil zones, though relatively much higher in the light brown than in the dark brown area. The per capita relief and agricultural aid advances by rural municipalities in Saskatchewan outstanding as at April 30th, 1937, were $192 in the light brown soil area and $78 in the dark brown soil zone. In the park belt the amount outstanding was $7 per capita. While these figures do not represent the total relief costs in the respective areas, they do illustrate the relative burdens on governments arising from the different degrees of variability in the incomes earned by rural residents in each of these areas.

According to Dr. Newton's estimate there are, in the light and dark brown soil zones combined, about 48 million acres of land, suitable and marginal for cultivation or about 75% of the total.[9] This is probably all occupied, though not all improved. It follows that for this area there is no unoccupied arable land available for settlement. There are important limitations to the more intensive utilization of the land already under occupancy. Climate, topography and soil of the area imply a high degree of specialization as to use. Deficient precipitation and the nature of the soil and topography favour wheat, produced under conditions of extensive farming, or grazing. The tendency toward larger farms, and the existence of large areas suitable only for grazing, imply a declining rather than an increasing density of rural population.

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(9) The following rough calculation suggests this conclusion. The occupied, improved and unimproved acreages in the light and dark brown zones combined in 1936 were:

Total area	- 64.0	million acres.
Occupied area	- 58.3	" "
Improved area	- 33.5	" "
Unimproved area	- 24.9	" "

Assuming one-half the unimproved area to be arable, there are 46 million acres of arable land already occupied comprising 33.5 million acres of improved and 12.5 million acres of unimproved land.

This trend has been facilitated by the adoption of mechanized methods. The larger farm, together with abandonment of farm acreage in portions of the brown soils area, resulted in a decline in the rural population between 1921 and 1931,(10) and a further decline between 1931 and 1936. In sections, especially in southern Alberta, abandonment was very severe as recorded in the census of 1926, and has continued since that date. It is a significant commentary on the economical size of the farm unit in this area, that abandonment was most severe in the case of the small farm.(11) It is clear now that considerable areas in these soil belts should never have been used for wheat and that some of the problems with which the governments of Alberta and Saskatchewan, as well as the Dominion, have been attempting to cope in recent years, have arisen as a result of over-settlement. A redistribution of some part of the population in the poorest of the region is essential to provide stable agricultural organization in the dry areas. Soils experts in the province of Saskatchewan estimate that a minimum of 3 million acres in the southern part of the province which is, or has been, occupied must be permanently taken out of wheat growing. The government of the province of Alberta has been attempting for some years under the Special Municipal Areas Act to make an adjustment in the utilization of land in the worst of the drought area, and the government of the province of Saskatchewan is making similar attempts in co-operation with the Dominion government.

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(10) The Prairie Provinces in their Relation to the National Economy of Canada (Dominion Bureau of Statistics, 1934), p. 12, Map.

(11) Percentage of farms abandoned in Census Divisions 1, 3 and 5 in Alberta, 1926.

160 acres and under	161 - 480 acres
63.4%	31.8%

Source: Mackintosh, Prairie Settlement, p. 124.

3. The Black Soil Zone or Park Belt

The black park soils, including the black meadow soils of the Red River Valley, encircle the dark brown soil belt, stretching in a band of irregular width from the Red River Valley, diagonally across Saskatchewan and into the Edmonton district in Alberta. It extends southward from this point in an irregular fashion to the international boundary. The total area is about 42.5 million acres - 11.5 millions of which are in Manitoba, 23 millions in Saskatchewan, and 8 millions in Alberta. The rural population is 715,000 and there are 134,000 occupied farms.

The characteristic black colour is due to the large amount of organic material in the soil. The lime carbonate is commonly concentrated at a much lower level than in the brown soils. The total supply of plant food is large.

This zone corresponds to the park region with a sub-humid climate and a heavy growth of grass interspersed with "bluffs" of poplar and willow.

Climatically the park belt lies midway between the semi-arid prairie plains and the humid forest area. Annual rainfall varies from 15 to 20 inches, being greater in Alberta and Manitoba than in Saskatchewan; the growing-season rainfall averages from 9 to 14 inches. The precipitation-temperature ratio is 47.(12) Not only is precipitation greater but its variability is less and a complete failure through lack of moisture seldom occurs.

Range between High and Low of Annual Precipitation for Edmonton, Indian Head and Treherne

	High	Low	Range as Per cent of Average
Edmonton	25.3 in.	13.8 in.	65
Indian Head	26.0 "	13.5 "	68.3
Treherne	26.7 "	11.6 "	74.4

Source: Mackintosh, Prairie Settlement, p.176.

(12) Reconnaissance Soil Survey of Saskatchewan, Report No. 10, p.11.

The frost hazard , while not a serious limitation to agriculture, is nevertheless of importance. It has forced greater dependence on early maturing wheats and a more diversified type of agriculture. The greater humidity has also contributed to greater diversification.

Topographically the area is well suited to agriculture, the surface, on the whole, being level to rolling.

According to Dr. Newton's estimate about 50% of the area is satisfactory for cultivation and 25% marginal. In all, about 75% of the area is considered suitable for settlement. The proportions are about the same in each province.

Estimate of Soils Satisfactory for Cultivation, Marginal for Cultivation and Unsuitable for Cultivation in the Black Soil Zone (excluding the Black Meadow in Manitoba)

	Acres	Per cent of Total
Satisfactory	20,250,000	50
Marginal	10,125,000	25
Sub-marginal	10,125,000	25

Source: Mackintosh, Prairie Settlement, Appendix on Soils.

Estimate of Soils Satisfactory for Cultivation, Marginal for Cultivation and Unsuitable for Cultivation in the Black Meadow Area of Manitoba

	Acres	Per cent of Total
Satisfactory	1,400,000	70
Marginal	300,000	15
Sub-marginal	300,000	15

Source: Mackintosh, Prairie Settlement, Appendix on Soils.

By 1906 settlement had spread across the Park Belt and in some parts, especially in Manitoba, eastern Saskatchewan and in Alberta a rural population density of five to ten to the square mile had been attained. By 1916 the area was well supplied with railway facilities and the greater part of the belt, except in western

Saskatchewan and eastern Alberta had acquired a density of five to ten to the square mile. This area of lower density was gradually settled and by 1931 a very small part of the whole park belt contained less than five persons to the square mile. There were considerable areas, mainly peopled by non-Anglo-Saxons, with a density of over ten persons to the square mile.

The park belt is mainly a grain growing area, though, as already indicated, mixed farming is of considerable importance being relatively more important in the Black Meadow section than elsewhere. The areas devoted to the various uses are indicated in the following table based on 1936 census data:

Land Utilization in the Black Soil Zone, 1936
(Millions of Acres)

Field Crops		15.6
(Wheat	7.6	
(Oats	3.9	
(Barley	2.5	
(Rye	.2	
(Other	1.4	
Fallow		5.5
Other Improved		1.5
Total Improved		22.6
Natural Pasture		8.7
Other Occupied		7.3
Total Occupied		38.6
Unoccupied		3.9
TOTAL		42.5

There are 134,000 occupied farms with an average area of 288.2 acres. Occupied acreage accounts for 90% of the total; 59% of the occupied area is improved and 23% of it is in natural pasture. Sixty-nine per cent of the improved acreage is in field crops, 34% in wheat, 11% in barley and 7% and .9% in oats and rye respectively. Wheat comprises 49% of the field crop acreage, barley 16%, oats 24% and rye 1%. The total number of cattle and swine on farms is much greater than in the brown soil zones. In 1935 the value of all field crops was $83.7 million, and of wheat $39.3 million. Livestock sold off farms was valued at $20.4 million

and butter fat at $5.6 million in the same year. Thus the value of wheat produced was a much smaller proportion of the total value of field crops in 1935 in this area than in the brown soil zones. While the total value of livestock sold was much greater in the park region than on the prairies the value, per head of the rural population, was about the same.

The density of the rural population is, in general, five to ten persons to the square mile, although in the non-Anglo-Saxon communities, it is more commonly 10 to 20 persons. As people have moved northward from the prairie region they have settled in the park and wooded regions. Consequently, in general, the density of population has been increasing and decreases have been confined to small areas.

Abandoned acreage was little greater in 1936 than in 1931 and in 1936 was some 2% of the occupied acreage, as compared with 8% in the light brown soil zone.

Since precipitation is less variable and more reliable in this zone than in the prairie regions, and because there is a greater variety of farm products, income is more stable than it is for the areas already considered. As a consequence, the financial drain on governments has not been as great as in the semi-arid regions of the Prairie Provinces. This has already been illustrated by reference to the relief and aid advances in the various soil zones in Saskatchewan. In the Park Belt, including the Black Meadow, there are about 32 million acres of land suitable and marginal for cultivation, i.e., about 75% of the total area. Probably very little, if any, of this is unoccupied.(13) Climatic conditions do not impose as severe limitations to attaining a dense population as they do in the brown soil zones. Climatic factors favour a more

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(13)

Total area	42.5	million acres.
Occupied area	38.6	" "
Improved area	22.6	" "
Unimproved area	16.0	" "

Assuming one-half the unimproved area to be arable, there are 31 million acres of arable land already occupied consisting of 23 million acres of improved and 8.0 million acres of unimproved land.

diverse type of agriculture, the soil is good, and while it is predominately a grain growing area, mixed farming is important. Frost is to some extent a limiting factor. The farm is, on the average, smaller than in the brown soil belt, though the average size has been increasing. This area is the most thickly settled of the rural regions of the Prairie Provinces and in recent years the density has been increasing.(14) Abandonment has not been serious. Expansion of markets for dairy produce, or the products of mixed farming, or a tendency toward a more nearly self-sufficient type of farming would contribute to greater population densities even in those areas already occupied.

4. The Grey Timber and Black Park Transitional Soil Zones

The black park transitional soil zone is a region having most of the characteristics of the park belt soils but upon which the forest has encroached to a considerable degree. These soils are of the black park and grey timber type and on the whole are good agricultural soils but clearing is costly in many sections. The soil map shows their location, mainly in Manitoba and Saskatchewan, bordering on the park belt proper. A narrow fringe is adjacent to the park area in Alberta. Beyond the transitional belt are the true grey wooded soils. In the inter-lake area in Manitoba and west of Lakes Manitoba and Winnipegosis are the grey timber and high lime peat soils. These latter soils are mainly marginal and sub-marginal. The underlying rock formation of the inter-lake district consists of limestone. "The soils are frequently stony and the underlying limestone rocks come to the surface in places. High lime peats or muskegs are common throughout the area, and there is much marsh land."(15)

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(14) The Prairie Provinces in their Relation to the National Economy, p. 12, Map.

(15) Mackintosh, Prairie Settlement, Appendix, p.221.

The grey wooded soil zone, including the transitional soils, the inter-lake area and the Peace River district, contain about 60 million acres. This area, it should be noted, does not include the whole of the northern portion of the three provinces but only those areas in which agricultural settlement might be considered a possibility. The area corresponds closely with the mixed-wood forest belt and lies on the southern and western margins of the Precambrian Shield. It is the area in which forestry operations are most usually associated with agriculture. The areas suitable for agricultural exploitation are scattered, small and isolated. The Peace River district, which is the largest of these areas, contains much soil of the true black park and transitional varieties, interspersed amongst the true grey wooded soils. With respect to the transitional soils it seems probable that, "at an earlier time, parts of the present forested area were occupied by open grass lands. Soil profiles under the forests are usually of a type intermediate between the typical grass-land soils and the fully developed forest soils".(16) "The better areas of the wooded soils are quite fertile, but such areas constitute only a small proportion of the total. The poorer areas are relatively low in fertility, and must have special attention paid to their management if satisfactory returns are to be obtained. A large proportion of the wooded soils have undesirable topography, poor soil and much muskeg. Such areas are best suited to forest and game reserves. There remain, however, extensive areas which could be satisfactorily farmed provided proper systems of management were employed."(17) The management of these soils involves the extensive use of fertilizers and the growing of legume crops to make up the deficiency in sulphur and nitrogen. Apart from this treatment wheat yields are very low.

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(16) J. D. B. Harrison, Forests and Forest Industries of the Prairie Provinces, Forest Service Bulletin 88 (Ottawa, 1936), pp. 20-21.

(17) F. A. Wyatt and J. D. Newton, Wooded Soils and their Management, College of Agriculture, Bulletin No.21, (Edmonton, 1932), p. 4.

Although the climate is in general sub-humid and the rate of evaporation is low, crops are often reduced by lack of moisture. The precipitation-temperature ratio is 51 as compared with 47 in the park belt. Moreover, frost is a limiting factor, and wheat growing is only possible with early-maturing varieties.

Topography, the character of the soil and the climatic conditions suggest mixed farming as the most satisfactory agricultural use of the land, and this, in fact, is the type of agriculture which predominates, with livestock as an important source of cash income. In the Peace River section, of course, a considerable quantity of wheat is produced.

Of an area of 50 million acres in the grey timber and black park transitional zone (including the Peace River district in Alberta and British Columbia), Dr. Newton estimates over 50% to be sub-marginal, and of 10 million acres in the grey timber and high lime peat area in Manitoba he estimates 70% to be sub-marginal.

Estimate of Soils Satisfactory for Cultivation, Marginal for Cultivation and Unsuitable for Cultivation in the Grey Timber and Black Park Transitional Zone and in the Grey Timber and High Lime Peat Zone

Grey Timber and Black Park Transitional

	Acres	Per Cent of Total
Satisfactory	10,200,000	18
Marginal	13,400,000	27
Sub-marginal	26,700,000	55
	50,300,000	

Grey Timber and High Lime Peat (Manitoba)

	Acres	Per Cent of Total
Satisfactory	1,000,000	10
Marginal	2,000,000	20
Sub-marginal	7,000,000	70
	10,000,000	

Source: Mackintosh, Prairie Settlement, Appendix on Soils.

Of the 23 million acres considered suitable for settlement, i.e., the satisfactory and marginal lands, 15 million acres are located in Alberta and the Peace River block of British Columbia. Most of the land still available for settlement in the Prairie Provinces is located in this region. This area, while large in total, consists of small patches, isolated from one another, and at best each will accommodate only a small population. The progress of settlement will be slow, and agriculture will, for a long time, be at, or near, the subsistence level. In any case an extension of settlement into the area is likely to be costly to governments.

Though people entered the wooded areas of Manitoba very early, the extension of settlement over the forested areas as a whole has been a slow process. Early settlement was retarded in part because the prairie lands could be much more easily prepared for growing crops. Transportation facilities in the forested areas were provided much later, and the physical characteristics of the region were unattractive to settlers. However, by 1911 the settlers had penetrated the forested areas of Saskatchewan and Alberta. The building of a railway into the Peace River district in 1915 contributed to rapid settlement and by 1921 settlers occupied a considerable area and had pushed into the Peace River Block in British Columbia. The density of the population in small areas in the Alberta section of the Peace River country was as high as two to five persons to the square mile in 1921. By 1931 the density of population in the true grey wooded soil zone was, in the main, less than two to the square mile, though in the transitional belt population density was in many sections two to five to the square mile and in a few areas five to ten.

In Saskatchewan settlement has extended little beyond the black park transitional soil zone, but in Alberta and Manitoba it extends well into the grey wooded soils. The following table indicates the extent of agricultural development in the whole region:

Land Utilization in the Grey Timber and Black Park Transitional Soil Zones, 1936
(Millions of Acres)

Field Crops		4.0
(Wheat	2.0	
(Oats	1.0	
(Others	1.0	
Fallow		1.0
Total Improved		5.0
Natural Pasture		3.0
Other occupied (woodland, marsh etc.)		8.0
Total Occupied		16.0
Unoccupied		44.0
TOTAL		60.0

There are some 60,000 farms with an average area of 266.6 acres per farm. Wheat is of relatively less importance in this area than in the semi-arid region and in the park belt. In the wooded area wheat acreage is little over 50% of the field crop acreage. The coarse grains and livestock are of relatively greater importance.

Population densities are frequently less than two to the square mile, the exception being on the transitional soils, in areas lying adjacent to railways and in some parts of the inter-lake region. There has been severe abandonment in certain sections, particularly in the inter-lake area. The 1936 census recorded over 1.5 million acres abandoned in the grey soil zone.

Chapter III The Possibilities of Further Economic Expansion and Increases in Population

1. Agriculture

(a) In the northern areas

Population movements in the Prairie Provinces in recent years have been northward. It is in the grey timber and black park transitional soil zones, on the northern fringes of settlement, and in the Peace River country, that the prospects for increased agricultural settlement are greatest. This area, including the inter-lake district in Manitoba (i.e., the grey timber and high lime peat soils) and the Peace River Block in British Columbia, contains about 26 million acres of land suitable or marginal for cultivation, according to Dr. Newton's estimate. About 16 million acres of this area are already occupied, and some 5 million acres improved, leaving possibly 16 million acres of land, suitable for settlement, still available for occupancy.(18) Dr. Newton is of the opinion that the bulk of the area in the grey soil zone proper, i.e. outside the black park transitional zone, is unsuited for cultivation.(19) Areas suitable for agricultural settlement are small in size and isolated. Climate, inferior soils, small farms and transportation difficulties tend to favour livestock and field crops other than wheat.

In the wooded and transitional region as a whole, settlement has proceeded more slowly than on the prairies mainly because of its physical features and the distance from markets. The timbered land is costly to clear, and if clearing is undertaken by the settler himself, it postpones for a

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(18) Occupied area - 16 million acres
Improved area - 5 " "
Unimproved " - 11 " "

Assuming one-half the unimproved area to be suitable for cultivation there are 10 million acres of arable land already occupied including 5 million acres of improved and 5 million acres of unimproved land. There are possibly 16 million acres of arable land at present unoccupied.

(19) Mackintosh, Prairie Settlement, p. 149.

considerable time his ability to produce a profitable cash crop. A considerable proportion of the soil is inferior to that in other areas as it is deficient in the plant foods and requires careful management, especially for growing wheat. Moreover, the small areas suitable for settlement are interspersed among large areas of poor lands and consequently the density of population over the whole area will necessarily be low, involving greater cost of transportation and other services. The frost hazard is sufficiently great to influence the selection of crops. The introduction of Garnet and Reward varieties has made wheat growing possible, but even so, there is a tendency to select fodder crops and rely to a greater extent on livestock here than on the prairies. Mixed farming, and the small farm, will contribute to a somewhat greater density of population, than would a more extensive type of agriculture.

Lack of transportation is a hindrance to settlement. Where the suitable land occurs in small isolated blocks and the population is small, the provision of transportation facilities is costly, and is likely to add to the total overhead of railway or other transport costs. Moreover, the character of agriculture im this area is such that a smaller proportion of the total produce than in the prairie region will be of the "cash crop" variety, and so will contribute less to railway traffic.

With respect to the northern fringe of settlement Dr. Mackintosh has pointed out: "The record of settlement in the past suggests that satisfactory and relatively permanent settlements are likely to be established on the transition soils of the Forest Belt where substantial areas are available and transportation is feasible. Where the areas available are small and isolated, settlers are bound to lack the social and economic services which are offered by larger communities, or submit to very heavy taxation in order to

acquire them. Alternatively, they may obtain them through subsidy by the provincial government." On the basis of the large proportion of land in the area unsuitable for cultivation "one can predict that the density of settlement in these areas will remain low, and that the problem of maintaining adequate transportation, governmental and social services for the settlements will be correspondingly difficult."(20)

In the area of the Prairie Provinces contained within the Precambrian Shield - an area of rock, forest, lake and muskeg - there are small isolated sections capable of cultivation, but not independently of other industries, such as mining and forestry. These industries provide local markets and supplementary sources of income which may become the basis for agricultural settlements which in total will not be large.

(b) On Lands held by the provincial governments and certain land holding companies

In an endeavour to obtain supplementary information as to the amount of suitable land still available for settlement, a number of land holding companies and the provincial governments were requested to submit statements of the amount of unoccupied land held by them, classified as to its suitability for agricultural purposes. The details are contained in Table II. These details are summarized here by provinces.

(i) Alberta

The Hudson's Bay Company, the Canadian Pacific Railway Company and 28 members of the Dominion Mortgage and Investments Association have 1.8 million acres of unoccupied land. Of this, 600,000 acres are classed as farming lands. This is the equivalent of about 4,000 quarter sections, and assuming a family of four to a quarter section(21) would

(20) Ibid., pp. 147, 150.

(21) This is somewhat optimistic. In 1936 the rural population in the grey soil zone was 3.5 per quarter section of occupied land.

TABLE II

Unoccupied Lands in the Prairie Provinces held by Certain Companies and the Provincial Governments, 1938(a)

(Thousands of Acres)

	Total	Arable or Farming Land	Range, Pasture and Hay Land	Sub-Marginal and Waste Land
Manitoba				
Hudson's Bay Company	110	35	75	-
Canadian Pacific Ry.Co.	64	-	21	43
Dom. Mortgage Inv.Ass.(b)	89	77	12	-
Sub-Total	263	112	108	43
Provincial Government	4,217(c)	1,967(c)	587	1,663
Total	4,480	2,079	695	1,706
Saskatchewan				
Hudson's Bay Company	680	365	315	-
Canadian Pacific Ry.Co.	555	183	194	178
Dom.Mortgage Inv.Ass.(b)	538	467	71	-
Sub-Total	1,773	1,016	579	178
Provincial Government	1,973	300(d)		1,673
Total	3,746			1,851
Alberta				
Hudson's Bay Company	655	310	345	-
Canadian Pacific Ry.Co.	1,067	321	418	328
Dom.Mortgage Inv.Ass.(b)	16	15	1	-
Sub-Total	1,738	646	764	328

(a) Compiled from statements submitted by the companies and governments concerned.

(b) Based on returns from 28 member companies.

(c) Includes 1,410,560 acres of farming and grazing lands, withheld from immediate settlement.

(d) Classified as commercially productive.

accommodate about 16,000 persons. Information is not available from the provincial government with respect to its land holdings but presumably the bulk of the unoccupied lands in the north belongs to the Crown.

(ii) Saskatchewan

Professor Mitchell of the University of Saskatchewan and Dr. Allen, formerly of that University, are both of the opinion that there is practically no arable land available for settlement. Moreover, they are of the opinion that a minimum of 3 million acres in the southern part of the province which is, or has been, occupied must be permanently taken out of wheat growing. This involves a shift in the location of farm families for whom new homes must be found. It is maintained that it is extremely difficult to find suitable locations for those who are abandoning their farms. It is clear, however, that if there are small areas available for settlement they are located in the grey wooded soil belt and are subject to the same hazards and costs of settlement as for similar soils in Alberta.

The Hudson's Bay Company, the Canadian Pacific Railway Company and the members of the Dominion Mortgage and Investments Association have altogether about 1.8 million acres of unoccupied land of which 1 million acres is classed as farming land. This is equivalent to a little over 6,000 quarter sections which will accommodate, at four persons to the quarter section, 24,000 people. In addition the provincial government holds 300,000 acres (100,000 acres of provincial land and 200,000 acres of school land), or 1,900 quarter sections of unoccupied commercially productive provincial and school lands.[22] This would accommodate an additional 7 to 8 thousand persons. The Minister of Natural Resources of the

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(22) There are in addition, 365,000 acres of commercially productive provincial and school lands under lease.

Province of Saskatchewan reports that "there is no land suitable for agriculture in the unsurveyed part of the province, except a few scattered small areas, and these are not sufficient in any district to provide for a self-sustaining settlement." The commercially productive provincial lands (100,000 acres) is the last of the homestead lands. "It has generally been reported a poor second to third grade type. Much of it supports fair to poor stands of timber and is comparatively light in texture.....No commercial crops of any great value could be produced therefrom for three to five years at least, and commercial crops will not be sustained for any length of time without a greater diversification of farming practice than is commonly to be found in this province." Of the 200,000 acres of commercially productive school lands, 80,000 acres is considered to be "a good second class" of agricultural land. The balance (120,000 acres) is of the same type as the 100,000 acres of vacant provincial lands described above. The commercially productive school lands under lease (331,000 acres) are, on the whole, somewhat inferior in quality to the 80,000 acres mentioned above.(23)

(iii) Manitoba

The best lands in Manitoba have been occupied long ago and only inferior wooded soils are left. These unoccupied lands lie mainly in the south-east corner of the province, in the inter-lake district and in the area west and north of the lakes. In general, they consist of bush, muskeg, rock outcroppings and small areas of arable land.

The Hudson's Bay Company, the Canadian Pacific Railway Company and the members of the Dominion Mortgage and Investments Association hold 263,000 acres of unoccupied land, of which 112,000 acres are classified as farming land. This is the equivalent of 700 quarter sections and might accommodate 3,000 people. Of a total of 4 million acres of Crown lands in the province about 1 million acres is considered by the Lands

(23) Information obtained from W. F. Kerr, Minister of Natural Resources, Province of Saskatchewan.

Branch to be suitable for immediate settlement and 1.5 million acres suitable for settlement in the future. "The lands classified as suitable for immediate settlement are generally those situated in settled districts which are provided with roads, schools, and other municipal facilities.....The lands classified as not suitable for immediate settlement are lands which are considered suitable from an agricultural point of view but, due to location, it is not considered advisable to have them placed on the market for the present."(24) The provincial lands are located in the south-east corner of the province, in the inter-lake area and in the north-western part. Of the 1 million acres designated as suitable for immediate settlement over 50% is classed as agricultural land. Dr. Newton estimates that only about 30% of the land in the inter-lake area is satisfactory, or marginal for cultivation. On the assumption that the land already occupied is, on the whole, the best in the region, it seems reasonable to suppose that much less than 30% of the unoccupied portion can be profitably cultivated. An examination of the location of unsold Hudson's Bay Company lands confirms this opinion. The lands held by this company are almost entirely in the south-east corner of the province, in the inter-lake area and west of the lakes. A large proportion of the original grant in these areas is still in the hands of the company. In view of the fact that the province has been thoroughly prospected for agricultural land this suggests that the remaining areas are very inferior or quite unsuitable. Furthermore, parts of these areas have been settled and abandoned, and other parts, where settlement persists, are "problem" areas.

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(24) Information obtained from J. S. McDiarmid, Minister of Mines and Natural Resources, Province of Manitoba.

(c) Summary - Possibilities of further agricultural settlement and increases in farm population

In the preceding analysis an attempt has been made to set out the physical characteristics, the status of agricultural development and the population possibilities of each soil zone and province. At this point the situation with respect to the region as a whole will be summarized. Dr. Newton's estimate of the land area in the Prairie Provinces suitable for agricultural settlement has been used as the basis for the conclusions stated above with respect to the population possibilities of each soil zone. These conclusions are supported by the information obtained by correspondence with the Hudson's Bay Company, the Canadian Pacific Railway Company, the Dominion Mortgage and Investments Association, and the various provincial governments with respect to their present land holdings. Some detail as to these land holdings has been set out above. Dr. Newton's estimate of the amount of arable land, which is the best that can be made from available information, is derived from "the published and unpublished reports of soil, land-classification and geological surveys, from surveyors' notes, from correspondence and interviews with those familiar with particular areas and from personal inspection."(25) The details of this estimate are set out in Table I. Of a total area of some 167 million acres included in the survey there are some 107 million acres of land in the Prairie Provinces considered suitable for agricultural settlement, suitability being defined in terms of soil and topographical characteristics and not in terms of climate. Deficient rainfall may render some arable lands unsuitable for grain growing. The area lying within the Precambrian Shield and certain wooded areas in northern Saskatchewan and Alberta, considered suitable for forest reserves only, are

(25) Mackintosh, Op. Cit., pp.206-207.

excluded from the survey. Grazing lands and wood lots are not included in the estimate. "The primary purpose of the estimate given.....is to furnish information concerning the quantity of land suitable for settlement in the immediate or near future and under conditions similar to those which have obtained over the last decade. It is considered that both land classed as satisfactory for cultivation and marginal for cultivation may reasonably be made available for settlement."(26) Dr. Mackintosh estimated that of the 107 million acres of arable land at least 20 million acres "reasonably accessible, with larger areas of woodland and pasture, remained in 1931 available for settlement".(27) The occupied acreage increased by 3.5 million between 1931 and 1936, while the improved acreage increased by 1 million. Therefore, there is probably not more than 18 million acres of arable land still available for occupancy, nearly all of it being in the grey soils zone. However, this land cannot be settled quickly. The soil is inferior; it is wooded, and the suitable lands are in isolated patches. Only by planned and controlled settlement can heavy individual and public losses be avoided.

Eighteen million acres is the equivalent of 67,500 farms of the average size found on that type of soil. Assuming a population density similar to that now found in those zones (six persons per farm) this would accommodate a rural population of, say, 400,000 persons.(28) However, an increase in occupied acreage between 1921 and 1931 of 22 million acres (of which probably not more than 18 million acres were arable)

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(26) Ibid., p.233.

(27) Ibid., p.234.

(28) Density rural population by soil zones, 1936.

	Number of persons	
	Per occupied quarter section	Per farm
Light brown soil zone	1.0	4.1
Dark brown soil zone	1.5	4.6
Black soil zone	3.0	5.4
Grey soil zone	3.5	6.2
Total area		5.2

was associated with an increase in rural population of 216,000. On the basis of past experience, then, it might be said that the 18 million acres of arable land still available, will accommodate not more than 200,000 to 250,000 additional people in rural occupations unless a lower standard of living be acceptable to the new settlers.(29) There would also be some increase in the urban population of Canada associated with this rural increase. It is argued below that, in the main, such increase will occur in urban centres outside the Prairie Provinces.(29a) It seems clear that there is little prospect of the land already occupied accommodating a larger rural population. In fact in the brown soils zones some reduction of rural population seems to be called for. Mechanization and a tendency toward larger farms will intensify the decline. Only in the irrigated sections of the brown soil zone does a greater density of population appear to be possible.

2. Mining and Forestry

(a) Mining

Over 90% of the total value of mineral production in the three provinces is derived from metallic minerals and fuels. The largest single item is coal. Copper and gold are next in importance (in terms of value of product), then natural gas and crude petroleum. The Prairie Provinces produce about 90% of the Canadian production of petroleum, and about one-third of the Canadian production of coal and natural gas. For the balance of the minerals the production is, in general, 15%, or less, of the total Canadian production.

The possibilities with respect to the further development of mining in the field of metallic minerals are uncertain. The northern and eastern portions of Manitoba and the north-eastern portion of Saskatchewan, as well as the North West Territories, are underlain with the same geological formations as the metal-producing areas of Ontario and Quebec. Consequently, there may be considerable expansion in mining in

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(29) Dr. Wyatt, Professor of Soils, in the University of Alberta suggests a possible increase in the rural population of the wooded areas of Alberta alone, over the next 25 years, of 200,000 to 250,000 people. As the bulk of the available land is in Alberta the increase in rural population through settlement of the wooded areas will be largely in that province.

(29a) See infra, pp. 41-46.

these areas, in which case there will be considerable stimulus to the distributing centres in all three provinces, as well as to local agriculture. Expansion of the coal industry of Alberta depends mainly on the extension of markets in central Canada, the main obstacle to which is the costly haul from the west to Ontario and Quebec. At present Alberta's potential production of crude oil is about sufficient to supply the three Prairie Provinces, but output is being controlled by the larger companies operating in the field. Apart from the initial boom associated with exploration and development, it does not appear likely that expansion in mining in the Prairie Provinces will provide the basis for a much larger population in the region. The net value of production in the mining industry in these provinces increased from $33.6 millions in 1921 to $41.6 millions in 1936, an increase of 24%, and the number gainfully employed in mining increased from 9,302 to 11,772, or 29%, in the same period.(29b) It is apparent that the number employed in the industry is not large, and that it will require a very considerable increase in mining to materially increase the number directly employed. Account must also be taken of the influence of mining development on the demand for materials and consumption goods, and, hence, on employment in the industries supplying these goods. It is apparent that in this respect also it will require a great development in mining to have a material influence on the further development of these subsidiary industries. The rate of depletion of old mines is also a factor in that some rate of new development is necessary to maintain present employment in the mining industry.

(29b) Dominion Bureau of Statistics, Annual Report on the Mineral Production of Canada, 1936. (1938).

(b) Forestry

The lumber industry in the Prairie Provinces is relatively small and is dominated by the small portable mill producing for the local market. Many lumber companies have been established and operated for a short time. This is due in part to the fact that there are few large continuous stands of timber capable of sustaining prolonged production. This accounts also for the predominance of the small portable mill. "There have been few efforts made to establish sawmills with a view to permanent operation.....Consequently, the lumber industry, far from being a stabilizing influence in the economy.....has had the reverse effect.....The general tendency, as far as the larger operations are concerned, has been to attract settlement to the vicinity of a mill and subsequently to close down and move elsewhere. With respect to small portable mills this aspect of the situation does not arise, since they depend on labour locally recruited, and are usually operated as a source of revenue supplementary to that yielded by the farms of their owners."(30) While the larger mills ship to

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(30) J.D.B. Harrison, Forests and Forest Industries of the Prairie Provinces (Ottawa 1936) pp.57-58.

points outside the districts in which they operate,most of the small portable mills do custom work for local settlers. There is one paper mill in the Prairie Provinces with sufficient capacity to meet any expansion in demand that is likely to occur in the immediate future.

Apart from a major boom in the construction industry, there seems little prospect for the forestry industries supporting any material increase in population. The structure of the industry and the character of the forest resources imply that the industry will be carried on in close association with agriculture, and will provide an income supplementary to that derived from agriculture.

3. Probable Population Trends in the Urban Centres

The development of urban communities in western Canada has been mainly in relation to the growth of agriculture. Moreover, agriculture will continue to dominate the economic life of the region and if it is to be expected that growth in this industry will be moderate in the future, there is little basis for considerable further expansion in urban activities. Many of the economic activities associated with urban communities were built up in terms of a continued expansion and consequently were over-developed in terms of stabilized agriculture. This is particularly true of the construction and distributive activities. It will be argued here that there is little prospect of the urban communities in western Canada absorbing a great increase in the population as the outlook for expansion in these centres is relatively less favourable than it is elsewhere in Canada. The day of rapid and great expansion in the west is past and the future trend will be toward internal readjustment and stability. It follows that the natural increase in the population of the prairie region must seek employment in greater numbers in the industrial centres of Canada elsewhere than in the Prairie Provinces. It should be reiterated that this conclusion is predicated on the

assumption that there will not be a marked expansion in the external demand for Canadian agricultural products.

The development of western urban centres as distributive channels depends mainly on expansion in agriculture and mining with their demands for capital and consumers' goods. In so far as agriculture tends to become stabilized the demand for capital equipment will be mainly a replacement demand and the existing distributive machinery is probably sufficient to handle it. The greater mechanization of farms, in so far as such development occurs, will tend to raise the demand somewhat above one of mere replacement, but again the distribution set-up is probably sufficient to meet this situation. It is to be expected that a large part of the moderate increase in agricultural population which may occur in the future will be much nearer a self-sufficient level than in the past and their demands for industrial products will not be as great as are those of residents engaged in commercial agriculture on the prairie plains. A marked increase in mining activity will, of course, have repercussions in those urban centres favourably situated with respect to the location of mines. The prospects for development in this field are, however, uncertain.

The possibility of expansion associated with the processing of agricultural products does not appear very promising. Meat packing and flour milling capacity is probably sufficient to take care of a considerable increase in output, with the employment of a few additional people. The manufacture of dairy produce may be susceptible of a moderate expansion, if additional outlets for the produce can be found outside the Prairie Provinces.

Activity in the construction industry in the Prairie Provinces in the past has been associated largely with agricultural expansion. This was particularly true of the activity in construction which occurred during the periods 1900 to 1913 and 1925 to 1931. In view of the relatively

moderate expansion to be expected in agriculture in the future it appears that the construction industry itself will be stabilized at a level sufficient to meet the requirements for urban residences, the replacement of farm buildings and possibly also to meet a slightly increased demand for industrial equipment. Apart from this the demand of governments for road construction and other public works would seem to offer the most important stimulus to the construction industry. Many of the industrial activities of the region are ancillary to the construction industry and consequently advancement in these activities will be determined largely by the future of construction.

Apart from the processing of agricultural and other primary products, the manufacturing industries in the Prairie Provinces are mainly those producing for the local market and expansion in their output is largely dependent on an increase in the local demand. The establishment of new large-scale industries is handicapped by the prior establishment of these industries in central Canada and by the limitations in the supply of raw materials, especially iron ore, and the absence of a large market close at hand. Moreover, the westward shift of manufacturing, similar to the trend in the United States, is limited by the existence of a large unoccupied territory between the markets of central Canada and the western region.

The service industries - financial, merchandising, etc.- are adequate to handle the requirements of a stabilized agriculture. The tourist trade, however, could be stimulated by the building and improvement of highways.

4. Recent Movements and Trends in the Population of the Prairie Provinces

During the decade 1921-1931 the increase in the population of the Prairie Provinces was 397,447. As the natural increase in the same period was 356,729, it is clear that there was a net inward migration of 40,718 during the decade. In other words, the Prairie Provinces in those 10 years were able to absorb about 12% more than the natural increase.

Table III

Population Movements, 1921-1931 and 1931-36
(Prairie Provinces)

	1921-1931	1931-1936
Total Increase in Population	397,447	61,362
Natural Increase	356,729	165,442
Net Immigration(+) or Emigration (-) from Region	+40,718	-104,080

Source: The Prairie Provinces in their Relation to the National Economy of Canada, p. 12, and information supplied by the Dominion Bureau of Statistics.

In the following 5 years, however, the net increase was only 61,362, whereas the natural increase for the period was 165,442. Thus there was a net outward migration of 104,080 during the period, the Prairie Provinces being able to hold only the equivalent of 37% of the natural increase. So far from providing an outlet for surplus populations from elsewhere, the prairies were sending out a surplus population of their own. There is no assurance that the net outward movement of 1931-36 had been checked.(30a)

Population increases in Canada are becoming to an increasing extent associated with urban development.

Table IV

Estimated Net Rural-Urban Migration in the Prairie Provinces, 1921 - 1931

	Rural-urban migration as % of 1921 rural population	% Increase in farm acreage 1921-31	% Increase in gainfully employed in agriculture, 1921-1931
Number			
Manitoba +31,100	8.9	3.64	7.2
Saskatchewan +33,000	6.1	26.60	17.1
Alberta - 2,400	0.6	33.29	27.3

Source: W.B.Hurd and Jean C. Cameron, Population Movements in Canada, 1921-1931, (The Canadian Journal of Economics and Political Science, May, 1935), p.225.

(30a) It should be noted that there is also the immigration into the Prairie Provinces to be taken into account. The Dominion Bureau of Statistics has estimated that during the ten year period 1921-1931 about 508,000 people came into the Prairie Provinces from outside Canada. Therefore, about 468,000 people, who during this time came to the region, failed to establish permanent residence therein. Similarly, it is estimated that about 24,000 people came into the Prairie Provinces from outside Canada between 1931 and 1936. Therefore, during this period a total of about 128,000 people intending to establish residence in the region failed to do so.

Figures for net rural-urban migration in the Prairie Provinces as showm in the above table emphasize the improbability of the farms of the Prairie Provinces providing a basis for substantially increased populations. In the decade 1921-1931 in both Manitoba and Saskatchewan the rural areas were unable to absorb the natural increase in the rural population, and that was in spite of an increase in farm acreage of 26.60% in Saskatchewan and 3.64% in Manitoba. Only in Alberta, where the increase in farm acreage was 33.29% and the increase in the number gainfully employed in agriculture 27.3% was the natural increase fully absorbed, with a small margin (2,400) to spare. "Alberta was the only province [in Canada] in which the growth of rural industry was adequate to take care of additions to its rural population equivalent to its rural natural increase."(31) There is evidence that the ability of the rural areas of the Prairie Provinces to provide a living for the natural increase is growing more difficult rather than the reverse, a consideration highly relevant to current discussions about immigration and land settlement. Lacking momentous changes in the international trade situation and external demand for farm products, there appears to be little prospect of the rural part of the Prairie Provinces being able to absorb surplus populations from other areas.

Recent trends in population growth and in population movements in the Prairie Provinces have a significant bearing on the question of western expansion. The decline in the rate of growth of population in the Prairie Provinces, the net rural-urban migration, and the numbers emigrating from the prairies suggest that the region is, under existing circumstances, relatively unattractive for new settlement. Apart from the fact

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(31) W.B. Hurd and Jean C. Cameron, Population Movements in Canada, 1921-1931: Some Further Considerations. (The Canadian Journal of Economics and Political Science, May 1935), pp.225-228.

that changes in the rate of growth of the population are associated with agricultural depression and prosperity, the declining trend implies that even under favourable conditions future increases im population will be moderate.

Table V

Percentage Increases in the Population of the Prairie Provinces, by 5 Year Periods, 1901-1936.

	Prairie Provinces	Manitoba	Saskatchewan	Alberta
1901-1906 -	92.76	43.29	182.39	153.62
1906-1911 -	64.24	26.17	91.04	102.11
1911-1916 -	27.86	20.04	31.56	32.63
1916-1921 -	15.19	10.16	16.93	18.53
1921-1926 -	5.69	4.74	8.35	3.25
1921-1931 -	13.84	9.56	12.31	20.41
1931-1936 -	2.6	1.7	1.0	5.6

Sources: The Prairie Provinces in their Relation to the National Economy of Canada, p.3, and Census of 1936.

Chapter IV. Problems of Readjustment in the Agricultural Economy of the Prairie Provinces.

1. The Variability of Income.

The extreme variability of farm income on the prairies is a factor which discourages increasing the density of population of the area up to the top limits which may seem to be feasible in the more prosperous cycles. If the prairie farmer is to be in a position to survive depressions without undue outside assistance he will require reserves of all kinds, including reserve acreage. The variability of farm income arises not only from the fluctuations in gross income due to drought, rust and other agricultural evils, but also variations in prices. Equally important is the relative inflexibility of farm costs, especially interest and taxes. The attached table shows the variation in a number of items in the income from prairie agriculture, and contrasts the average for the period 1926-28 with that for 1930-37. The fluctuation between two single years, 1928 and 1932 is also shown.

For the Prairie Provinces as a whole, gross cash income fell from 100 in 1926-28 to 40 in 1930-37, but cash operating expenses fell only from 100 to 70, and interest on mortgages and other debt meanwhile rose from 100 to about 110. In 1926-28 the prairie farmer had $410 million net cash income to meet an interest bill of $43.5 million, while in 1930-37 he had only $121.5 million to meet an interest bill of $48 million. Average net cash farm income fell 80% from 1926-28 to 1930-37. Net cash income in the single year 1932 was less than 5% of what it was in the peak year, 1928.

These figures are even more striking for the Province of Saskatchewan, where gross cash income (the average for 1928-30 compared with the average for 1930-37) fell from 100 to 32, while cash operating expenses fell from 100 to 67. The result was that net cash income fell from $198 million to $20 million, while

in the year 1932 there was not sufficient net income to pay the mortgage interest and nothing for living expenses which had to be met out of borrowings, past savings, consumption of capital and government relief.

TABLE VI

Farm Cash Income in the Prairie Provinces (a)

(Thousands of Dollars)

Manitoba

	1926-28 Av.	1928	1930-37 Av.	1932	Percentage change 1930-37 from 1926-28.
Gross Cash Income	83,371	82,088	42,848	28,420	- 48.6
Less Cash Operating Expenses ex.Interest(b)	29,192	30,526	18,292	17,147	- 37.3
Net Cash Income before Interest	54,179	51,562	24,556	11,273	- 54.7
Est.Interest on Mortgages and Other Debt.	6,395	6,669	6,759	7,191	+ 5.7
Net Cash Income	47,784	44,893	17,797	4,082	- 62.8

Saskatchewan

Gross Cash Income	292,817	319,475	93,148	73,444	- 68.2
Less Cash Operating Expenses ex.Interest (b)	71,905	75,172	48,041	48,118	- 33.2
Net Cash Income before Interest	220,912	244,303	45,107	25,326	- 79.6
Est. Interest on Mortgages and Other Debt	22,717	24,118	24,985	26,893	+ 10.0
Net Cash Income	198,195	220,185	20,122	-1,567(c)	- 89.8

Alberta

	1926-28 Av.	1928	1930-37 Av.	1932	Percentage change 1930-37 from 1926-28
Gross Cash Income	180,143	210,791	86,874	67,242	- 51.8
Less Cash Operating Expenses ex. Interest (b)	45,872	48,633	35,011	33,162	- 23.7
Net Cash Income before Interest	134,271	162,158	51,863	34,080	- 61.4
Est. Interest on Mortgages and Other Debt	14,375	15,468	16,259	17,545	+ 13.1
Net Cash Income	119,896	146,690	35,604	16,535	- 70.3

Prairie Provinces

Gross Cash Income	556,331	612,354	222,870	169,106	- 59.9
Less Cash Operating Expenses ex Interest (b)	146,968	154,331	101,344	98,427	- 31.0
Net Cash Income before Interest	409,363	458,023	121,526	70,679	- 70.3
Est. Interest on Mortgages and other Debt	43,486	46,255	48,003	51,629	+ 10.4
Net Cash Income	365,877	411,768	73,523	19,050	- 79.9

(a) Based on estimates prepared by Mr. J.R. Rutherford of the Dominion Bureau of Statistics and the Research Staff of the Royal Commission on Dominion-Provincial Relations.

(b) Operating expenses (exclusive of depreciation) incurred whether paid for in cash or borrowed.

(c) Net cash loss.

2. The Effects of Depression and Drought.

The extreme fluctuations in income are due in part to climatic variations and in part to economic fluctuations. This was particularly apparent in the period following 1929. The separation of the effects of drought and depression presents difficulties and involves certain assumptions, but an approximation may be reached by using variations in the production of wheat as a measure of the effects of drought, and variations in its price as an indication of the weight of the depression.(31a) The average annual production from 1921 to 1929 was 375 million bushels, and was 286 million bushels from 1930 to 1937. The farm price averaged 92 cents per bushel between 1921 and 1929 and 54 cents per bushel between 1930 and 1937.(31b) Assuming the average yield for 1921 to 1929 to have prevailed during the later period, gross farm income calculated at average price would have been $1,600 millions, whereas, actual gross income was $1,231 millions. It might be said, then, that the drought reduced farm income over that eight-year period by roughly $370 millions. Making allowance for the fact that in 1930-1937 wheat acreage was some 13% greater than in 1921-1929, gross farm income for the period 1930-1937 calculated at average price would have been $1,810 millions, whereas, actual gross income was $1,231 millions. Hence drought reduced farm income over the period by roughly $580 millions. It is true, of course, that rust and insects reduced farm income in certain years and that drought was not wholly responsible for reduced yields. It might be argued that if production had been maintained prices would have been lower than they were, and farm income would have been somewhat lower than estimated.(31c) Assuming the average price for 1921 to 1929 to have prevailed over the later period, gross farm income derived from

(31a) The production and price of wheat, of course, are not the only elements in farm income. For the purpose in hand, however, these data are the most usable.

(31b) These are weighted averages, weighted by volume of production in the respective years.

(31c) For the purposes of this study further consideration of this point seems unnecessary. It should be noted, however, that the point is controversial and appears to involve two considerations: (1) the possible influence on world price of variations in the Canadian production of wheat, and (2) the possible influence on the spread between the price of Canadian wheat and the price of other wheats of variations in Canadian production.

actual production would have amounted to $2,093 millions, while actual income was $1,231 millions. The decline in price, therefore, accounted for a reduction in income of approximately $862 millions. The total loss due to both drought and low prices amounted to about $1,442 millions.(31d) Thus it may be said, with a reasonable degree of accuracy, that of the losses sustained by wheat growers in the Prairie Provinces between 1930 and 1937 some 60% was due to economic causes and 40% to natural causes.

Low prices combined with good yields may produce so little income that interest and depreciation cannot be provided, but, in general, relief and agricultural assistance are unnecessary. Crop failure, however, involves assistance from governments and is of great significance in the problem of government finance. The effects of drought upon public finance are illustrated by the following comparison of municipal advances per capita for direct relief and agricultural assistance in eight municipalities in Saskatchewan-four of them in the heart of the drought area and four of them in areas relatively little afflicted by drought.

TABLE VII

Agricultural Aid and Relief Advances per Capita in eight Municipalities in Saskatchewan, as at April 30th, 1937.

Drought Area Municipalities:	
Browning #34	$176.28
Benson #35	231.33
Gravelbourg #104	322.32
Glen Bain #105	411.15
Non-Drought Area Municipalities:	
Garry #245	3.76
Ituna Bon Accord #246	7.43
Star City #428	1.10
Carrot River #429	1.63

It is evident that to place the existing agricultural population on a relatively self-supporting basis, in the face of fluctuations which it is known will recur in the future, certain physical and financial readjustments are essential. It is not maintained that an agricultural population can be completely self-supporting in face of a succession of complete crop failures. It does seem likely, however, that certain adjustments can be made which will somewhat ameliorate the distress arising from drought and low prices.

(31d) The method of calculation employed gives rise to a small error in the amount of the total loss which, however, does not impair the conclusions which are approximate in any case.

In certain respects agriculture can be better adapted to the climatic and soil characteristics of the region. Adaptation involves the two-fold problem of the uses to which the land is to be put and the techniques that are to be applied to it. Adjustments in land utilization will in turn involve adjustments in the distribution of the population and in social and governmental organization. Indiscriminate settlement in the past has meant that some areas of land have been put to uses which should not be continued. This is particularly true in the light brown soil zone. A redistribution of some part of the population in the worst of the region is essential to provide stable agricultural organization in the dry areas. Some portion of the unoccupied lands in the north would be used by emigrants from the south. While it seems reasonably clear that if some portion of the population in the drought area were to shift they would be better off as individuals, there is at present sufficient capital equipment in the form of railways, schools, roads and other public facilities to accommodate a larger population. To carry this burden requires a larger rather than a smaller population. The financial costs of resettlement are not merely those connected with moving and establishing the people in new homes, but also those involved in the overhead of equipment which will be less completely utilized and will be reflected in government deficits, and in defaults. The problem is whether, in the long run, it is more or less profitable to write this off and attempt an adjustment of existing institutions to a permanently smaller population.

In so far as wheat is to be grown in the west, it is necessary to adopt, as far as possible, agricultural practices which are suitable to the environment and will preserve the crop-producing abilities of the soil. It is necessary to adopt practices which conserve the maximum amount of moisture and at the same time do not predispose the soil to drifting. Wind erosion has been serious in some parts of the west in recent years. "In many instances farmers have lost their entire crop and have had the fertility of their land enormously reduced,

certainly for many years and possibly permanently.[32] This problem is being attacked, largely through the Experimental Farms, in an attempt to devise cultural practices which combine dry farming and prevention of wind erosion.

The problem of water conservation is also of considerable importance, the limiting factors being amount of water available, topography, and (a factor not unrelated to the first two) cost. Topography is such that it seems doubtful if large-scale irrigation projects are possible, except at great cost. There remain the small-scale water conservation projects such as small irrigation schemes, dug-outs for stock watering, and so on, which are now being developed under the Prairie Farm Rehabilitation Act.[33] The main object of such developments is to provide a greater degree of self-sufficiency for the farm, or ranch, unit.

Moreover, the problem of financial adjustment, with respect to the individual farmer, must not be ignored. Income is variable, while costs are relatively inflexible. Variability of gross income is due in part to the prevalance of drought conditions, in part to the fluctuations in price. Relative fixity of costs implies a net income which is even more variable than gross income. Inflexible costs arise mainly out of the institutional structure of our economy. It is this fact that has given rise to proposals for a more flexible instrument of finance than the mortgage, for the provision (by the individual or by government through taxation) of reserves, for crop insurance, and has led to the various schemes of debt adjustment in operation.[33a]

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(32) Hopkins, et al, Soil Drifting Control in the Prairie Provinces, p.6.

(33) G.E. Britnell, The Rehabilitation of the Prairie Wheat Economy, (The Canadian Journal of Economics and Political Science, Nov. 1937), pp.511-517.

(33a) See Appendix.

3. Farm Debt - the need for a more Flexible Instrument than the Mortgage.

Rapid expansion of agriculture in western Canada involved the assumption of a large volume of indebtedness in connection with the purchase of land, implements, stock, and building materials. The mortgage has been the chief instrument of farm finance and the large volume of borrowing implies heavy fixed charges to be met out of an income which is extremely variable. An estimate has been made of the amount of indebtedness, under various categories, of the farmers and urban residents of the Prairie Provinces. This estimate, which is believed to be conservative, shows farm mortgages and agreements of sale outstanding to the amount of over $500 million at the end of 1937. Other debts amounted to nearly $280 million making a total farm debt of about $800 million. These outstanding amounts are net figures after allowance has been made for considerable amounts that have been written off. Interest charges on the mortgages and agreements of sale alone, calculated at 6%, would amount to over $30 million annually. The burden of this rigid interest cost fluctuates greatly from year to year. Since 1928 it has varied from less than a tenth to nearly a third of the total gross cash receipts (8% in 1928, 31% in 1932 and 14% in 1937). It is, however, net operating income, not gross income, out of which interest on debt and the living expenses of the farm family have to be met. Between 1928 and 1932 the share of the net cash operating income taken by interest rose from a tenth to nearly three quarters. In 1937, after considerable amounts had been written off and interest rates reduced, it still amounted to about one quarter of net cash operating income. In years of good crops and higher prices, the interest cost can be met relatively easily; in years of low income, resulting either from poor crops, low prices, or a combination of both such as was experienced during the depression,

TABLE VIII

ESTIMATED AGRICULTURAL AND URBAN DEBT IN THE PRAIRIE PROVINCES AS AT DECEMBER 31, 1937 (a)

(Millions of Dollars)

	MANITOBA	SASKATCHEWAN	ALBERTA	PRAIRIE PROVINCES
	$	$	$	$
AGRICULTURAL DEBT				
Mortgages and Agreements of Sale	81.0	279.5	167.0	527.5
Relief and Agricultural Aid Advances	2.0 (b)	37.0	11.5	50.5
Tax Arrears	7.5	27.0	22.0	56.5
Implement Companies	5.0	16.0	9.0	30.0
Oil Companies	0.2	3.0	0.6	3.8
Retail Merchants and Liens	5.0	40.0	30.0	75.0
Banks and Finance Corporations and miscellaneous (c)	8.0	30.0	25.0	63.0
	108.7	432.5	265.1	806.3
URBAN DEBT				
Mortgages and Agreements of Sale	42.0	16.0	11.0	69.0
Tax Arrears (d)	7.0	9.0	7.5	23.5
Retail Merchants	2.0	5.0	2.5	9.5
	51.0	30.0	21.0	102.0

(a) Estimated from information supplied by mortgage companies, land companies, insurance companies, implement companies, oil companies, retail merchants associations, finance companies, the provincial governments and from the 1936 Census of Agriculture of the Prairie Provinces. The amounts shown include arrears of interest payable, but exclude write-offs of both principal and interest reported under debt adjustment legislation and reported write-offs otherwise arranged.

(b) Estimated.

(c) The outstanding accounts of finance corporations could not be separated as between urban and rural.

(d) As at December 31, 1936.

it becomes an almost impossible burden. Defaults and the accumulation of arrears are the ways of escape. Under these circumstances there is a very strong case for the use of a more flexible instrument of farm finance than the mortgage - an instrument which will give the "lender" a proprietary share in the income of the farm enterprise rather than a fixed annual claim against it.

Provincial and municipal governments are, of course, operating under the handicap of the same ill-mated pair - fluctuating income and heavy overhead costs. Since an instrument of government finance providing for a variable annual payment does not seem feasible, the only alternative, if it is desired that provincial and municipal governments finance their operations out of their own resources, is the provision, to a greater extent than in the past, of capital expenditures out of current revenues when they are available.

4. The Changed Situation in the Wheat Market.

While it is true that Canada became an important exporter of wheat during the first decade of the 20th century, she did so in response to increased world demands of a permanent character. During the War period, however, the shift in her position in the export market was, in large part, at the expense of the exports of other countries, and, as it proved, was of a temporary character. Therefore, Canadian wheat producers were placed in a more vulnerable position than formerly not simply because production increased absolutely, but more particularly because of the shift in the relative position of Canada with respect to the world's export trade in wheat. When countries which had temporarily retired from the export markets returned, and other countries determined to provide for their own requirements out of domestic production, the full force of Canada's unbalanced position became evident. Figures published by the

Secretariat of the Wheat Advisory Committee in January 1938 show the nature of the shifts which occurred in world wheat production and export trade during the War. Wheat acreages in the four overseas exporting countries were as follows in 1909-1913 and 1922:

	1909-1913	1922
Argentina	16.05 m.acres	16.25 m.acres
Australia	7.60 " "	9.76 " "
Canada	9.95 " "	22.42 " "
United States	51.99 " "	67.17 " "
Four Overseas Exporters	85.59 " "	115.60 " "

On the other hand, acreage declined in European exporting countries (Poland, Lithuania, Danube Basin and U.S.S.R.), from 97.17 million acres in 1909-1913 to 54.86 million acres in 1922, and in 19 European importing countries from 50.46 million acres to 45.92 million acres during the same period. The shifts in the export positions of the four overseas exporting countries are shown in the following table.

TABLE IX

Percentage Share of World Total Net Exports Obtained by Each Exporting Country, 1909-1914 and 1922-1923.

	1909-1914	1922-1923
Argentina	12.3%	19.4%
Australia	8.0	7.0
Canada	13.9	39.0
United States	16.0	28.2
Four Overseas Exporters	50.2	93.6

The percentage share of the total net export trade declined for seven European expotters from 40.5% to 1.4% and 19 European importers obtained 36.9% of their requirements from abroad in 1909-1914 and 40.1% in 1922-1923. Russia and the Danubian countries dropped out of the export market; the European importers became more dependent on outside supplies; the overseas exporters, Canada in particular, expanded acreage to make up the deficiency. This shift in Canada's export position implied a higher degree of specialization in wheat in western Canada and a greater dependence on export markets and world prices.

The renewed expansion in agriculture after 1926 was facilitated by the fact that Russia had not yet re-entered the export market. Moreover, while the production of wheat in the European importing countries was increasing, the high yields of the later period had not yet been attained. Until 1929 the export of Canadian wheat was well maintained, and the Winnipeg price remained around $1.50 per bushel. Mechanization of farming contributed to expansion, increase in the size of farms, and lower costs.

While Canada's capacity to produce wheat increased up to 1931, the world market for wheat shrank considerably in the following years. The following table shows the extent of this shrinkage during the period 1932-1937:

TABLE X

World Net Imports of Wheat and Wheat Flour
(Millions of Bushels)

	United Kingdom and Irish Free State	Continental Europe	Ex. Europe	Total
1909-1914	217.7	326.7	98.0	643.2
1922-1927	224.4	373.1	128.5	740.2
1927-1932	236.3	373.9	159.4	780.7
1932-1937	225.8	170.8	126.8	543.6

Source: Report of the Royal Grain Inquiry Commission, 1938 (Ottawa, 1938) p.121

It is apparent that continental importations account for a large proportion of the decline. France, Germany and Italy had net average annual imports of 171.0 million bushels in 1927-1932, and only 35.0 million in 1932-1937.

The causes of this change in importation are to be found in part in the decreased purchasing power during the depression and in part in the restrictions which were placed upon the importation of wheat by the European countries. These restrictions, in the form of tariffs and import and milling quotas, were imposed for the purpose of maintaining a prosperous agricultural population, to protect domestic currencies, and to ensure independence of outside supplies in time of war. The net result is, of course, to make it more difficult for the exporting countries to market their wheat, and the large surplus recently accumulated has been disposed of only because unfavourable weather conditions in North America reduced yields.

The outlook for Canadian wheat in export markets depends largely upon prosperity in European countries and their willingness to relax the restrictions they have imposed on the importation of wheat. During the period 1927-1932 Argentina, Australia, Canada and the United States exported annually an average of 693 million bushels. Mr. Broomhall's estimate of world importers' requirements for 1938-39 is 548 million bushels. Under normal conditions Canada's exportable surplus will be about 300 million bushels. To dispose of this she will require about 60% of the probable export market. She has never acquired such a high proportion and in 1927-1932 had only 35% of the world total net exports. It appears that given yields similar to those prevailing during 1927-1932, there will have to be a considerable change in the import situation to absorb the available supply and in any case it appears that wheat growing has reached the limit of its expansion in terms of available markets.

Chapter V. Conclusions.

The material presented in this review affords no basis for the belief that the presently unexploited resources of the Prairie Provinces are capable of supporting large additions to the present population. This conclusion must be modified by the statement that the discovery of unsuspected resources on a vast scale, a revolution in farm technique, the breeding of a new drought-resistant cereal or grass, a profound change in the character of external markets and the development of new uses for western Canadian products or the evolution of a highly self-contained economy might materially alter the prospects. Assuming a continuation of present factors, however, it appears that the Prairie Provinces will not find it easy in the early future to support their own natural increase, and that any attempt to enhance the population by assisted immigration or land-settlement schemes would probably merely accentuate to that degree the present emigration. A period of adjustment to the climatic experience of the past decade and to the market probabilities of the early future appears inevitable.

The logic of the situation appears to call for further abandonment of wheat acreage in the sub-marginal arid and semi-arid areas (in favour of ranching), the extension of mixed farming in the park and grey soils, which may also involve reduction in wheat acreage, and the specialization of wheat production in the best lands of the brown soil zone, where it can be pursued to best advantage. The present trend toward more extensive farming on the short-grass plains, using power machinery to reduce costs, is likely to continue. Both the abandonment of dry sub-marginal areas and increased extensive farming in the best wheat lands will result in some depopulation, and the park and grey soil zones, together with the virgin areas capable of being exploited without undue expense, will be called upon to absorb the exodus from the other soil zones. Whether

they can do this as well as provide for their own natural increase is a question of some consequence. At all events it seems clear that no margin of any importance is left for an influx of peoples from other parts.

The limitation to population increases imposed by the available natural resources is accentuated by the serious economic problems confronting prairie agriculture. The solution of the problems arising out of the extreme variability of income, drought, debt and the restricted wheat market is not likely to be such as will promote expansion.

Appendix - Supplementary Note on Agricultural Debt Adjustment.

The rigidity of debt service charges for prairie agriculture, and the excessive proportion of net farm income required to meet them in years of low prices and light yields, have been discussed in the foregoing study. The existence of this burden of relatively inflexible debt charges during a period when farmers' net cash income declined so markedly, resulted in widespread inability on the part of farmers, especially those in the drought area, to meet their obligations and governments intervened. The following pages review the legislation adopted in the three Prairie Provinces from time to time. These legislative and administrative measures are a recognition of the breakdown of the fixed and regular payment system of farm finance. They made possible a scaling down of debts and interest charges, and introduced a certain amount of flexibility, without the debtor incurring the penalties of default. Most of the measures, however, were of a temporary and ad hoc nature and were designed to meet an immediate situation. They have done little toward introducing a system of farm finance which is in harmony with the economics of prairie agriculture and which is equitable to all the parties concerned.

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SASKATCHEWAN.

1. Debt Adjustment Legislation.

The first legislation dealing with the adjustment of debts in Saskatchewan was passed in 1914. This legislation gave the Lieutenant-Governor-in-Council special powers to authorize the postponement of payment of any debt, if necessary, for the protection of the property of those who had joined the army, or for the protection of those who suffered from a very poor crop in the southwest corner of the province in 1913. This legislation was renewed from year to year until 1926 and was administered by the Department of Agriculture.

During the session of 1928-29 the legislature passed "An Act to Facilitate the Adjustment of Debts", establishing a permanent bureau with a commissioner in charge under the Department of Agriculture. No powers of debt revision or postponement of payment were given the commissioner. He was to act as mediator between debtor and creditor in arriving at voluntary adjustments. A farm resident could, if he wished, transfer his crops to the commissioner to be handled and distributed by him for a period of not more than five years. In 1931 the legislation was amended to empower the commissioner, if it seemed to be in the best interests of the resident and his creditors, to issue a certificate prohibiting any action being taken against the debtor without leave of a judge of the district court or the consent of the commissioner. The commissioner began to receive appeals from other than farm debtors.

Legislation in 1932 amended and consolidated previous statutes. An important change in principle was introduced in this legislation, in that the creditor was now required to give the commissioner twenty days' notice of intention to take legal action. Under the former legislation the debtor initiated the appeal to the commissioner. Vendors were not permitted to take action under the personal covenant, but were restricted to

recovery of the article sold to the purchaser. Mortgagees were restricted to seizure of not more than one-third share of a debtor's crop, and from this one-third share the lessee, purchaser or mortgagor might deduct one year's taxes, provided they were paid directly to the municipality.

The Act of 1933 established a Debt Adjustment Board of three members. The Act, in effect, provided for a general moratorium since a creditor could not take action against a debtor until he obtained a permit from the Debt Adjustment Board to do so. Protection was provided any owner of land whether a resident of the province or not, and any business in the province except banks. Debts incurred subsequent to April 1st, 1933 were not subject to the terms of the Act.

The powers of the Board were extended in 1934 to restrict the actions of municipalities against debtors and to undertake compulsory debt adjustment. The Board, after reviewing the case, was to make a proposal of adjustment to the creditors. If this proposal were not accepted by the creditors, the Board could then confirm the proposal whereby the creditor could receive no payment on his claim until he accepted the reduction ordered by the Board. The legality of this provision was in doubt and the plan failed to operate. It was also provided in the Act that the Board could, if it saw fit, prohibit action under the personal covenant in foreclosures.

Legislation of 1934 established the present Board. It restored the notice of intention system whereby a creditor, before taking action to foreclose, must serve notice of intention to do so on the Debt Adjustment Board thirty days before commencement of such action. No action where the amount involved exceeds one hundred dollars and where the transaction took place prior to April 1st, 1933, can be commenced until the matter is investigated and allowed to proceed by the Board. This applies to sundry accounts and claims, actions under the personal covenant,

farm and urban foreclosures, farm and urban tax sales, actions under mechanics liens, repossession, and execution actions and sale after seizure. In the intervening time the Board investigates the case and if it sees fit may prohibit the action. The policy of the Board has been, where possible, to obtain co-operative adjustments between creditor and debtor.

The "Drought Area Debt Adjustment Act", 1937, is the legislative basis for a general reduction of debts involving the provincial government, the municipalities and the Dominion government as well as mortgagees and vendors. The details of the plan are outlined in the following section.

The adjustments that were arranged by the Saskatchewan Debt Adjustment Board between January 7, 1935, when the present Board came into existence, and March 25th, 1938 amounted to $1,335,847. This amount represents actual write-offs in connection with cases where the Board has received notice of intention to take action against the debtor. The amounts written off each year were:

1935	$ 592,733.
1936	416,316.
1937	249,589.
1938(to March 25th)	77,209.
	$ 1,335,847.

(A list of Saskatchewan Statutes dealing with debt adjustment is included at the end of this section. Information respecting the order of priority of charges on farm crops and on land is available in the submission of the Dominion Mortgage and Investments Association Part II, Appendices, and in special memoranda prepared by various departments of the Saskatchewan government.)

2. The Municipal Unit Voluntary Adjustment Plan.

In April, 1935, the Premier of Saskatchewan initiated an experimental scheme of general voluntary debt adjustment to be applied with respect to debts in the drought area. The scheme was scarcely under way when it was replaced by a more comprehensive plan of adjustment, the "Municipal Unit Voluntary Debt Adjustment Plan".

On September 28th 1936, the government of Saskatchewan announced an arrangement with the Dominion Mortgage and Investments Association to put into effect this voluntary plan. The principle underlying the plan was to supplement the individual adjustments which were being made under the debt adjustment legislation by a comprehensive general scaling down of debts in the drought area, and if possible, in the non-drought area as well.(1)

For the purposes of this arrangement the province was divided into three sections: (1) the drought, or "red", area, comprising 158 rural municipalities and local improvement districts; (2) the marginal or "blue", area consisting of 18 rural municipalities; (3) the rest of the province, or the "white" area.

The members of the Association agreed to reduce the rate of interest on agreements and mortgages to 6 per cent. over the whole province, as from January 1st, 1937.

In the drought and marginal areas the agreement provided for, in addition to a reduction of interest to 6 per cent., the cancellation of all unpaid interest on mortgages and agreements of sale to January 1st, 1935. The outstanding principal, plus unpaid interest for 1935 and 1936, was to be consolidated in a standard renewal agreement providing for payment over a

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(1) See, G.E. Britnell, "The Saskatchewan Debt Adjustment Programme", Canadian Journal of Economics and Political Science, August, 1937, pp.370-5.

period of ten years with interest at the rate of 6 per cent. Where the original contract called for annual cash payments, the renewal contract was to provide for annual payments of the interest and 5 per cent. of the principal with the balance due in the tenth year. Where the original contract specified crop share payments these terms were to be adhered to from 1940. Under both types of renewal agreement one-third share of the crop would constitute full payment during 1937 to 1939 inclusive. Consequently, the debtor could not be in default prior to 1940. Where the crop in any of these three years was less in value than 10 bushels per acre of No.2 Northern wheat the current taxes might be deducted from the creditor's share of the crop.

The members of the Association, in addition to reducing interest where there was an accumulation of interest arrears arising out of circumstances beyond the borrower's control, agreed to make such other adjustments as the circumstances warranted in the non-drought area. The mortgage companies state that in practice they are applying the same general adjustments in the "white" area as in the drought area. Reductions under the standard renewal agreement in the "white" area amount to $904,526 in so far as they have come to the attention of the Debt Adjustment Board. The total amount is probably much larger than this.

This agreement with the Dominion Mortgage and Investments Association left many mortgagees and vendors outside its scope. Legislation giving the government power to declare a moratorium against a creditor, made it possible to exercise pressure on these creditors who were reluctant to co-operate. The Debt Adjustment Board exercises similar pressure if their cases come before it for review.

Adjustments in the drought area were to be final. The provincial debt adjustment facilities were to apply only to those debts not affected by the renewal contracts, though the debtor still had access to the federal debt adjustment machinery,

with respect to his whole debt. Outside the drought area the provincial agency was still available, unless the renewal agreement was approved by the Debt Adjustment Board.

The provincial and federal governments agreed to cancel all relief and agricultural aid indebtedness in the drought area incurred during the fifteen years prior to January 1st, 1935,

The municipalities in the drought area agreed to cancel arrears of taxes and penalties, except those for 1935 and 1936, while the provincial government agreed to cancel arrears under the Public Revenue Tax to January 1st, 1935. As such tax cancellations made it difficult for municipalities to meet their own financial obligations some adjustment of the debts of municipalities, school districts and telephone companies became necessary. Consequently, the local Government Board was given power to make adjustments in the debts of these local authorities.

With respect to tax cancellations "the principle followed has been that where tax arrears exist the amount obtained on the tax roll shall be the last two years' unpaid levies, whatever two years these may be, plus one 5 per cent. penalty on the second year's taxes. If collections after July 1,,1936, but prior to the coming into force of the Act (Drought Area Debt Adjustment Act, 1937), are in excess of payment in full of the two years' taxes mentioned, the balance shall be credited against arrears which would otherwise be cancelled. In cases where all taxes and tax sale claims have been paid in full by December 31st.1936, a credit equal to the total amount of the 1934 levy on the land is to be established in the tax accounts and one-quarter of this amount is to be allowed as a credit in reduction of taxes levied against the land in each of the years 1937 to 1940 inclusive. In cases where one and two years' taxes only are unpaid, the credits allowed are 80 and 60 per cent. respectively, of the 1934 levy."(2)

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(2) Ibid., pp.372-3.

Amounts Written Off Under this Plan in the Drought Area as at March 15th, 1938.

1. By private lenders on mortgages and agreements of sale (These write-offs not complete)	$ 27,129,510.25
2. By the Province of Saskatchewan	
(a) To rural municipalities:	
i. Relief claims	$ 24,210,000.00
ii. Provincial taxes levied by the municipalities on land (approx)	2,750,000.00
iii. Provincial taxes on land prepaid by municipalities and now returned by the province (approx)	350,000.00
	$ 27,310,000.00
(b) To individual debtors:	
i. Write-off of provincial land contracts	4,568,996.30
ii. Write-off by Saskatchewan Farm Loan Board	1,984,229.25
iii. Cancellation of seed grain and relief claims (approx)	8,087,212.43
	$ 14,640,437.98

Note: Items (i) and (ii) of (b) are included in amounts written off by private lenders.

3. By the Municipalities:	
i. Relief claims (approx)	$ 23,171,300.00
ii. Tax write-off (approx)	23,222,640.00
(Note: This figure includes provincial taxes written off to the municipalities - $2,750,000 as above - and the refund of prepaid provincial taxes - $350,000 as above.)	
	$ 46,393,940.00

In addition the plan calls for setting up tax credits of about $1,488,600 to those taxpayers whose taxes were little in arrears and who received no tax cancellation.

4. By the Dominion government:

i. Saskatchewan government Treasury Bills	$ 17,959,606.51
ii. Advances from the Dominion for 1934-35, direct relief and winter maintenance (estimated)	9,000,000.00
	$ 26,959,606.51

(Note: Write-off of provincial Treasury Bills refers only to red area, whereas write-offs by province and municipalities refer to both red and blue areas.)

These write-offs and cancellations under this plan as at March 15th, 1938 represent relief to the farmer as follows:

On mortgages and agreements	$ 27,129,510
Seed grain and relief claims	31,258,512
Tax arrears	23,222,640
	$ 81,610,662

In addition, tax credits of about $1,489,000 are set up to those taxpayers who received no cancellations.

List of Saskatchewan Statutes Dealing with Debt Adjustment.

(a) THE DEBT ADJUSTMENT ACT

The revised statutes of 1930 include the above as Chapter 162 in the consolidated statutes of that year. A new Act was passed as Chapter 59 in 1931. It was amended and consolidated as Chapter 51 in 1932. A new Act on a much more comprehensive scale was enacted as Chapter 88, Statutes of 1934-35. That Act is still in effect with certain annual amendments made since.

(b) THE LOCAL GOVERNMENT BOARD SPECIAL POWERS ACT.

In the 1930 consolidation, this was found as Chapter 116. It is still in effect with certain minor amendments and has been supplemented by THE LOCAL GOVERNMENT BOARD (TEMPORARY SPECIAL POWERS) ACT, being Chapter 86, 1934-35. This was slightly amended by a supplementary statute passed the same year as Chapter 87 and was again amended by Chapter 118 of the statutes of 1936. Subsequently, in 1937 a new LOCAL GOVERNMENT BOARD (TEMPORARY SPECIAL POWERS) ACT, 1937, was passed as Chapter 93 of the Statutes of that year and, after setting out new powers, repealed Chapters 86 and 87 of 1934-35 and Chapter 118 of 1936.

(c) Each year in and since 1929 as the drought continued there has been an Act dealing with the POSTPONEMENT OF APPLICATION FOR TAX TITLES.

(d) Certain statutes entitled as dealing with TEMPORARY CHANGES IN THE STATUTE LAW were passed as Chapter 51 of 1931 Chapter 36 of 1932 and Chapter 33 of 1933.

(e) THE LIMITATION OF CIVIL RIGHTS ACT was passed as Chapter 83 in 1933 and has been amended by Chapter 89, 1934-35 and Chapter 119, 1936, and Chapter 94 of 1937. (See submission of Dominion Mortgage and Investments Association, part II, Appendices, p.9.)

(f) In 1934-35 the TREASURY DEPARTMENT ACT was amended to set up a Board of Revenue Commissioners, who were given statutory powers to deal with appeals regarding provincial taxes, and were also clothed with power to adjust those taxes even if appeals on points of law were refused. THE INCOME TAX ACT was also amended in order to provide for such appeals and went on to provide for a further appeal from the Board to the courts. There was no further appeal from the Board to the courts with respect to other classes of provincial taxes until 1938 when THE TREASURY DEPARTMENT ACT was further amended to provide for an appeal from the Board to the courts on points of law with regard to any class of provincial taxes.

(g) THE DROUGHT AREA DEBT ADJUSTMENT ACT, 1937 being Chapter 92, 1937, was enacted that year with regard to the write-off of taxes and relief in the red and blue areas of the province. The Act was amended by Chapter 88, statutes of 1938.

(h) Chapter 38, statutes of 1938, provided for the cancellation of certain indebtedness in respect of advances of direct relief and winter maintenance of livestock in certain rural municipalities to the extent same were issued after certain dates set in the Schedule of said Act.

(i) Chapter 22, statutes of 1938, being an "ACT for the PROTECTION OF TRUSTEES IN CERTAIN EVENTS", protects trustees from personal liability for adjustments of certain types made by them, if approved by order-in-council.

ALBERTA

1. Debt Adjustment Legislation

The Debt Adjustment Act of 1923 was in force, with minor amendments, until 1933. The principle embodied in this Act was similar to that in the early Saskatchewan Acts, i.e. the debtor could obtain protection only through the issuance of a certificate by the Director. Moreover, the Act provided that the Director might effect by negotiation, where possible, some adjustment of the resident's debts by agreement between debtor

and creditor. Where protection was afforded the debtor, he was required to account for his revenues which were required to pay operating costs and the balance was distributed among his creditors, having regard to the status of the claims against him. The chairman of the Debt Adjustment Board reports "that it was amply proven that this plan was cumbersome in its operation, inasmuch as the operating farmers resident in districts scattered over the province in some instances took advantage of the impossibility of their being checked up regularly with the result that the revenues were not properly accounted for to the Director". In 1931 a Board of Review was established to which creditors could appeal. In 1932 the application of the Act was extended to others than farmers.

In the Debt Adjustment Act of 1933 the principle, which has been followed since, of automatically extending protection to debtors was established. In this case permission had to be obtained to proceed against a debtor. The Act of 1933 extended protection to farm debtors and resident home owners, except in respect of indebtedness for taxes, water rentals or hospital bills. The Debt Adjustment Act of 1937 extended the application of the Act to all indebtedness of residents of Alberta contracted before July, 1936. "An amendment of 1938 enables any resident debtor to obtain a certificate from the Board prohibiting proceedings against him, on his undertaking to turn over a certain portion of his gross income for the Board to distribute among creditors as it sees fit."(3)

Over the period during which a debt adjustment act has been in force the chairman of the Board estimates that total reductions in the claims handled amount to over $15,000,000.

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(3) Submission of the Dominion Mortgage and Investments Association, Part II, Appendices, p.15.

2. Other Legislation Affecting the Collection of Debts.

The Postponement of Debts Act, 1937 and an Order-in-Council of 1937 protected debtors against recovery of debt by any body corporate before March 1st, 1938. An Act of 1938 (The Debt Proceedings Suspension Act) continues the moratorium until March 1st, 1939. Debts owing by one individual to another are exempt from the moratoria. The Home Owners' Security Act, 1938, which was disallowed by the Dominion, prohibited foreclosure of a mortgage made prior to March 1st, 1938 where such mortgage is secured upon the home quarter section of a farmer. In the case of a mortgage secured upon the home of an urban resident the mortgagee when taking action to foreclose was required to deposit with the clerk of the court $2,000, which was to be paid to the mortgagor when the order of foreclosure was obtained. An amendment in 1938 of the Limitation of Actions Act, 1935, prohibited legal action being taken after July 1st, 1940 in connection with a contract made before July 1st, 1936, unless a new agreement had been entered into wherein the debtor had agreed to pay the specified amount, or unless the creditor has commenced action with the consent of the Debt Adjustment Board.

The Dominion Mortgage and Investments Association made proposals for a general reduction of debt similar to those put into effect in Saskatchewan and Manitoba. The proposals were not accepted by the Alberta government.

(For information respecting the order of priority of charges against land and crops in Alberta see submission of the Dominion Mortgage and Investments Association, Part II, Appendices, pp.11-15).

MANITOBA

1. Debt Adjustment Legislation.

In 1930 a director of debt adjustment was appointed by order-in-council to negotiate adjustments when possible, between debtors and creditors. This procedure was continued until April 1931 when, under the Debt Adjustment Act of that year, a commissioner of debt adjustment was appointed. Under this Act, if a debtor applied to the commissioner, the latter might attempt to effect an arrangement with the creditors or, if he saw fit, might issue a certificate preventing action being taken against the debtor. In May 1932, the old legislation was repealed and the Debt Adjustment Act of 1932 changed the method of procedure. This Act with its amendments, under which the Debt Adjustment Board still operates, provides that a creditor must apply for a certificate to proceed against a debtor. The Commissioner attempts to effect a mutually satisfactory settlement, but if he fails he may or may not issue a certificate allowing a creditor to proceed. The Board has no power to write down debts, but by refusing to issue a certificate may stay proceedings.

The Act now in force applies in respect of the goods and chattels used on the farms of farmers and retired farmers and the homes of non-farmers. It may be applied also to protect the owners of any other real estate from foreclosure, etc., in cases where there is less than one year's default of taxes, insurance premiums, and interest on a first mortgage. The Act does not apply to debts contracted after April 1st, 1931. The commissioner states that "the machinery of the Debt Adjustment Act is, in the first place, directed towards securing time for the debtor, and negotiation, if possible, of better terms. We do not attempt in the majority of cases to call in all the creditors and make a general settlement as is done under the Farmers' Creditors' Arrangement Act. We deal as a rule only with the application of the particular creditor or creditors who

have applied to us for permission to proceed. The case may or may not involve or require an attempt to get a reduction of the debt.... For instance, it is seldom possible to secure reductions in applications to proceed to title under tax sale proceedings, amd there is a large number of other cases where no reduction of debt is really required, but merely an extension of time for payment."(4)

Records of settlements involving debt adjustments are available over the last two years only. These settlements involved a reduction of debt of about $102,000 during that time. In addition reductions amounting to about $223,000 have been made by mortgagees in connection with new agreements which they have made and reported to the commissioner.(5)

2. Debt Adjustment in the Drought Area.

A scheme, similar to that described above for the province of Saskatchewan, was put into effect in Manitoba. Under this plan the write-offs were as follows:

Amounts Written Off in the Drought Area of Manitoba.

1. By Mortgage Lending Institutions		$ 966,291.17
2. By the Province of Manitoba;		
(a) To municipalities		1,258,338.35
(b) To individuals (Manitoba Farm Loans Assoc. Accounts)		112,981.68
	Total	$1,371,320.03
3. By the Municipalities:		
(a) Seed grain, fodder and relief advances		$ 1,212,982.94
(b) Taxes		34,908.00
	Total	$ 1,247,890.94
4. By the Dominion government		$ 804,897.02

(4) G.S. Rutherford, Commissioner, Debt Adjustment Board, Province of Manitoba, Correspondence.

(5) Ibid.

In addition to the above write-off, the mortgage lending institutions wrote off $2,171,900.71 outside the drought area and reduced the rate of interest on mortgages on farms in the drought area to 6 per cent. or less.

(For information respecting legislation in Manitoba affecting the priority of first mortgages see submission of the Dominion Mortgage and Investments Association, Part II, Appendices, pp.1-4).

FEDERAL DEBT ADJUSTMENT LEGISLATION:

The Farmers' Creditors' Arrangement Act, 1934

The Farmers' Creditors' Arrangement Act permits the farmer-debtor to obtain a composition of his debts without going into bankruptcy. The farmer submits to an Official Receiver in the province a proposal for the composition of his debts together with a statement of his affairs. The Receiver calls a meeting of the creditors in an attempt to reach a voluntary arrangement. The Receiver has no power to arbitrarily reduce debts. If no satisfactory arrangement is reached the case is referred to the Board of Review, either on the application of the debtor or one of the creditors. The Board may reduce the claims of all creditors to the extent which it considers necessary to enable the debtor to remain on the farm and pay his debts under the new arrangement. The debt under the new arrangement is divided amongst the creditors having regard to their priorities.

The following table gives information respecting the amount of the adjustments that have been made in the Prairie Provinces under the Act.

The Farmers' Creditors' Arrangement Act, 1934 (a)

Statistical Return Covering 11,113 Cases Disposed of in the Prairie Provinces to March 31st, 1938

(Thousands of Dollars)

	Number of Cases	ORIGINAL DEBT			REDUCTION			Estimated Amount of Reduction in Annual Interest Charges
		Secured	Unsecured	Total	Secured	Unsecured	Total Reduction of Debt	
MANITOBA -								
Board of Review	1,894	12,820	2,109	14,929	4,901	1,606	6,507	511
Official Receivers	1,263	6,772	680	7,452	2,656	300	2,956	218
Total	3,157	19,592	2,789	22,381	7,557	1,906	9,463	729
SASKATCHEWAN -								
Board of Review	2,499	23,819	2,334	26,153	7,734	910	8,644	575
Official Receivers	2,160	15,693	1,398	17,091	5,350	540	5,890	391
Total	4,659	39,512	3,732	43,244	13,084	1,450	14,534	966
ALBERTA -								
Board of Review	2,461	20,530	2,243	22,773	7,251	1,126	8,376	879
Official Receivers	836	6,059	673	6,732	2,345	318	2,664	208
Total	3,297	26,589	2,916	29,505	9,596	1,444	11,040	1,087
PRAIRIE PROVINCES -								
Board of Review	6,854	57,169	6,686	63,855	19,886	3,642	23,527	1,965
Official Receivers	4,259	28,524	2,751	31,275	10,351	1,158	11,510	817
Total	11,113	85,693	9,437	95,130	30,237	4,800	35,037	2,782

(a) Information supplied by Mr. H. F. Gordon, Director, Farmers' Creditors' Arrangement Act.